Reducing Childhood Obesity Utilizing a Nurse-Led Protocol in Primary Care Setting

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Abstract

Introduction: Childhood obesity is on the rise at an alarming rate; it became a global health concern in the early 1960s and continues to be a crucial global health issue. Estimates from the 2018-2019 report from the center for disease control (CDC) indicated that approximately 19.3 % of children between 2 and 19 in the United States are obese, while another 16.1% are overweight; this includes about 6.1% who are severely obese.

Objectives: The project's purpose was to create a protocol for screening and treating childhood obesity for children between 5 and 18 in a primary care setting. The project's objectives were to increase awareness among practitioners regarding BMI calculation to diagnose childhood obesity, overweight, at risk for obesity children and initiate a family-centered treatment plan using community resources.

Methods: Current recommendations for preventing childhood obesity in the United States (US) include screening and early intervention. Screening for obesity in children over six, intervention if obese, offering healthy diet counseling, behavioral counseling, and encouraging physical activity are all included in the current recommendations. Education was provided to staff members, including providers, regarding childhood obesity, its background, and the new protocol implemented at the clinic. A pre and post-test was conducted to see the increase in knowledge among the participants regarding childhood obesity and the new protocol. Chart audit was also conducted to evaluate the compliance among participants in following the protocol.

Results: A paired T-test was used to evaluate the efficacy of the education provided using the pre and post-test results. The paired T-test showed a statistically significant improvement using education ($p > .005$). A percentage calculation with a 95% confidence interval was used to calculate the compliance among participants while using the protocol. Complete compliance and partial compliance were evaluated**.** The compliance among the participants was calculated using a simple percentage with a confidence interval of 95%. Nineteen charts were analyzed; 47% of charts were fully compliant with the childhood obesity protocol, while 26.3% were partially

compliant and 26.3% were non-compliant.

Conclusion: Childhood obesity is a rising global concern, and nurse-led protocols to tackle childhood obesity in family practice settings are essential. Early screening using BMI to diagnose childhood obesity and overweight in children between 5 and 18 years of age in primary care settings can prevent chronic conditions related to childhood obesity. Proper training, set protocols and guidelines for staff members, and adherence to the protocols will enable primary care providers (PCP)s to identify and treat obese, overweight children. Screening allows the PCPs to propose proper approaches for weight loss, such as promoting physical activities and improving dietary intake, thus improving bodyweight management and reducing obesity-related complications. Six goals to success is a simple tool that can be implemented easily in clinics, allowing families to select a goal that resonates with them in preventing childhood obesity and related complications. Further studies need to be done to evaluate the full potential of this nurse-led protocol and its efficacy in the early identification and treatment of childhood obesity.

Keywords: BMI; Childhood obesity; Early Screening; Nurse-led protocols; Six goals to success.

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Reducing Childhood Obesity Utilizing a Nurse-Led Protocol in Primary Care Setting

In 1948, the International Classifications of Diseases (ICD) included obesity for the first time (James, 2008). Childhood obesity became a global health concern in the early 1960s and continues to be a crucial global health issue. Estimates from 2016 indicated that approximately 40 million children below the age of five and over 330 million children from ages 5-19 were overweight (Di Cesare et al., 2019). In addition, Tran et al. (2019) estimated that approximately four million deaths were associated with excess Body Mass Index (BMI) globally.

Low socioeconomic status, low parental literacy, limited access to healthy food, and a lack of knowledge regarding healthy meal plans are all associated with a higher incidence of obesity among children (Epstein et al., 2015a; French et al., 2018). Childhood obesity is associated with poor quality of life due to comorbidities, higher healthcare costs, and increased mortality rates (Lobstein et al., 2004). Childhood obesity has been linked with the development of diabetes, hypertension, musculoskeletal disorders, and cardiovascular disease (Tran et al., 2019). Obese children are at higher risk of developing poor mental illness due to body image disturbance, low self-esteem, poor grades in school, substance use, self-harm, and eating disorders (STOP, 2020). Primary Care Providers (PCP) has an essential role in addressing childhood obesity, as this will help reduce mortality and morbidity rate among children due to obesity.

Background

Obesity Prevalence

Childhood obesity affects both developed and developing nations (Bhadoria et al., 2015). In the United States (US), childhood obesity has become a significant public health concern at all healthcare system levels. Current statistics indicate that childhood obesity has tripled among

children ages 6-11 (Cheung et al., 2016). The prevalence of obesity among children and adolescents in 2017-2018 from 2-19 was 19.3%, representing an estimated 14.4 million children and adolescents (CDC, 2021). The occurrence of obesity in 2 to 5-year-olds was 13.4%, and among 6 to 11-year-olds was 20.3% (CDC, 2021). The incidence rate was highest among 12 to19-year-olds at 21.2% (CDC, 2021).

Current Recommendations and Responsibilities of Healthcare Providers

Current recommendations for preventing childhood obesity in the US include screening and early intervention. BMI ranges at the 95th percentile or above are considered obese, while children between the 85th and 94th percentile are considered overweight (CDC, 2021). For example, US Preventive Services Task Force (USPSTF) recommends that clinicians screen children six years and older for obesity and offer them counseling and behavioral interventions if necessary (USPSTF Recommendation Statement, 2010).

Early screening allows PCPs to identify and treat obesity to improve weight management and weight status (Gorecki et al., 2019; Staiano et al., 2017). Unfortunately, almost 99% of the pediatric population who were obese or overweight did not receive a formal diagnosis or screening for physical activity or nutrition (Guardi et al., 2020). Therefore, screening children for obesity in the primary care setting is essential. In addition, it allows PCPs to track weight gain and intervene in weight management and counseling on healthy lifestyles (Gorecki et al., 2019). PCPs must use routine screening of growth parameters such as BMI among children to create awareness and prompt further evaluation and counseling regarding obesity if necessary (Cygan et al., 2014). PCPs should engage parents in weight-related discussions or refer to a dietitian when needed (Kaufman et al., 2020). Additionally, they should assess parents for risk factors that may lead to childhood obesity, such as significant maternal weight gain during pregnancy,

overfeeding, and nutrition composition of the food consumed, to identify the risk factors for childhood obesity (Kaufman et al., 2020).

Protocols and Guidelines

Protocols and clinical guidelines help practitioners identify and treat childhood obesity. The current guidelines by the USPSTF include screening for obesity in children over the age of six, intervention if obese, offering healthy diet counseling, behavioral counseling, and encouraging physical activity (Staiano et al., 2016). These interventions should last at least six months and include 25 or more contact hours (Staiano et al., 2016). Busch et al. (2018) found that training providers to use evidence-based policies to prevent, diagnose, treat, and manage childhood obesity increases the chance of diagnosing and treating childhood obesity.

Manios et al. (2016) explored utilizing the "Childhood Obesity Risk Evaluation" (CORE) index, a screening tool used to identify children at risk for obesity. The algorithm recommended by the American Academy of Pediatrics (AAP) includes utilizing this tool for the assessment and management of childhood obesity in patients two years and over (PA Chapter, American Academy of Pediatrics, 2019). Six to Success is another tool developed by Cygan et al., based on AAP and National Association of Pediatric Nurse Practitioners (NAPNP) recommendations. This tool encompasses guidelines for clinics, an algorithm for screening children for obesity, goals that patients and families can achieve, follow-up appointments, and a chart audit to evaluate compliance among practitioners (Cygan et al., 2014). This protocol was successfully implemented in a child and adolescent clinic and evaluated 396 charts for their process improvement (PI) project. The project showed statistically significant improvement in identifying and starting treatment protocols based on their algorithm. Studies conducted by Busch et al. (2018) concluded that PCPs feel they lack sufficient time, knowledge, and tools to

address childhood obesity. “Thirty-three percent of PCPs are unaware of how BMI is calculated (Busch et al., 2018), and many PCPs lack adequate knowledge to diagnose childhood obesity (Uerich et al., 2016).”

Problem Identification

Approximately 12.5 million (17%) children between 2 and 19 are obese (Dooyema et al., 2017) in the United States. The Doctor of Nursing Practice (DNP) project site is a family practice setting that primarily caters to low-income minority communities. Initial conversations with the stakeholders and the project mentor have revealed an uptick in obesity and higher BMI in the pediatric population. However, the clinic has no screening protocol or specific intervention policy for practitioners to identify childhood obesity. Consequently, the health practitioners at the clinic rarely assess patients’ BMI or counsel families on healthy lifestyles to prevent obesity. In addition, due to this lack of policy, the practitioners do not routinely follow up with patients to ensure adherence to restorative practices and lifestyles.

Project Question

The following PICOT question will guide the project: Among family care practitioners (P), will the implementation of the nurse-led protocol for screening and management of childhood obesity (I) compared with current practice without a protocol (C) increase early identification and intervention for children aged 5-18 years who are obese or at risk for obesity (O) in four weeks (T)?

Search Methods

Electronic databases used for the literature review were the Cumulative Index to Nursing and Allied Health Literature (CINAHL), Elsevier, EMBASE, PubMed, EBSCOhost, ProQuest,

Web Science, and Scopus. The research focused on scholarly works written in English and published between May 2015 and May 2021. The keywords used to find relevant scientific studies were childhood obesity, nurse-led protocols, BMI, obesity screening, and primary care setting. Keywords with Boolean operators “AND” and “OR” were used during the search process. Boolean operators helped connect the keywords to find the relevant publications.

Exclusion and Inclusion Criteria

The initial search yielded 366 articles on childhood obesity. Based on titles, 124 articles were excluded since they were not current. Thirty-six studies were excluded since they were not fully accessible, and 93 studies were excluded as they did not mention screening protocols or primary care. The remaining 57 studies were evaluated, and 41 were excluded because they were conference papers, editorials, research briefs, or the complete article was not available. The remaining 15 articles covered several themes, including factors associated with the prevalence of obesity, early screening, and weight management interventions at the primary care level.

Review Synthesis

This literature review aims to identify the current recommendations and guidelines by the Center for Disease Control (CDC), AAP, NAPNP, and USPSTF to identify and treat childhood obesity in primary care settings and the adherence to these guidelines. Studies on obesity management were reviewed to examine how protocols implemented in primary care settings can affect weight loss outcomes. The review and search methods focused on establishing an association between screening for obesity, weight management, and weight changes in children. This review intends to establish a practice gap in addressing obesity among children in the primary care setting.

Theme Development

Factors Associated with the Prevalence of Obesity

Demirci et al. (2018) investigated the impact of physical exercise, knowledge of nutrition, eating habits, and self-efficacy on obesity rates. The study's findings revealed that approximately 35% of the population was obese, and most were uninterested in physical activities (Demirci et al., 2018). Conversely, participants of average weight were found to possess healthy eating habits, such as having breakfast and eating a balanced diet.

In a descriptive cross-sectional survey, Hassan et al. (2018) found that lifestyle choices such as eating habits and physical activities were significant factors contributing to the upsurge in obesity cases. Hassan et al. (2018) advocated that obesity could be reduced through lifestyle change. Lanigan & Sauvan (2020) noted that increased consumption of dense energy foods, frequent eating out, larger portion sizes, and a lack of physical activity are causative factors for childhood obesity. Based on the literature review, it is evident that poor eating habits and lack of physical exercise increase childhood obesity.

Early Screening and Interventions at the Primary Care Level

Gorecki et al. (2019) highlighted the need for early screening and weight management among children at risk for obesity. Screening for obesity and the risk factors for obesity increases the chances to identify and intervene early (Gorecki et al., 2019). In addition, the screening process brings pertinent information to the provider's attention, which leads the provider to implement the best practices for weight management.

Screening and early treatment are necessary for effective weight management in children with obesity (Staiano et al., 2017a). For example, Staiano discovered that screening allows the

PCPs to propose proper approaches for weight loss, such as promoting physical activities and improving dietary intake, thus improving bodyweight management and reducing obesity-related complications. Likewise, research by Santos et al. (2016) identified that PCPs should implement screening tools to distinguish children at risk for obesity and consider interventions that address inappropriate weight gain.

Peirson et al. (2016) recommended applying family-based interventions and behavioral approaches to promote weight management at the primary care level. Family-based interventions to improve eating habits and adopt healthy lifestyle behaviors inspire children to adopt these lifestyles themselves. Such interventions effectively improve weight management by reducing BMI, body fat, and waist circumference (Ells et al., 2018; Ranucci et al., 2017).

Barriers to Identifying Childhood Obesity

One other theme that emerged during the literature review was the barriers PCPs experience to identifying or diagnosing childhood obesity. Some of the barriers that PCPs encounter include lack of experience or training, financial reimbursement, and lack of screening tools that simplify the process.

Staiano et al. (2016) stated that providers experience difficulties implementing current weight management recommendations. Some of the challenges identified were lack of compensation from the insurance companies for the services provided, insufficient financial or organizational resources, and inadequately trained staff. Mageloff (2019) investigated the effectiveness of nurse-led interventions in managing and treating children with obesity and noted a lack of collaboration between nurses, caregivers, and parents. Additionally, nurses lacked adequate training to chart and track children’s weight status. Mageloff (2019) recommended that

staff training and parental involvement significantly result in successful weight-loss interventions based on these research findings.

Guardi et al. (2019) found that 99% of the time, PCPs lacked appropriate obesity screening measures such as nutritional habits and physical activity. Adhering to the clinical guidelines can improve obesity identification, including physical examination and lifestyle assessment, diagnosis, and preventive strategies to address childhood obesity (Cyang et al., 2014). Unfortunately, even though the guidelines for screening childhood obesity from various healthcare agencies such as the CDC, AAP, and USPSTF exist, many PCPs fail to screen or diagnose obesity among children (Guardi et al., 2019).

Review of Methods

After conducting a literature review, the themes and methods found in relevant research can be used in the current DNP project. The literature review section entailed scholarly articles with different methodologies, including randomized trials, cross-sectional studies, systematic literature reviews, chart reviews, and retrospective studies. These methods are relevant to the current DNP project as they provide reliable and valid evidence on the role of PCPs in implementing interventions for addressing childhood obesity. In addition, the evidence identified during the literature review can be translated to the practice site during the DNP project to identify and manage childhood obesity.

Project Aims

This DNP project aims to address childhood obesity by implementing a screening protocol for children between 5 and 18 and educating staff members at a primary care center. The project aims to educate staff and providers on the screening tool based on current protocols set forth by CDC and USPSTF. In addition, the project aims to increase the diagnosis of

childhood obesity using both a screening tool and a checklist reminder. The documentation will be using an electronic health record (EHR) system, 'Alta pointe.' Chart audits will be done at the end of the project to determine compliance in using the screening tool and evaluate the increase in diagnosis and management of childhood obesity at this clinic.

Project Objectives

In the timeframe of this DNP Project of 4-5 weeks, the objectives are to:

1. Create a childhood obesity screening tool for children between the age of 5 and 18 following national guidelines set forth by CDC, AAP, NAPNP.
2. Provide education to staff members regarding the screening tool to improve identification and management of childhood obesity.
3. Increase identification of children who are obese and at risk for obesity.
4. Improve the staff knowledge of current obesity best practices and the DNP project protocol using a pre-and post-education questionnaire.
5. Evaluate provider's compliance with the protocol using a chart auditing tool.

Theoretical Framework

A framework is an essential aspect of nursing research. Identifying the proper structure is key to the success of any project. Green (2014) described that theory could be defined as an organized and systematic set of concepts that specify relationships between variables to understand the problems or nature of things. The theoretical outline selected for the DNP project is the Donabedian model. The Donabedian model is a conceptual model that supports surveying health services and assessing health care quality (Moore et al., 2015).

The Donabedian model has three components: structure, process, and outcomes that help the researchers to evaluate the quality of care provided to the patients (see Appendix A). These three components enable the observer to assess the outcome of any intervention provided to improve patient outcomes.

Historical Development of the Theory

In 1966, Donabedian's article "Evaluating the Quality of Medical Care" was published and became the pioneering factor in quality assurance and health services research (Ayanian, 2016). Donabedian believed that improving care structures should improve the clinical process and patient outcomes (Moore et al., 2015). Donabedian used the structure, process, and outcomes model to assess the quality of care in healthcare settings. Donabedian, a non-practicing immigrant physician, believed that he could have a different perspective on healthcare delivery in the US (Ayanian, 2016). Donabedian argued structure, process, and outcome should not be reflected as quality characteristics; instead, they are forms or categories of information obtained in various formats to conclude the quality of care (Donabedian, 1980).

Application to DNP Project

Structure

The first component of the Donabedian model is structure. The structure includes all the aspects that affect the context of care delivery. These factors affect how providers and patients operate in the healthcare system, and there are quality measures in the healthcare system (Donabedian, 2003). This can be the physical space where the project will be conducted, the resources available, or process change (Ayanian, 2016). The structure is easy to observe and could be one of the causes of the process's glitches (Donabedian, 2003). The guidelines utilized and the equipment and supplies needed for the project are part of the structural aspect. Lack of a protocol

or policy may be one of the structural components that may lead to poor quality in healthcare. Insufficient training for staff members and a lack of equipment can lead to inefficient healthcare delivery. The project site, policies, stakeholders, staff members who will implement the project, the screening protocol, and equipment needed for the project are part of the structural component.

Process

Process in the Donabedian model is defined as a summation of all actions that are the framework for healthcare (Donabedian, 2003). The process aspect of the Donabedian model includes the care delivered, interventions, and process improvement (Ayanian, 2016). The process can be classified as interpersonal relationships, multidisciplinary approach, care delivery, and technical aspects of healthcare (Donabedian, 1980). Information regarding the process can be accessed using medical records, surveys or interviews with caregivers and clients, or observation of the care provided (Donabedian, 2003). Interventions, applications, examinations, treatments, or counseling are all part of the process aspect of the Donabedian model (Donabedian, 1980).

The screening protocol for childhood obesity includes utilizing the screening tool and checklist, identifying or diagnosing obese or overweight children, identifying at-risk children for obesity or overweight, prescribing appropriate treatment plans and referrals. These are all appropriate interventions that meet the criteria for the process component of this model. With the implementation of the protocol, the clinic will see increased identification and management of childhood obesity. The staff members, including Physicians (MDs), physician's assistants (PAs), nurse practitioners (NPs), registered nurses (RNs), licensed practical nurses (LPNs), and medical assistants (MAs), will be educated on the new guidelines/protocols and screening algorithm.

Management protocols will be implemented if diagnosed as obese or overweight, such as patient counseling and referrals to appropriate programs or departments.

Outcome

Outcomes can be viewed as one of the most critical quality indicators in healthcare. The outcomes are the effects of healthcare, such as a change in health status, behaviors, literacy, patient satisfaction, or quality of life related to their health (Donabedian, 2005). The primary purpose of healthcare is to improve the health status of the patients served. However, the difficulties in evaluating healthcare outcomes are financial constraints, large sample sizes required, and time-consuming follow-ups or outcomes that need considerable time to become noticeable (Donabedian, 2005).

Outcomes can be measured using several methods: data evaluation, mortality or morbidity rates, satisfaction among users, or adherence to a protocol change (Anayian, 2016). The primary outcome that will be evaluated is to see if there is improvement in identifying obese or at-risk children and, if necessary, interventions were provided. The second outcome measured for the project will be the staff's knowledge of the current screening recommendations, changes in screening practices at the clinic, and the need for implementing the screening protocol. A pre- and post-questionnaire will achieve this before and after education. The third outcome of the project will be evaluated by collecting data to assess staff members' adherence to the protocol.

Population of Interest

This DNP project will focus on the healthcare providers by implementing the screening protocol for childhood obesity. The direct population of interest includes two MDs, two PAs, four NPs, two RNs, five LPNs, and eight MAs. The direct population of interest is included as they will implement the protocol and receive an education. The MDs, PAs, and NPs will diagnose and

initiate a treatment plan. Other persons of interest will be information technology (IT) assistants to help design and include the tool in the EHR system. The office manager will manage the workflow and schedule staff members. The project will exclude the office staff and the billing department from implementation as they are not involved in direct patient care. The indirect population of interest is children at risk for being overweight or obese.

Setting

The project site is a privately owned family practice setting in Southern Nevada established in 2004. It has four clinics under its management, and the student will be conducting this DNP project at one of their sites. The project site is a family practice clinic that caters to different age categories, including children aged 5 to 18. The clinic primarily serves patients from low socio-economic backgrounds and ethnic minorities. The majority of the patients have Medicaid or Medicare as their insurance, and about 10-15% of their clientele are uninsured. The clinic treats approximately 400- 500 patients a month, including 40-50 pediatric patients. The project site uses ‘Alta pointe’ EHR for documentation. All documentation and intake for patients are using EHR except for COVID screening. COVID screening for patient intake is done using paper documentation and is not scanned into the EHR system; this information is not relevant to the student's project.

Stakeholders

The stakeholders include the owner of the family practice setting, who is not a medical provider and is involved in the project by providing approval for the project to be conducted at the project site. This approval includes allowing the staff the time and providing any financial expenses that may incur during the project implementation. The time and monetary expenses pertain to the participants attending the educational session and paying them to be included.

The clinic manager will oversee and post the schedule for the education of staff members. The IT tech will assist in extracting data from the EHR system. MDs, PAs, and NPs will diagnose children with overweight or obesity or identify children at risk for obesity. The RNs, LPNs, and MAs will use the screening questionnaire to screen the children between 5 and 18 years of age, and MDs and NPs will use this to formulate a diagnosis and treatment plan. The student will communicate with the stakeholders via e-mail or in-person as needed during the project's implementation phase. Permission and no affiliation agreement required from the site was obtained to conduct the project at the practicum site (see Appendix B).

Interventions

The project will be implemented over five weeks. Pre-implementation data will be collected during the first week, and participants will receive the education. The project lead will be at the site to provide support during the first week of project implementation. A pre-test will be administered and collected before the educational sessions, and a post-test will be administered and collected after education is provided. Participants will be introduced to the protocol. The education will give the background of childhood obesity, data on childhood obesity in the US, instructions on using the screening tool, calculating BMI, accurately documenting a diagnosis based on the screening questionnaire, the treatment plan, and follow-up information. The pre-and post-tests will evaluate the participants' attitudes and understanding of childhood obesity and the protocol. The project will be implemented at the clinic during weeks two, three, and four, while data collection and analysis will occur during week five of the project. Retrospective chart audits for pediatric patients between ages 5-18 will be completed; the data will be de-identified and only data pertaining to the project will be collected. Only the charts of patients seen during the implementation period will be audited. The DNP project will not include

any pediatric patient seen at the clinic before and after implementation. Data collection will consist of chart audits to evaluate if the protocol was used for the appropriate pediatric patients. Additionally, the chart review will assess for proper determination and documentation of a diagnosis, if a customized treatment plan was initiated, and if a follow-up appointment was scheduled.

Tools

The childhood obesity screening and management protocol is based on the Six to Success program. The obesity screening and management protocol have several components. The tools used for this project are the protocol which includes: a screening questionnaire, a BMI calculator, blood pressure (BP) tables, an algorithm for assessment, diagnosis, treatment, selected goals and resources, a chart audit tool to verify compliance, and a pre-and post-test to evaluate participants' attitudes and understanding of best practices and the protocol. Additionally, a PowerPoint has been developed to educate the project site team. The tools used in this project are based on the Six to Success program; permission to use the program and its components or to modify it was obtained from the author and the publishing company (see Appendices C and D).

PowerPoint Presentation for Staff Education

The project lead created the PowerPoint presentation. It includes background information regarding childhood obesity, the protocol's purpose, calculating BMI, using the protocol, and information regarding risk factors for future obesity (Cygan et al., 2014; Pierce, 2016). An algorithm, treatments, risk factors leading to childhood obesity, goals for patients, and resources are also included in staff education. Staff members will be educated regarding the obesity screening protocol at the project site (see Appendix E)**.**

Childhood Obesity Screening and Management Protocol

The project lead modified the Six to Success protocol to screen children ages 5 and 18 years to identify, diagnose, and treat overweight, at-risk, or obese children. The evidence-based protocol is developed based on the Six to Success pediatric weight management program to identify childhood obesity in a family practice clinic and is based on the algorithm developed by the American Academy of Pediatrics (AAP) Institute for Healthy Childhood Weight and follows AAP's current guidelines (Pierce, 2016).

The protocol includes the purpose, a step-by-step guide, a BMI calculator, blood pressure tables, a screening questionnaire for patients to identify personal and family risk factors, an algorithm to assess, diagnose, treat, and follow-up, and six goals and resources for patients. (see Appendix F) The resources include information regarding the local recreational gyms and parks, information about “my plate,” and resources to quality food in the local market. “My plate” is an initiative started in 2011 by Unites States Department of Agriculture (USDA) along with Dietary Guidelines for Americans (U.S Department of Agriculture [USDA], 2011). My plate consists of visual reminders of food groups to be on a plate rather than specifying what food items to be consumed. The “my plate” concept gives the consumer more autonomy and visual cue reminders of healthy eating. Other resources include information regarding the county’s project on healthy living. The protocol is not validated by previous studies.

The Screening Questionnaire

The screening questionnaire will allow the patients to answer the health, family, and personal questions during the intake process (see Appendix F). The screening questionnaire includes medical history, family history, diet, and physical activity questions. The responses to the questionnaire will allow providers to evaluate further and assess risk factors to formulate a diagnosis based on the algorithm. The screening questionnaire is taken from the Six to Success

program and formatted by the project lead for ease of use at the project site. No alteration is made to the original questionnaire.

BMI Calculator and Blood Pressure Table

The BMI calculator using weight, height, and gender is a standardized tool from the CDC and used by the AAP. A BMI calculator will be downloaded from the CDC website (see Appendix F) and does not require permission for use. There will be no modification to this BMI calculator. The BMI calculator will enable the practitioners to diagnose based on the BMI percentile criteria set forth by AAP and CDC following the instructions provided in the algorithm. Children between the 80-85th percentile with one risk factor will be diagnosed at risk for obesity. Children between the 85th to 94th percentile will be diagnosed as overweight. Finally, children above the 95th percentile will be diagnosed as obese.

The CDC created the blood pressure table, which the AAP also uses. The blood pressure table (see Appendix F) will be downloaded and does not require any permissions for use. The BP table is formatted to identify the percentile where the child falls based on the BP measurement. The BP table is specific for age and gender criteria and provides information to identify children at risk for obesity.

Algorithm and Six Goals

The algorithm to evaluate, diagnose and initiate treatment plans for children with obesity, overweight, or at-risk for childhood obesity is included in the protocol (see Appendix F). The project lead modified the algorithm based on Six to Success after permission was obtained to modify it to fit the project site's needs. The algorithm is reformatted and altered minimally to meet the clinics' needs and appeal to the project site's staff members and stakeholders. The algorithm contains identification and diagnosis criteria, assessment required for diagnosis,

prevention or intervention methods, and scheduling for follow-up appointments. The algorithm also has how to use the BP table and personal and family risk factors to diagnose. The interventions include non-pharmacological treatment plans, including diet, physical activity, and motivational guidance (Cygan et al., 2014).

The algorithm also provides information regarding the six goals patients and their families can choose. These goals include 1) Five vegetables and fruits a day 2) Four glasses of water a day 3) Three low-fat calcium servings a day 4) Less than Two hours of screen time per day 5) One hour of physical activity per day and 6) Zero sugar drinks like juice, soda. If diagnosed with obesity, overweight, or at risk for obesity, patients and families are encouraged to pick one of the six goals from the protocol that resonate with them as part of their treatment plan. Selecting their goal will enable the patient or the family to have more autonomy and control over their treatment plan and motivate them to achieve it within the time frame (Cygan, 2014).

Permission was obtained from the publishing company to use the images and article for the project (see Appendix D). The algorithm is modified by omitting the lab value evaluation for the DNP project. The lab values are omitted due to time constraints for the DNP project. Lab value evaluation may be added later to this algorithm as needed at the discretion of the leadership at the clinic.

Pre- and Post-Test

The project lead developed the pre-and post-tests and will seek expert consultation with stakeholders and the DNP project team (see Appendix G). The test contains two parts; Part I includes a Likert scale with five questions regarding the general attitude towards childhood obesity and education. Part II consists of ten multiple-choice questions to assess staff members'

knowledge pre-and post-education regarding childhood obesity. The validity of this tool will be established by completing a content validity index (CVI).

Content Validity Index (CVI). The content validity index (CVI) is used to rate the tools or the test's validity and reliability to establish the validity and reliability of the instrument (see Appendix H). Content validity index will allow subject matter experts to evaluate and rate the tool or the instrument you have created and provide information regarding the relevancy of the contents to the topic. A minimum of three expert opinions is sorted for the evaluation. A score of 2 or above for the quality questions and a 3 or 4 for the multiple-choice questions is acceptable. The average rating by the experts for the multiple-choice questions is 4, and the average for the quality questions is 3, which validates the relevance of this pre and post-test questionnaire.

Chart Audit Tool

The chart audit tool will evaluate the participants' compliance with the protocol. The protocol is modified to fit the clinic's needs and will accommodate the timeline for the DNP program (see Appendix I) (Cygan et al., 2014). Permission to use the chart audit tool from the Six to Success protocol is obtained from the author; the validity and reliability of the tool have been established from previous studies (Pierce, 2016). The chart audit tool contains yes or no questions to evaluate 90% compliance among the practitioners. The audit includes assessing if the participants documented medical and family history questions, completed health assessment evaluating all systems, BMI calculation, diagnosis of obesity documented, and treatment plan. The project lead is expecting and evaluating 90% compliance among the participants to use the entire childhood obesity screening and management protocol. The chart audit tool will assess all childhood obesity screening and management protocol components.

Partial compliance among the practitioners will also be evaluated using the cart audit tool. Partial compliance will be awarded for the charts if the practitioners used the protocol and completed 50 % or more of the protocol components. Both BMI and an obesity diagnosis must be documented along with 50% or more components completed from the protocol to fulfill partial compliance criteria. If either one of these criteria is not met, the cart will be non-compliant. Partial compliance will warrant further education regarding the screening protocol. This data will be used for evaluations and continued education for staff members regarding childhood obesity and compliance with the protocol. Deficiencies evaluated during chart audit for staff re-education will include correct calculation and documentation of BMI, correct documentation of obesity diagnosis, and initiation of the appropriate treatment plan.

Study of Interventions/Data Collection

The project lead will collect data after implementing the childhood obesity protocol at the project site during week five. The data collection will include the compliance or partial compliance among using the childhood obesity protocol and participants' knowledge regarding childhood obesity pre- and post-education.

Pre- and Post-Test Evaluation

Pre- and post-tests will be completed using the paper and pencil method; participants’ names will not be used on the tests to maintain confidentiality. Pre- and post-tests will be numbered before distribution to participants, and each set of pre-and post-tests will have identical numbers. Each participant will receive the same numbered test to evaluate their knowledge pre- and post-education. A sign-in sheet will be provided for participants, and they will be assigned a number for their tests. This sign-in sheet will be scanned into the project lead's password-protected computer for storage. Sign-in sheets and the pre-test will be collected after

the participants complete the test. Then the education presentation will commence. The post-test will be administered immediately after the education and collected when the participants have completed the test.

The project lead will score the tests, and the results will be initially transferred into an excel spreadsheet on the project lead's password-protected computer. No other person will have access to this computer, and it will be stored in a secure location. The hard copies of the tests will be destroyed by shredding the documents after the data is transferred to the spreadsheet.

Chart Audits

The project lead will conduct chart audits during week five using the chart audit tool for patients between ages 5 and 18 who visited the clinic during the implementation period. The chart audit will evaluate compliance among practitioners utilizing the protocol. Each chart audit tool and the corresponding participant will have identical numbers for identification. The numbers for the chart audit tool will correspond to the pre-post test administered to the participants. This will ensure to track the participants' performance. The data will be de-identified before the audit to maintain patient confidentiality. The chart audit tool does not contain any area to document identifiable information. Therefore, no patient information will be extracted from the chart during the audit. The only information collected pertains to the utilization of the protocol by the participant. Hard copies of the chart audit tool will be kept safe under lock and key at the project site. The project lead and the project mentor will have access to these documents. Once the audit is completed, results will be transferred to an excel spreadsheet on the project leads password-protected computer and will not contain any patient identifiers. No other person will have access to this computer, and it will be stored in a secure location.

According to the DNP protocol, the project lead will destroy all paper and electronic copies of data collected for this project.

Ethics/Human Subjects Protection

Institutional Review Board (IRB) approval is typically not necessary for a quality improvement project (see Appendix J). However, the project lead will complete a project determination form whereby the project team will review and determine if an IRB review is warranted. The project site does not require any IRB approval. The project lead completed all required Collaborative Institutional Training Initiative (CITI) modules to ensure that the project lead followed all ethical aspects of human subject research. There are no ethical concerns regarding the implementation of the project.

Participation in childhood obesity protocol education is mandatory as per the clinic's leadership. Benefits of attending the educational sessions include increased staff awareness regarding childhood obesity, information on BMI and its relationship with childhood obesity, and communication on the new childhood obesity screening protocol. There are no anticipated risks to participants. Since this is a mandatory practice change, no consent will be required. Participation in this project is not considered a condition of employment. The participants will be provided with food by the office manager, the extra time for education will be compensated with pay and their regular salary. The food and education compensation expense will be allocated from the education budget. No special treatment or consideration will be extended for participants or non-participants.

Measures/Plan for Analysis

Data collection and analysis for the DNP QI project will be conducted in week five of the implementation phase. The data will be collected at the beginning of week five, and analysis will

be completed at the end of that week. Raw data regarding the results of pre-test before education, post-test after education, and compliance among practitioners using the chart audit tool will be transferred to the spreadsheet and used for analysis. Initial analysis will include a simple calculation of results of the pre-and post-tests, number of charts audited, number of charts that were 100% compliant using the protocol, and number of partially compliant charts. Partial compliance will be evaluated if more than 50% of the protocol was followed, along with a BMI calculation and diagnosis. If there is less than 50% compliance or BMI calculation or a diagnosis is missing during the chart audit, the chart will be considered non-compliant.

The Statistical Package for Social Sciences (SPSS) will analyze the data collected from the pre-post tests and chart audits. A paired t-test will analyze the pre-and post-test results to compare participants' knowledge regarding childhood obesity before and after education. A paired t-test is an appropriate statistical test for measuring one group's performance on two different occasions, as in a pre and post-test after an intervention (Pallant, 2016). In a parametric test, like the paired t-test, the general assumption is that the dependent variable is measured at intervals using a continuous scale (Pallant,2016). The paired T-test will analyze the effectiveness of the education provided and compare the pre and post-test results. This measurement will give insight into whether further education is required and evaluate the staff's knowledge of childhood obesity. A percentage calculation for the chart audit tool will be performed using a 95% confidence interval to assess compliance among the participants in using the protocol. The confidence interval will be used to determine the level of compliance. A confidence interval (CI) is a range of values likely to include a population value with a certain degree of confidence. It is often expressed as a % whereby a population means lies between an upper and lower interval. The 95% confidence interval is a range of values that you can be 95% sure contains the

population's true mean. Consultation with a statistician will ensure that the data is accurately analyzed and interpreted.

Analysis of Results

The data was analyzed to measure if the participants gained knowledge about the educational program provided. A paired t-test was the statistical test utilized to measure this objective. Tables and graphs will be used to illustrate the results. Data was collected and analyzed to measure if the participants adhered to the new childhood obesity protocol. Since there was no previous protocol to compare, the statistical test chosen is to calculate the percentage of compliance using a 95% confidence interval (CI). The CI is a span of values where a person can be 95% sure contains the true, unknown parameter (McLeod, 2019).

Pre and Post Results

A paired t-test was performed to compare pre and post-test results regarding childhood obesity prevalence and the new protocol after education. Nineteen participants attended the instruction and took the pre and post-tests. There was an average 6.737 increase in the correct answers during post-tests, showing a positive effect of education (*n- 19*, *p->* 0.001). The test was conducted assuming that the provided education would increase the participants' knowledge, and there was no violation of the assumption. See Table 1for details on the test and Figure 1 for the graph representing the participants' increased understanding.

The paired t-test indicated that the post-test scores were significantly higher *(M = 9.95, SD = .229)* compared to the pre-test *(M = 3.21, SD = .967)*, t(18) = 29.626, *p = <.001*. Standard deviation indicates how the data is dispersed to the mean value. A standard deviation high or low indicates that the data point is above or below the mean. In this test, the pre-test showed a higher standard deviation (*SD =.967),* whereas the post-test showed a much closer number to the mean

value (*SD = .229).* The paired T-test showed a statistically significant improvement using education (p >.005). The correlation measures the strength of the relationship between two variables, in this case, education and test results; in this test, there is a positive correlation between the two variables.

Table 1

Pre and Post Education Test

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	POST yes count	9.95	19	.229	.053
	PRE yes count	3.21	19	.976	.224

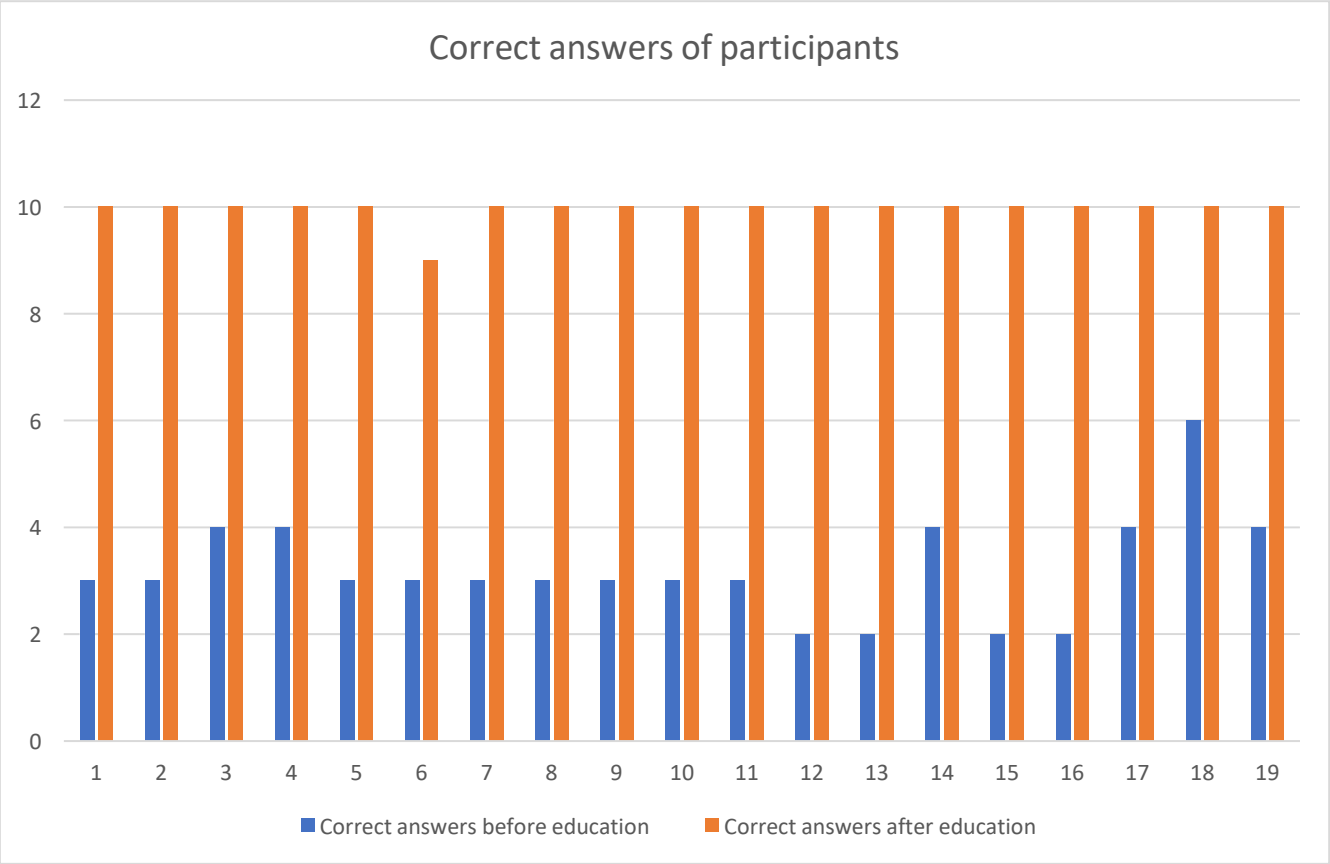
Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	POST yes count & PRE yes count	19	.052	.832

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	POST yes count - PRE yes count	6.737	.991	.227	6.259	7.215	29.626	18	.000

Fig 1 *Percentage of Participants' Score Pre and Post tests*



Protocol Compliance Score

The charts were audited, and data were analyzed using SPSS to evaluate complete or partial compliance among the participants in using the childhood screening protocol. The compliance among the participants was calculated using a simple percentage with a confidence interval of 95%. Out of the 19 charts analyzed, nine charts (47%) were completely compliant with the childhood obesity protocol. Five charts (26.3%) were found partially compliant, and five (26.3%) were found noncompliant. The mean for the fully complaint charts was .47 , with a standard deviation of .513, and the 95% confidence interval between .23 and .72 *(M = .47, SD= .513, CI (.23, .72)*. The mean for partially compliant charts was .74 with a standard deviation of .452, and the 95% CI was between .52 and .95 *(M= .74. SD= .452, CI (.52,.95)*. The wide range

for the CI could be because of the small sample size. Partial compliance was also calculated using simple percentage calculation, where the charts had a BMI calculation, obesity diagnosis, and 50% compliance with the protocol. See Table 2 for detailed analysis and Figure 2 for graph representation of this data.

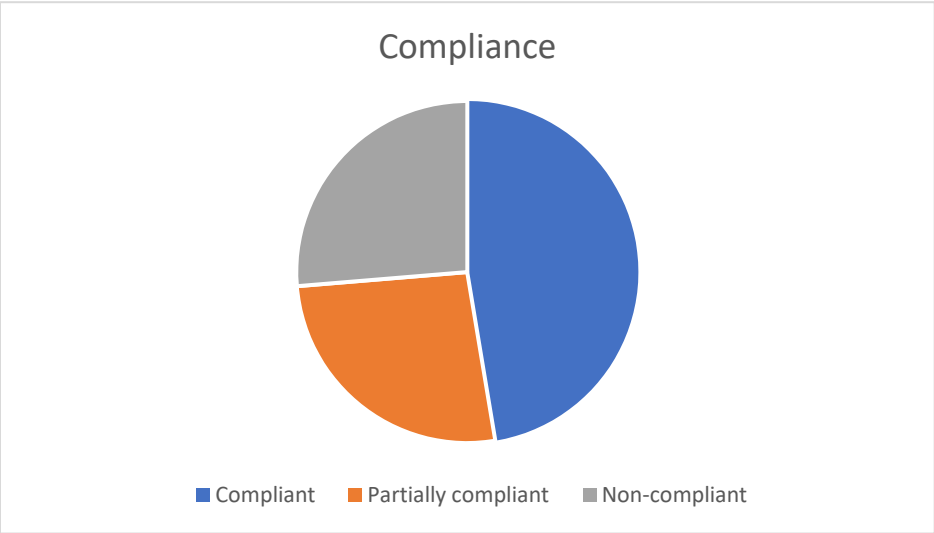
Table 2 *Compliance for using the childhood obesity protocol*

Descriptives

			Statistic	Std. Error
Compliant	Mean		.47	.118
	95% Confidence Interval for Mean	Lower Bound	.23	
		Upper Bound	.72	
	5% Trimmed Mean		.47	
	Median		.00	
	Variance		.263	
	Std. Deviation		.513	
	Minimum		0	
	Maximum		1	
	Range		1	
	Interquartile Range		1	
	Skewness		.115	.524
	Kurtosis		-2.235	1.014
Partially compliant	Mean		.74	.104
	95% Confidence Interval for Mean	Lower Bound	.52	
		Upper Bound	.95	
	5% Trimmed Mean		.76	
	Median		1.00	
	Variance		.205	
	Std. Deviation		.452	
	Minimum		0	
	Maximum		1	
	Range		1	
	Interquartile Range		1	
	Skewness		-1.170	.524

Kurtosis	-.718	1.014	

Fig 2



Compliant-9, Partially Compliant -5, and Non-compliant-5

Discussion of Findings

CDC, USPSTF, and AAP recommend practices and policies regarding using a protocol for diagnosing and managing childhood obesity. Yet, these protocols and guidelines can sometimes be challenging to translate into practice. Practitioners were able to diagnose and develop the treatment plan for childhood obesity or identify at-risk children for obesity or overweight utilizing the new childhood obesity screening tool and protocol implemented at the practice site. The project's objective was to improve staff knowledge regarding best practices to identify and treat childhood obesity. Data analysis showed the objective was met, as evidenced by improvement in knowledge regarding childhood obesity among the participants and improved scores on post-test by an average of 6.76 correct answers.

The clinic had no policy before the project implementation to identify childhood obesity. By implementing this project, participants were able to identify and treat children who were overweight, obese, or at risk for obesity and implement a treatment plan. The project audited 19 charts and found five at-risk patients, three obese patients, and four overweight children. The number of children diagnosed and referred to the treatment plan reflected increased knowledge, thus meeting the project's objectives. Mageloff (2019) recommended that staff training and parental involvement significantly result in successful weight-loss interventions. The participants had increased knowledge regarding childhood obesity, factors that cause obesity, and the new screening protocol.

The project lead became a change agent in identifying a practice gap, thus advocating for a change in practice to address childhood obesity at early stages by implementing the protocol. This protocol enabled the staff members to recommend lifestyle changes, provide community resources for managing childhood obesity, and use a family-centered approach. The participation and input from the staff members resulted in a practice change that improves outcomes by identifying early childhood obesity or children who are at risk for overweight or obesity at the clinic, thus fulfilling the objective of compliance among participants.

Out of the 19 charts audited for this project, nine were found compliant, five were partially compliant, and five were non-compliant. The charts were audited for all pediatric patients seen at the clinic during the project implementation phase. Even though the expectancy was 90% compliance, the chart audit revealed that the protocol was not followed every time for the pediatric patients. Some participants could not attend the education provided due to ill health. This could be a significant contributing factor for non-compliance among the participants. A chart was deemed partially compliant if the participant used BMI and had an obesity diagnosis

recorded on the chart along with 50% of the screening questionnaire completed. Even though there was a significant improvement in knowledge regarding childhood obesity and its relevance, some participants did not comply with the screening questionnaire primarily due to lack of time. The non-compliant charts were missing either BMI calculation or the obesity diagnosis and used less than 50% on the screening questionnaire.

Adhering to the clinical guidelines can improve obesity identification, including physical examination and lifestyle assessment, diagnosis, and preventive strategies to address childhood obesity (Cyang et al., 2014). This indicates that a nurse lead protocol in the family clinic for early identification of childhood obesity can improve patient outcomes by identification and treatment. Most participants at this clinic were compliant with the protocol, which concludes that reinforcement is required for full compliance from the participants. Screening and early treatment are necessary for effective weight management in children with obesity (Staiano et al., 2017a). Screening allows the PCPs to propose proper approaches for weight loss, such as promoting physical activities and improving dietary intake, thus improving bodyweight management and reducing obesity-related complications (Staiano et al., 2017). The response from family members using the screening questionnaire was not addressed as it was not within this project's scope. Satisfaction among the participants using the protocol was also not measured for this project.

There was positive feedback from the staff members regarding the childhood obesity protocol and the treatment plan. There was increased use of BMI calculation among the participants, increasing the number of children diagnosed with overweight and obesity, indicating a change in practice. This change in practice promoted the discussion with family

members regarding lifestyle change using the six to success protocol. It gave them the autonomy to choose one goal from the protocol.

Significance/Implications for Nursing

The project's purposes were to increase awareness among practitioners regarding BMI calculation to diagnose childhood obesity, overweight, at risk for obesity children and initiate a family-centered treatment plan using community resources. Although this was a new protocol at the facility, most participants adhered to and utilized it. There was noncompliance from 2 NPs,1 MD, and 2 LPNs. Implications for future practice would include continued education for PCP's and staff members in using the protocol 100% of the time.

Another objective for the project was early identification of childhood obesity among children between 5 and 18 and to start them on a treatment plan to prevent chronic diseases. Even though there was less than 90% compliance among the practitioners using the protocol, there was a significant increase in diagnosis and initiation of treatment for children with overweight or obesity. Involving family members and children in their care by giving them the autonomy to choose a goal for themselves will increase patients' adherence to the treatment plan.

DNP-prepared nurses are equipped with the knowledge and skills to change practices by implementing new policies and becoming change agents (DNP, 2006). The childhood obesity screening project at the family clinic brought changes in diagnosing and treating children who are at risk for being overweight or obese. DNP-prepared nurses can be at the frontline to bring changes in practice by disseminating and integrating the knowledge they possess to bring positive outcomes for patients. This project suggests that screening and BMI calculations can lead to early detection of childhood obesity and thus prevent choric conditions among children. This project provides tools to practitioners in helping identify childhood obesity and start

treatment early. Staff training and parental involvement can significantly result in successful weight-loss interventions (Mageloff, 2019).

Further training and education are required for compliance among the practitioners. Implications for future practice are to continue to increase PCP's awareness of evidence-based guidelines for childhood obesity with the support of the key stakeholders of the primary care center. Implementation of the evidence-based guidelines is essential for decreasing the number of at-risk youths for childhood obesity.

Limitations

There were several limitations identified for this project at the project site. These limitations influenced the outcome of this project and are discussed in detail.

Project Design

One of the significant limitations at the site was some participants' were unable to attend the education session due to ill health. The COVID -19 virus was a major setback for the project, as it affected education participation, which significantly impacted compliance in using the obesity screening protocol at the facility. The project lead offered makeup sessions during week two, but the participants could not attend due to being quarantined.

Data Recruitment

One limitation related to data collection was an unexpected decrease in pediatric patients due to the pandemic and insurance changes. The pandemic affected the recruitment of patients, who were essential to implementing the project protocol. During the implementation phase of this project, the surge in the Omicron variant of Covid-19 occurred. This specific variant has disproportionately impacted children up to four times than was seen in other Covid-19 waves (Kozlov, 2022).

Another limitation impacting data recruitment was sufficient time to evaluate the effectiveness of this project. The Touro University Nevada (TUN) DNP program restricted the implementation phase to five weeks to accommodate the accelerated program timeline. This time constraint was one of the limitations of this project that contributed to the lack of a thorough evaluation of the intervention as mentioned above and limited the time to collect sufficient data to evaluate compliance of the participants over time. There was not enough time for complete implementation of all participants at this one clinic and evaluation to assess the full potential of the new protocol.

Data Collection and Analysis Methods

The time limitation impacted the data collection methodology by not allowing for a long-term evaluation of the potential data. There were no limitations noted for analyzing the data that was collected. The TUN policy of having no direct patient care also presented a limitation for this project. More objectives and data collection should be added to track clinical outcomes such as reduction in weight, adherence to the goals by the patients, and family involvement are critical to the project's success.

Dissemination

Areas of further dissemination include further implementation of the screening and early detection of childhood obesity in primary care settings. The project lead intends to present the screening protocol, components, and results during the annual poster presentation at the Hospital Corporation of America (HCA) national StaRN Instructor conference. The project lead is considering publishing the results of this project in a peer review journal National Association of Neonatal Nurses (NANN), and the monthly nationwide newsletter for the HCA StaRN program forum. The project and its results will be disseminated to the TUN faculty and peer students

during the oral presentation. The project will also be submitted to the DNP project repository for further dissemination.

Sustainability

The project can be sustained if management and other stakeholders continue to utilize the protocol to screen, identify and diagnose obese children, along with early intervention. The project can be adapted to the sister institutions of this clinic where the project was implemented. The project lead intends to provide staff members and stakeholders with the PowerPoint presentation, the necessary tools, and the data analysis findings for further research and development. As the protocol is established, there will be no additional cost to the clinic to sustain this project. Discussions regarding continuing the project for a more extended period and measuring the data may yield new results, and the stakeholders will be able to revaluate the sustainability of this project at the site.

Conclusion

Childhood obesity is rising, and nurse-led protocols to tackle childhood obesity in family practice settings are essential. Proper training, set protocols and guidelines for staff members, and adherence to the protocols will enable PCP's to identify and treat obese, overweight children. Screening allows the PCPs to propose proper approaches for weight loss, such as promoting physical activities and improving dietary intake, thus improving bodyweight management and reducing obesity-related complications. Six goals to success is a simple tool that can be implemented easily in clinics allowing families to select a goal that resonates with them to prevent childhood obesity and related complications. Further studies need to be done to evaluate the full potential of this nurse-led protocol and its efficacy in the early identification and treatment of childhood obesity.

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Appendix A

Donabedian Model

Appendix B

Permission Letter

7/31/21

From,

Ansy John, DMP, FNP- BC, PMHNP-BC

Nem Medical Center,

4440, E Washington Ave,

LV, NV, 89110.

To

Dr. Sturm Alyssa & Dr. Zabriskie Denies

Dear Dr. Sturm and Dr. Zabriskie,

It is my pleasure and privilege to assist Miss. Leena Joseph with her capstone project. I do not require an agreement for Leena to proceed with her project at my clinic site. If you have any questions, don't hesitate to contact me at 702-883-0349. I extent my sincere thanks to both of you for allowing me to be a part of this project.

Sincerely

Ansy John

Appendix C

Permission to Use and Modify Six to Success Protocol

7/19/2021 Touro College Mail - Permission to use

Leena Joseph <ljoseph8@student.touro.edu>

Permission to use

Heide Cygan <Heide_CYGAN@rush.edu> Mon, Jul 19, 2021 at 8:41 AM
To: Leena Joseph <ljoseph8@student.touro.edu>

Good morning,

Thank you for your interest in Six to Success. You are welcome to use my work as the basis for your project. You may use the protocol as is or modified to fit the needs of your organization and/or population. As you mentioned, you will need to get permissions from the journal to use any primed images. If you would like to talk to learn more about the project, please send me some dates next week that might work for you and we can set up a phone call.

Thanks,

Heide

Heide R. Cygan, DNP, RN, PHNA-BC

Associate Professor

Rush University College of Nursing

Community, Systems & Mental Health Nursing

BMO Harris Bank Health Disparities Research Fellow

600 S. Paulina, Suite 1080, Chicago, IL 60612

Phone: 312 943 3008

Heide_cygan@rush.edu

From: Leena Joseph <ljoseph8@student.touro.edu>
Sent: Thursday, July 15, 2021 12:36 AM
To: Heide Cygan <Heide_CYGAN@rush.edu>
Subject: Permission to use

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Appendix D

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Reducing Childhood Obesity Utilizing a Nurse-led Protocol in Primary Care Title Setting

Institution Touro University Henderson

name

Expected presentation date Feb 2022

Leena Joseph
9070 MANALANG RD

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Six to Success: Improving Primary Care Management of Pediatric Overweight and Obesity

Author:
Heide R. Cygan,Kathleen Baldwin,Lynn Gettleman Chehab,Nancy A. Rodriguez,Shannon N. Zenk

Publication: Journal of Pediatric Health Care

Publisher: Elsevier

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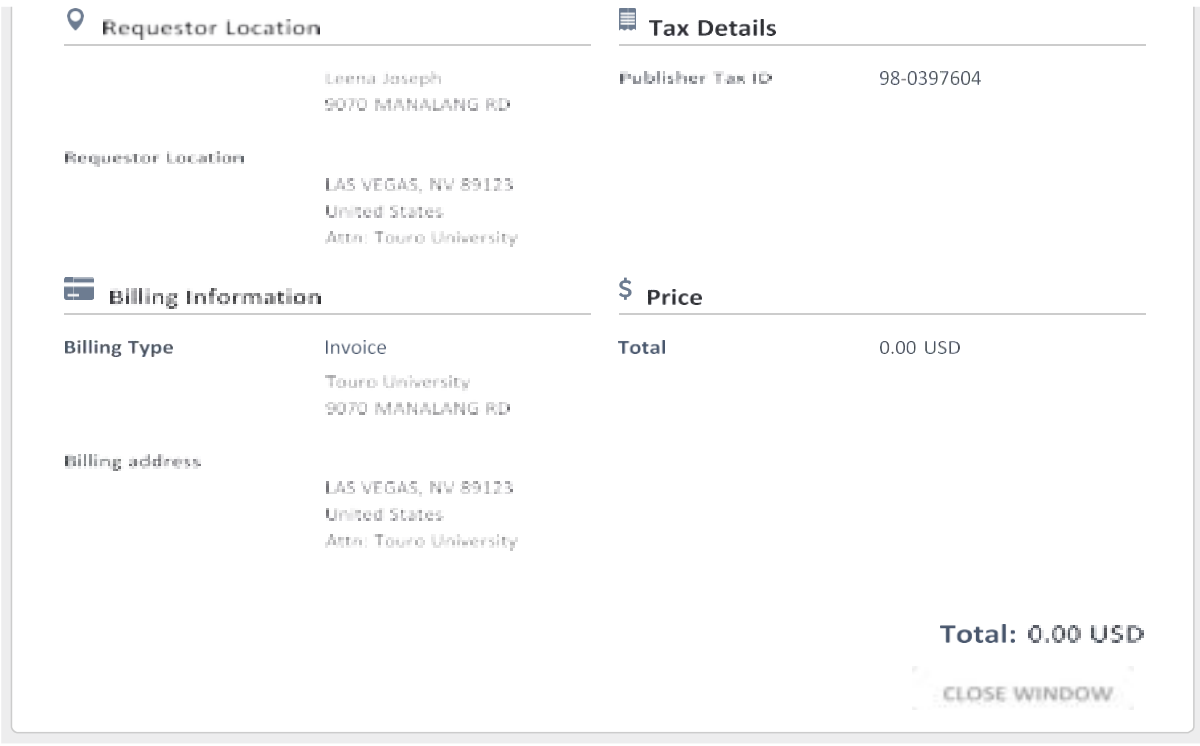

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Appendix E

PowerPoint Presentation

Factors causing childhood obesity
Low socioeconomical status
Low parental literacy
Limited access to healthy food
Lack of knowledge regarding healthy meal plans
Risks associated with childhood obesity
Poor quality of life related to comorbidities
Higher chances of developing Type 2 Diabetes, hypertension, musculoskeletal issues and cardiovascular issues.
Mental health issues, substance use, eating disorders

BMI

Calculating BMI using height and weight appropriate for age and sex.

BMI Formula

METRIC

BMI = weight (kg) / [height (m)]^2

IMPERIAL

BMI = 703 x weight (lbs) / [height (in)]^2

https://www.cdc.gov/healthyweight/bmi/widget/calculator.html?chost=www.cdc.gov&cpath=/widgets/healthyliving/index.html&csearch=&chash=Food&ctitle=Healthy%20Living%20Widgets%20%7C%20Social%20Media%20Widgets%20%7C%20CDC&wn=childTeenBMI&wf=/healthyweight/bmi/widget/&wid=childTeenBMI1&mMode=widget&mPage=&mChannel=&widgetMaxWidth=430px&widgetMaxHeight=750px

Guidelines for "Six Goals–Path to success"

- Early identification and assessment of overweight, obese patients, and at-risk patients.
- Use of body mass index, calculated for age and sex to determine weight status
- Complete physical examination with evaluation of sleep, respiratory, gastrointestinal, orthopedic problems, endocrine disorders , and genetic syndromes

Guidelines for "Six Goals-Path to success
Evaluation of activity level, dietary habits, and family obesity/medical history
Use of family-centered counseling
Use of Motivational Interviewing.

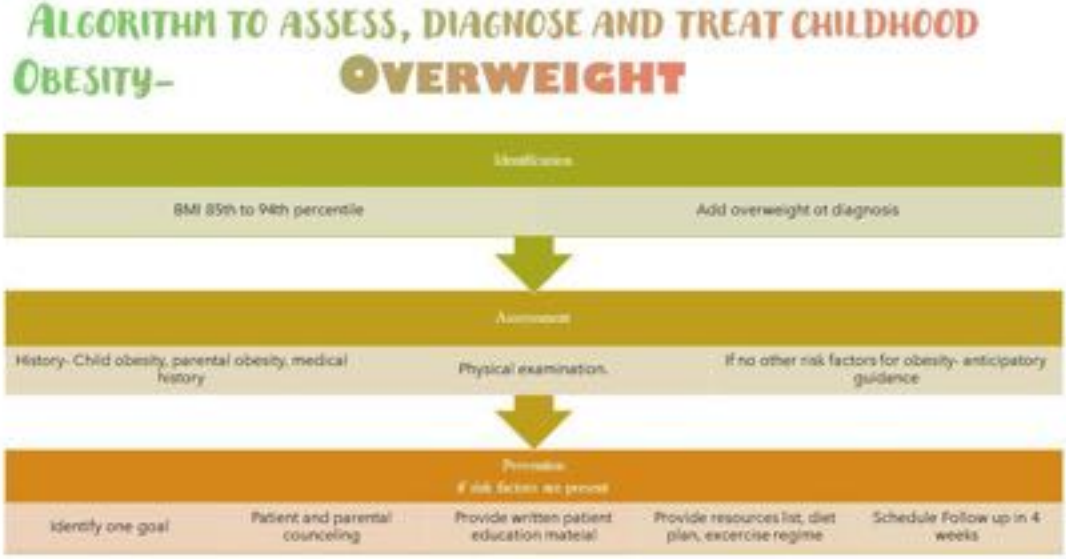
Six Goals Path to Success
An algorithm based on AAP guidelines.
Identification based on BMI.
Assessment using the screening tool and clinical judgement
Prevention using motivation interview, counselling, diet and physical activity, resources, and one goal to achieve patients may choose from the protocol.

Protocols

- BMI calculation during Intake
- Screening during Intake
- LIP to do assessment and diagnose using the algorithm
- Counseling, motivational interview and guidance, provide resources
- Help patients and families to identify one goal from the protocol, provide educational material

Algorithm to Assess, Diagnose and Treat Childhood Obesity– At Risk

Treatment plan- Stage 1
Assessment and counseling • Identify if the patient has low self esteem, Social isolation or any other behavioral problems.
Motivational Interviewing • Follow up with clinician— recommend every 1-3 months • Select one of the Six goals- Path
Actively engage whole family in lifestyle changes • Weight goal: initially weight maintenance.
AAP GUIDLINES, CYGAN, ET AL.,(2014), PIERCE, (2016)


ALGORITHM TO ASSESS, DIAGNOSE AND TREAT CHILDHOOD OBESITY- OVERWEIGHT
BMI 85th to 94th percentile
Add overweight ot diagnosis
History- Child obesity, parental obesity, medical history
Physical examination.
If no other risk factors for obesity- anticipatory guidence
Identify one goal
Patient and parental counceling
Provide written patient education materal
Provide resources list, diet plan, excercise regime
Schedule Follow up in 4 weeks

Treatment Plan- Stage II

- Assessment and counseling • identify if the patient has low self esteem, social isolation or any other behavioral problems
- Motivational Interviewing • Follow up with clinician — recommend every 1-3 months • Select one of the Six goals-Path
- Monitor behaviors through diet and activity logs • Meal plans created by Registered Dietitian or clinician with nutrition training • Actively engage whole family in lifestyle change
- Weight goal: weight maintenance, with lower BMI as age and height increase

AAP GUIDLINES, CYGAN, ET AL.,(2014), PIERCE, (2016)

Algorithm to Assess, Diagnose and Treat Childhood Obesity– OBESE

Treatment Plan-Stage III

Assessment and counseling • identify if the patient has low self esteem, social isolation or any other behavioral problems.

Motivational Interviewing • Follow -up with clinician— recommend every 1-3 months • Select one of the Six goals- Path

Monitor behaviors through diet and activity logs • Meal plans created by Registered Dietitian or clinician with nutrition training • Actively engage whole family in lifestyle change

Evaluation and follow-up with multidisciplinary team experienced in pediatric weight management

Risk factors for Comorbidities and Future Obesity

Personal Risk factors

- Elevated blood pressure
- Ethnicity: African American, Mexican-American, Native American, Pacific Islander
- Puberty
- Medications associated with weight gain (steroids, anti-psychotics, antiepileptics)
- Acanthosis Nigricans
- Birth history of SGA or LGA
- Disabilities

Family Risk factors

- Type 2 Diabetes
- Hypertension
- High cholesterol
- Obese parent(s)
- Mother with Gestational Diabetes
- Family member with early death from heart disease or stroke

Lab values to consider

- A1C
- Lipid Profile
- Blood glucose levels
- Lab values to be assessed at the clinical discretion of LIP if a diagnosis for obesity is made.

Six Goals– Path to Success

- Six goals to choose from
- Patients and families have the autonomy to choose the goal
- Goals that resonate with the patient and family and can be achieved.
- Praise family and patients for selecting the goal and provide support to achieve them

Pick your goal for the day !!!

- **Five** fruits and vegetables a day
- **Four** Glasses of water a day
- **Three** low fat calcium servings a day
- Less than **TWO** hours of screen time a day
- **One** hour of physical activity a day
- **Zero** sugared drinks (Soda, Juice, Pop, Kool-Aid…)

Did Patient meet goal

- Praise patient in making changes
- Reassess the behaviors and assist families choosing a new goal.
- Continue with education and motivation for families
- Schedule follow up appointments in 4 weeks

Follow up
Did Patient meet goal
Praise patient and family for coming to appointment
Reassess behaviors and assists families in making changes in meeting previous set goals
May consider choosing a new goal, provide education and motivation
Schedule appointment in 4 weeks

Resources for families
Information about Recreational centers, parks and open areas to promote physical activity
My plate information
Information regarding healthy food choices
Educational material to achieve the goal selected by the patient or family
https://gethealthyclarkcounty.org/

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Appendix F

Childhood Obesity Screening Protocol

1- Purpose of the Protocol

a. Early identification and assessment of overweight, obese patients, and at-risk patients.
b. Use the body mass index calculated for age and sex to determine weight status.
c. Utilize complete physical examination to evaluate sleep, respiratory, gastrointestinal, orthopedic problems, endocrine disorders, and genetic syndromes to diagnose obesity in children.
d. Utilize screening questionnaire to evaluate activity level, dietary habits, and family obesity/medical history
e. Use family-centered counseling and motivational interview for patients with obesity, overweight, or at risk for obesity.
f. Use goals to achieve the desired weight loss or adopting a healthy lifestyle.

2- Guide to Implementation of The Childhood Obesity Screening Protocol

a. Intake staff (MA, LPN, RN) will obtain height and weight for patients between 5 and 18 years.
b. Intake staff will obtain vital signs, including BP.
c. Intake staff will provide patients/families with the questionnaire and help them complete the questionnaire.
d. Intake staff will calculate the BMI using the CDC Widget or the manual calculator using the formula provided in the guidelines.
e. Providers (Physicians, NP and PA) will perform a complete physical examination on patients between 5-18.

f. The provider will evaluate the BP to see if it falls in the high-risk category.

g. The provider will review the screening questionnaire along with the patients or family members for clarity.

h. The provider will use the algorithm to correctly diagnose obesity, overweight, or at risk for obesity and document in the chart.

i. The provider will conduct the motivational interview and family-centered counseling regarding the risk factors and weight of the patient.

j. The provider will help families or patients identify one goal from the algorithm to help reduce body weight.

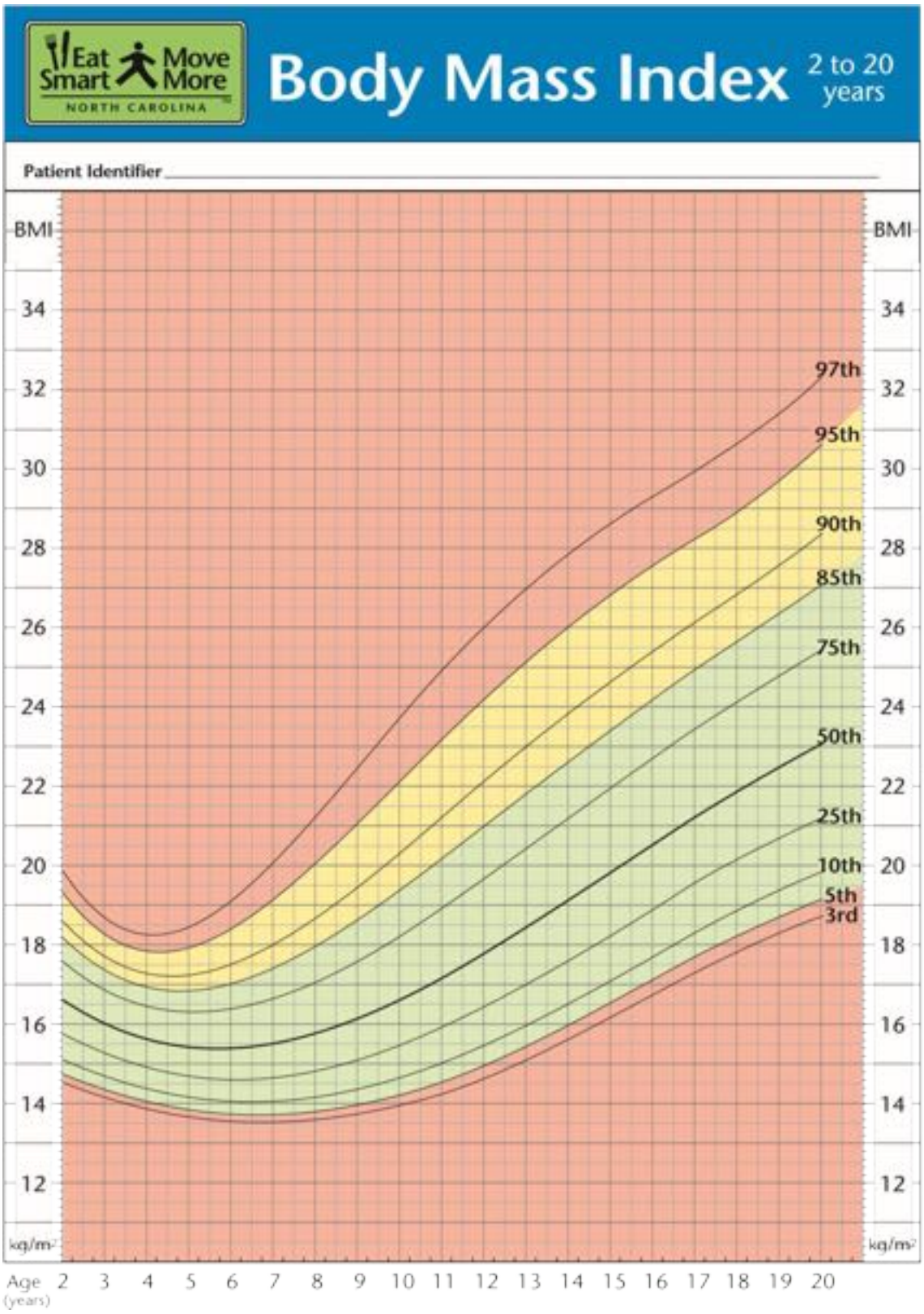
k. The provider will order a follow-up in four weeks for identified patients.

l. The provider will order resources and referrals if needed.

m. The front office staff will schedule a follow-up appointment in four weeks for patients diagnosed with obesity, overweight, or at risk for obesity.

n. Staff members will provide patients with printed resource material.

3- BMI Calculator.


Eat Smart Move More
NORTH CAROLINA
Body Mass Index
2 to 20 years
Patient Identifier
BMI
34
32
30
28
26
24
22
20
18
16
14
12
kg/m²
97th
95th
90th
85th
75th
50th
25th
10th
5th
3rd
Age (years)
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
BOYS
To calculate BMI:
Kilograms and meters:
weight (kg) / [height (m)]²
Pounds and inche
weight (lb) / [height (in)]² x 70
BOYS:
99th percentil
cut-points
AGE BMI
5 20.1
6 21.6
7 23.6
8 25.6
9 27.6
10 29.3
11 30.7
12 31.8
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From National Initiative for Children's Healthca
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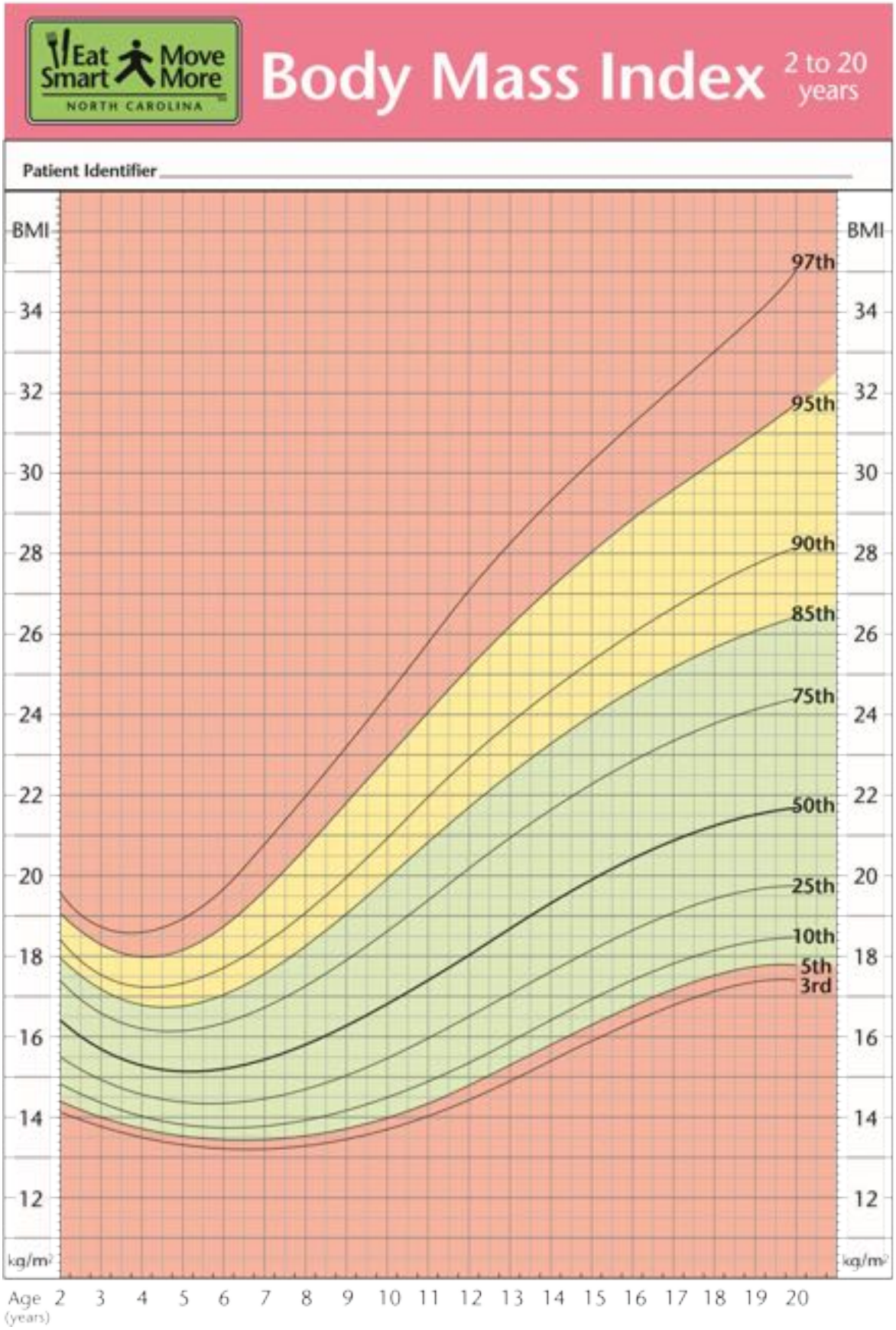
Eat Smart Move More
NORTH CAROLINA
Body Mass Index
2 to 20 years
GIRLS
Patient Identifier
BMI
97th
95th
90th
85th
75th
50th
25th
10th
5th
3rd
kg/m²
Age (years)
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
To calculate BMI:
Kilograms and meters:
weight (kg) / [height (m)]²
Pounds and inche
weight (lb) / [height (in)]² x 70
GIRLS:
99th percentil
cut-points
AGE BMI
5 21.5
6 23.0
7 24.6
8 26.4
9 28.2
10 29.9
11 31.5
12 33.1
13 34.6
14 36.0
15 37.5
16 39.1
17 40.8
From National Initiative for Children's Healthca
Quality (www.nichq.or

Color coding of the 2000 CDC BMI charts by UNC's Department of Pediatrics and Center for Health Promotion and Disease Prevention (CDC Cooperative agreement U48-DP-000059) for research and clinical purposes

4- Blood Pressure Table

Blood Pressure Levels

by Age and Height Percentile BOYS

Age (Year)	BP Percentile	SYSTOLIC BP (mmHg) Percentile of Height							DIASTOLIC BP (mmHg) Percentile of Height						
		5th	10th	25th	50th	75th	90th	95th	5th	10th	25th	50th	75th	90th 95th	
1	50th	80	81	83	85	87	88	89	34	35	36	37	38	39	39
	90th	94	95	97	99	100	102	103	49	50	51	52	53	53	54
	95th	98	99	101	103	104	106	106	54	54	55	56	57	58	58
	99th	105	106	108	110	112	113	114	61	62	63	64	65	66	66
2	50th	84	85	87	88	90	92	92	39	40	41	42	43	44	44
	90th	97	99	100	102	104	105	106	54	55	56	57	58	58	59
	95th	101	102	104	106	108	109	110	59	59	60	61	62	63	63
	99th	109	110	111	113	115	117	117	66	67	68	69	70	71	71
3	50th	86	87	89	91	93	94	95	44	44	45	46	47	48	48
	90th	100	101	103	105	107	108	109	59	59	60	61	62	63	63
	95th	104	105	107	109	110	112	113	63	63	64	65	66	67	67
	99th	111	112	114	116	118	119	120	71	71	72	73	74	75	75
4	50th	88	89	91	93	95	96	97	47	48	49	50	51	51	52
	90th	102	103	105	107	109	110	111	62	63	64	65	66	66	67
	95th	106	107	109	111	112	114	115	66	67	68	69	70	71	71
	99th	113	114	116	118	120	121	122	74	75	76	77	78	78	79
5	50th	90	91	93	95	96	98	98	50	51	52	53	54	55	55

	90th	104	105	106	108	110	111	112	65	66	67	68	69	69	70
	95th	108	109	110	112	114	115	116	69	70	71	72	73	74	74
	99th	115	116	118	120	121	123	123	77	78	79	80	81	81	82
6	50th	91	92	94	96	98	99	100	53	53	54	55	56	57	57
	90th	105	106	108	110	111	113	113	68	68	69	70	71	72	72
	95th	109	110	112	114	115	117	117	72	72	73	74	75	76	76
	99th	116	117	119	121	123	124	125	80	80	81	82	83	84	84
7	50th	92	94	95	97	99	100	101	55	55	56	57	58	59	59
	90th	106	107	109	111	113	114	115	70	70	71	72	73	74	74
	95th	110	111	113	115	117	118	119	74	74	75	76	77	78	78
	99th	117	118	120	122	124	125	126	82	82	83	84	85	86	86
8	50th	94	95	97	99	100	102	102	56	57	58	59	60	60	61
	90th	107	109	110	112	114	115	116	71	72	72	73	74	75	76
	95th	111	112	114	116	118	119	120	75	76	77	78	79	79	80
	99th	119	120	122	123	125	127	127	83	84	85	86	87	87	88
9	50th	95	96	98	100	102	103	104	57	58	59	60	61	61	62
	90th	109	110	112	114	115	117	118	72	73	74	75	76	76	77
	95th	113	114	116	118	119	121	121	76	77	78	79	80	81	81
	99th	120	121	123	125	127	128	129	84	85	86	87	88	88	89
10	50th	97	98	100	102	103	105	106	58	59	60	61	61	62	63
	90th	111	112	114	115	117	119	119	73	73	74	75	76	77	78
	95th	115	116	117	119	121	122	123	77	78	79	80	81	81	82
	99th	122	123	125	127	128	130	130	85	86	86	88	88	89	90

Blood Pressure Levels by Age and Height Percentile for BOYS (Continued)

Age (Year)	BP Percentile	SYSTOLIC BP (mmHg) Percentile of Height							DIASTOLIC BP (mmHg) Percentile of Height						
		5th	10th	25th	50th	75th	90th	95th	5th	10th	25th	50th	75th	90th 95th	
11	50th	99	100	102	104	105	107	107	59	59	60	61	62	63	63
	90th	113	114	115	117	119	120	121	74	74	75	76	77	78	78
	95th	117	118	119	121	123	124	125	78	78	79	80	81	82	82
	99th	124	125	127	129	130	132	132	86	86	87	88	89	90	90
12	50th	101	102	104	106	108	109	110	59	60	61	62	63	63	64
	90th	115	116	118	120	121	123	123	74	75	75	76	77	78	79
	95th	119	120	122	123	125	127	127	78	79	80	81	82	82	83
	99th	126	127	129	131	133	134	135	86	87	88	89	90	90	91

13	50th	104	105	106	108	110	111	112	60	60	61	62	63	64	64
	90th	117	118	120	122	124	125	126	75	75	76	77	78	79	79
	95th	121	122	124	126	128	129	130	79	79	80	81	82	83	83
	99th	128	130	131	133	135	136	137	87	87	88	89	90	91	91
14	50th	106	107	109	111	113	114	115	60	61	62	63	64	65	65
	90th	120	121	123	125	126	128	128	75	76	77	78	79	79	80
	95th	124	125	127	128	130	132	132	80	80	81	82	83	84	84
	99th	131	132	134	136	138	139	140	87	88	89	90	91	92	92
15	50th	109	110	112	113	115	117	117	61	62	63	64	65	66	66
	90th	122	124	125	127	129	130	131	76	77	78	79	80	80	81
	95th	126	127	129	131	133	134	135	81	81	82	83	84	85	85
	99th	134	135	136	138	140	142	142	88	89	90	91	92	93	93
16	50th	111	112	114	116	118	119	120	63	63	64	65	66	67	67
	90th	125	126	128	130	131	133	134	78	78	79	80	81	82	82
	95th	129	130	132	134	135	137	137	82	83	83	84	85	86	87
	99th	136	137	139	141	143	144	145	90	90	91	92	93	94	94
17	50th	114	115	116	118	120	121	122	65	66	66	67	68	69	70
	90th	127	128	130	132	134	135	136	80	80	81	82	83	84	84
	95th	131	132	134	136	138	139	140	84	85	86	87	87	88	89
	99th	139	140	141	143	145	146	147	92	93	93	94	95	96	97

BP = blood pressure

Blood Pressure Levels

by Age and Height Percentile GIRLS

Age (Year)	BP Percentile	SYSTOLIC BP (mmHg) Percentile of Height							DIASTOLIC BP (mmHg) Percentile of Height						
		5th	10th	25th	50th	75th	90th	95th	5th	10th	25th	50th	75th	90th	95th
1	50th	83	84	85	86	88	89	90	38	39	39	40	41	41	42
	90th	97	97	98	100	101	102	103	52	53	53	54	55	55	56
	95th	100	101	102	104	105	106	107	56	57	57	58	59	59	60

	99th	108	108	109	111	112	113	114	64	64	65	65	66	67	67
2	50th	85	85	87	88	89	91	91	43	44	44	45	46	46	47
	90th	98	99	100	101	103	104	105	57	58	58	59	60	61	61
	95th	102	103	104	105	107	108	109	61	62	62	63	64	65	65
	99th	109	110	111	112	114	115	116	69	69	70	70	71	72	72
3	50th	86	87	88	89	91	92	93	47	48	48	49	50	50	51
	90th	100	100	102	103	104	106	106	61	62	62	63	64	64	65
	95th	104	104	105	107	108	109	110	65	66	66	67	68	68	69
	99th	111	111	113	114	115	116	117	73	73	74	74	75	76	76
4	50th	88	88	90	91	92	94	94	50	50	51	52	52	53	54
	90th	101	102	103	104	106	107	108	64	64	65	66	67	67	68
	95th	105	106	107	108	110	111	112	68	68	69	70	71	71	72
	99th	112	113	114	115	117	118	119	76	76	76	77	78	79	79
5	50th	89	90	91	93	94	95	96	52	53	53	54	55	55	56
	90th	103	103	105	106	107	109	109	66	67	67	68	69	69	70
	95th	107	107	108	110	111	112	113	70	71	71	72	73	73	74
	99th	114	114	116	117	118	120	120	78	78	79	79	80	81	81
6	50th	91	92	93	94	96	97	98	54	54	55	56	56	57	58
	90th	104	105	106	108	109	110	111	68	68	69	70	70	71	72
	95th	108	109	110	111	113	114	115	72	72	73	74	74	75	76
	99th	115	116	117	119	120	121	122	80	80	80	81	82	83	83
7	50th	93	93	95	96	97	99	99	55	56	56	57	58	58	59
	90th	106	107	108	109	111	112	113	69	70	70	71	72	72	73
	95th	110	111	112	113	115	116	116	73	74	74	75	76	76	77
	99th	117	118	119	120	122	123	124	81	81	82	82	83	84	84
8	50th	95	95	96	98	99	100	101	57	57	57	58	59	60	60
	90th	108	109	110	111	113	114	114	71	71	71	72	73	74	74
	95th	112	112	114	115	116	118	118	75	75	75	76	77	78	78
	99th	119	120	121	122	123	125	125	82	82	83	83	84	85	86
9	50th	96	97	98	100	101	102	103	58	58	58	59	60	61	61
	90th	110	110	112	113	114	116	116	72	72	72	73	74	75	75
	95th	114	114	115	117	118	119	120	76	76	76	77	78	79	79
	99th	121	121	123	124	125	127	127	83	83	84	84	85	86	87
10	50th	98	99	100	102	103	104	105	59	59	59	60	61	62	62
	90th	112	112	114	115	116	118	118	73	73	73	74	75	76	76
	95th	116	116	117	119	120	121	122	77	77	77	78	79	80	80

	99th	123	123	125	126	127	129	129	84	84	85	86	86	87	88

Blood Pressure Levels by Age and Height Percentile for GIRLS (Continued)

Age (Year)	BP Percentile	SYSTOLIC BP (mmHg) Percentile of Height							DIASTOLIC BP (mmHg) Percentile of Height						
		5th	10th	25th	50th	75th	90th	95th	5th	10th	25th	50th	75th	90th	95th
11	50th	100	101	102	103	105	106	107	60	60	60	61	62	63	63
	90th	114	114	116	117	118	119	120	74	74	74	75	76	77	77
	95th	118	118	119	121	122	123	124	78	78	78	79	80	81	81
	99th	125	125	126	128	129	130	131	85	85	86	87	87	88	89
12	50th	102	103	104	105	107	108	109	61	61	61	62	63	64	64
	90th	116	116	117	119	120	121	122	75	75	75	76	77	78	78
	95th	119	120	121	123	124	125	126	79	79	79	80	81	82	82
	99th	127	127	128	130	131	132	133	86	86	87	88	88	89	90
13	50th	104	105	106	107	109	110	110	62	62	62	63	64	65	65
	90th	117	118	119	121	122	123	124	76	76	76	77	78	79	79
	95th	121	122	123	124	126	127	128	80	80	80	81	82	83	83
	99th	128	129	130	132	133	134	135	87	87	88	89	89	90	91
14	50th	106	106	107	109	110	111	112	63	63	63	64	65	66	66
	90th	119	120	121	122	124	125	125	77	77	77	78	79	80	80
	95th	123	123	125	126	127	129	129	81	81	81	82	83	84	84
	99th	130	131	132	133	135	136	136	88	88	89	90	90	91	92
15	50th	107	108	109	110	111	113	113	64	64	64	65	66	67	67
	90th	120	121	122	123	125	126	127	78	78	78	79	80	81	81
	95th	124	125	126	127	129	130	131	82	82	82	83	84	85	85
	99th	131	132	133	134	136	137	138	89	89	90	91	91	92	93
16	50th	108	108	110	111	112	114	114	64	64	65	66	66	67	68
	90th	121	122	123	124	126	127	128	78	78	79	80	81	81	82
	95th	125	126	127	128	130	131	132	82	82	83	84	85	85	86
	99th	132	133	134	135	137	138	139	90	90	90	91	92	93	93
17	50th	108	109	110	111	113	114	115	64	65	65	66	67	67	68
	90th	122	122	123	125	126	127	128	78	79	79	80	81	81	82
	95th	125	126	127	129	130	131	132	82	83	83	84	85	85	86
	99th	133	133	134	136	137	138	139	90	90	91	91	92	93	93

BP = blood pressure

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5- Screening Questionnaire Sheet: Six Goals-A Path to Success

Name: _____

Date of visit: _____

Male/Female:_____

Weight:_____ Height:_____Calculated BMI:

_____

Vital Signs: BP_____

Please select Yes/No for Part I screening questions

1. **Part I**

Please answer the following questions. Do you suffer from any of these conditions? If Yes, Please explain.	✓ **Yes**	✓ **No**
a. Family medical history of diabetes, obesity, or cardiac diseases		
b. Sleep problems (Sleep apnea, Sleeping disturbances)		
c. Respiratory problems (asthma, COPD, breathing difficulty)		
d. Gastrointestinal problems (Diarrhea, vomiting, constipation, indigestion, heartburn)		

e. Diabetes or Thyroid problems		
f. Orthopedic problems (pain in joints, pain in arms or legs, back problems, difficulty standing or walking)		
g. Genetic syndromes (any congenital disorders you are aware of, including allergy to certain foods)		

If the answer to any question is YES, please explain

_____

_____

_____

_____

_____

_____

2. **Part II**

Please answer the following diet/physical activity questions.	
a. How much Fruit/vegetable do you eat per day/week? (ex: 1 cup, once a day, two times a week)	
b. How many glasses of water do you drink per day?	

c. How many hours of screen time do you have per day?	
d. How many hours or minutes of physical activity do you have per day?	
e. How much Sugared beverage do you have per day (Soda, pop, juices)?	
f. How many meals do you eat outside per week?	

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6- Algorithm for Diagnosis and Treatment

Algorithm to assess, diagnose and treat childhood Obesity- Stage I At Risk

Identification	Assessment	Prevention If risk factors are present
• BMI 80th to 85th percentile and one personal risk factor present • BP evaluation • Add at risk for in diagnosis	• History- Child obesity, parental obesity, medical history • Physical examination • If no other risk factors for obesity- anticipatory guidance	• Identify one goal • Patient and parental counseling • Provide written patient education material • Provide resources list • Schedule Follow up in 1-3 months

Treatment plan- Stage I

- Assessment and counseling • Identify if the patient has low self esteem, Social isolation or any other behavioral problems.
- Motivational Interviewing • Follow up with clinician—recommend every 1-3 months • Select one of the Six goals- Path
- Actively engage whole family in lifestyle changes • Weight goal: initially weight maintenance

Algorithm to assess, diagnose and treat childhood Obesity– Stage II Overweight

Identification	Assessment	Prevention if risk factors are present
• BMI 85th to 94th percentile • BP evaluation • Add overweight to diagnosis	• History- Child obesity, parental obesity, medical history • Physical examination. • If no other risk factors for obesity- anticipatory guidance	• Identify one goal • Patient and parental counseling • Provide written patient education material • Provide resources list, diet plan, exercise regime • Schedule Follow up in 4 weeks

Treatment Plan– Stage II

- Assessment and counseling • identify if the patient has low self esteem, social isolation or any other behavioral problems.
- Motivational Interviewing • Follow up with clinician recommend every 1-3 months • Select one of the Six goals-Path
- Monitor behaviors through diet and activity logs • Meal plans created by Registered Dietitian or clinician with nutrition training • Actively engage whole family in lifestyle change
- Weight goal: weight maintenance, with lower BMI as age and height increase

Algorithm to Assess, Diagnose and Treat Childhood Obesity– Stage III Obese

Identification	Assessment	Prevention
• BMI above 95th percentile • BP evaluation • Add obesity to diagnosis	• History- Child obesity, parental obesity, medical history • Physical examination • Follow prevention guidelines • Family and patient concerns and motivation to change	• Identify one goal • Patient and Parental counceling Provide written patient education material • Provide resources list, diet plan, exercise regime • Schedule follow up appointment in 4 weeks • Evaluation and follow up with multidisciplinary team experienced in pediatric weight management

Treatment Plan– Stage III

- Assessment and counseling • identify if the patient has low self esteem, social isolation or any other behavioral problems.
- Motivational Interviewing • Follow up with clinician recommend every 1-3 months • Select one of the Six goals-Path
- Monitor behaviors through diet and activity logs • Meal plans created by Registered Dietitian or clinician with nutrition training • Actively engage whole family in lifestyle change
- Evaluation and follow-up with multidisciplinary team experienced in pediatric weight management

How to use BP table for assessment

BP, ages 3-19• Plot percentile from BP table• Must confirm with 3 seperate measures

< 90th%ile- Routine care. Recheck annually.

≥ 90th to < 95th%ile, >120/80 any age (pre-hypertension (HTN)- Increase physical activity. Smoking cessation. DASH diet. If other risks or symptoms, consider BUN/Cr, UA and culture, renal u/s, ECG, fundoscopic exam. Recheck every 6 months.

> 95th%ile to < 99th%ile, +5 mm Hg. (Stage 1 HTN)- As above, + CBC, electrolytes (include BUN/Cr), UA and culture, ECG. Consider renal u/s, fundoscopic exam, renin. Refer to cardiology or nephrology (esp. if prepubertal). Consider pharmacotherapy. Recheck 1 month

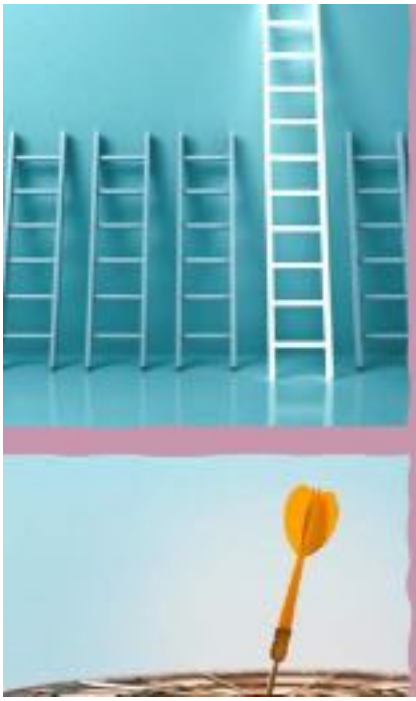
> 99th%ile +5 mm Hg(Stage 2 HTN)- As above. Refer to cardiology or nephrology. Recheck within 1 week.

Risk factors for Comorbidities and Future Obesity- Personal Risk Factors

- Elevated blood pressure
- Ethnicity: African American, Mexican-American, Native American, Pacific Islander
- Puberty
- Medications associated with weight gain (steroids, anti-psychotics, antiepileptics)
- Acanthosis Nigricans
- Birth history of SGA or LGA
- Disabilities

Risk factors for Comorbidities and Future Obesity-Family Risk Factors

Type 2 Diabetes	Hypertension	High cholesterol
Obese parent(s)	Mother with Gestational Diabetes	Family member with early death from heart disease or stroke

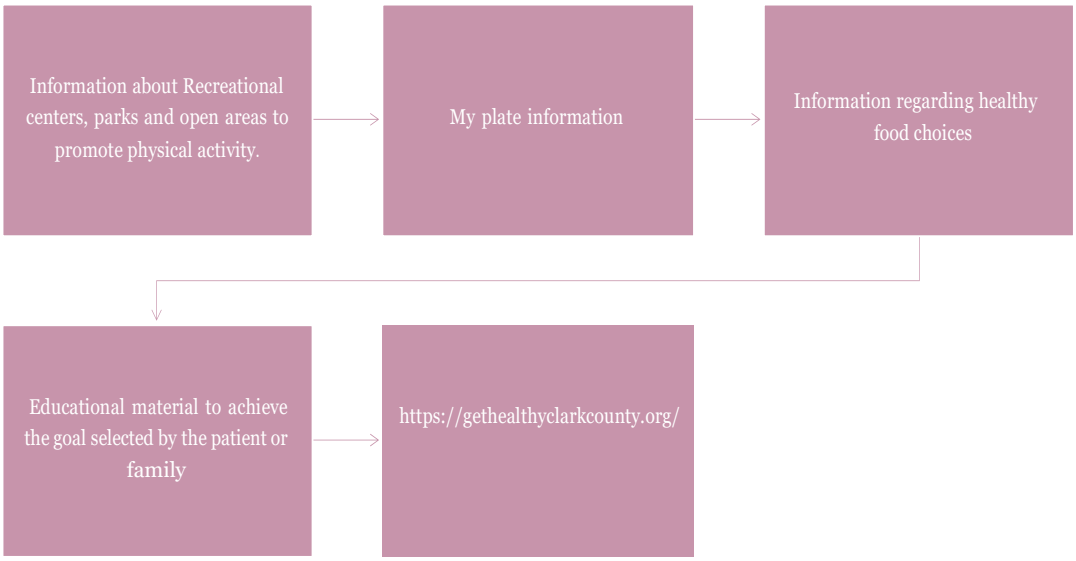


Pick your goal for the day !!!

- **Five** fruits and vegetables a day
- **Four** Glasses of water a day
- **Three** low fat calcium servings a day
- Less than **TWO** hours of screen time a day
- **One** hour of physical activity a day
- **Zero** sugared drinks (Soda, Juice, Pop, Kool-Aid…)

Resources for families

Information about Recreational centers, parks and open areas to promote physical activity. → My plate information → Information regarding healthy food choices → Educational material to achieve the goal selected by the patient or family → https://gethealthyclarkcounty.org/



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Appendix G

Pre and Post Test

Pre-Test

For each statement or question below, circle the answer that best describes your understanding of the topic.

1= Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree, 5= Strongly agree

Please answer the following questions	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
1. I have participated in education on childhood obesity prevention.	1	2	3	4	5
2. I am comfortable talking to patients and families regarding obesity.	1	2	3	4	5
3. I am familiar with childhood obesity prevalence.	1	2	3	4	5
4. I am familiar with BMI calculation.	1	2	3	4	5

5. I will benefit from childhood obesity prevention education.	1	2	3	4	5

Multiple Choice questions

1) **Identify the consequences associated with childhood obesity. (Select all that apply)**
   - **(1) Mental health issues**
   - **(2) Bullying**
   - **(3) Hypertension**
   - **(4) All the above**
2) **Factors causing childhood obesity. (Select all that apply)**
   - **1) Limited access to healthy food**
   - **2) Screen time less than 1 hour per day**
   - **3) Educated parents**
   - **4) Lack of knowledge regarding obesity**
3) **BMI is calculated using the following measurements.**
   - **1) Weight**
   - **2) Weight and waist circumference**
   - **3) Height, weight, and waist measurements**
   - **4) Height and weight**
4) **Childhood obesity can be prevented by the following. (Select all that apply)**
   - **1) Awareness about childhood obesity.**
   - **2) Decreasing sugary drink intake.**
   - **3) Providing community resources**
   - **4) All of the above**
5) **What is the national prevalence of obesity among children in the US?**
   - **1) 4 million children under the age of 5 are overweight.**
   - **2) 40 million between 5-19 are overweight.**
   - **3) 330 million children between 5-19 are overweight.**
   - **4) 40 million under the age of 5 are overweight.**
6) **Two personal non-modifiable risk factors that may lead to childhood obesity.**
   - **1) Old age**
   - **2) Puberty**
   - **3) Caucasian**
   - **4) African American**
7) **Two family risk factors that may lead to childhood obesity.**
   - **1) Teenage parents**

2) Hypertension in family
3) Obese parents
4) Family history of breast cancer

8) **Resources that will be used with the Six Goals- A path to Success protocol. (Select all that apply)**
    1) **My plate information**
    2) **Coupons for the closest fast-food chain**
    3) **Recreational center information**
    4) **Increase fluid intake with water, juice, soda, or pop**

9) **Two goals patients can choose to form within the protocol**
    1) **Five fruits and vegetables a day**
    2) **Six glasses of water, juice, or soda**
    3) **Four hours of screen time**
    4) **Three low fat calcium servings a day**

10) **An elevated lab value that may indicate that the patient is at risk for childhood obesity.**
    1) **A1c**
    2) **Creatinine level**
    3) **WBC counts**
    4) **ALT**

Post-Test

For each statement or question below, circle the answer that best describes your understanding of the topic.

1= Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree, 5= Strongly agree

Please answer the following questions	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
1. The education provided was meaningful.	1	2	3	4	5
2. The Six goals-path to success protocol was clearly explained.	1	2	3	4	5
3. How likely are you to calculate the BMI on your patients?	1	2	3	4	5
4. How likely are you to use the Six goals-Path to success algorithm for your pediatri	1	2	3	4	5

	c patient?					
5.	**You were provided with the resources and education regarding the Six goals-path to success protocol and policy.**	1	2	3	4	5

Multiple Choice questions

11) Identify the consequences associated with childhood obesity. (Select all that apply)

- **(1) Mental health issues**
- **(2) Bullying**
- **(3) Hypertension**
- **(4) All the above**

12) Factors causing childhood obesity. (Select all that apply)

- **5) Limited access to healthy food**
- **6) Screen time less than 1 hour per day**
- **7) Educated parents**
- **8) Lack of knowledge regarding obesity**

13) BMI is calculated using the following measurements.

- **5) Weight**
- **6) Weight and waist circumference**
- **7) Height, weight, and waist measurements**
- **8) Height and weight**

14) Childhood obesity can be prevented by the following. (Select all that apply)

- **1) Awareness about childhood obesity.**
- **2) Decreasing sugary drink intake.**

3) Providing community resources
4) All of the above

15) What is the national prevalence of obesity among children in the US?

5) 4 million children under the age of 5 are overweight.
6) 40 million between 5-19 are overweight.
7) 330 million children between 5-19 are overweight.
8) 40 million under the age of 5 are overweight.

16) Two personal non-modifiable risk factors that may lead to childhood obesity.

1) Old age
2) Puberty
3) Caucasian
4) African American

17) Two family risk factors that may lead to childhood obesity.

1) Teenage parents
2) Hypertension in family
3) Obese parents
4) Family history of breast cancer

18) Resources that will be used with the Six Goals- A path to Success protocol. (Select all that apply)

5) My plate information
6) Coupons for the closest fast-food chain
7) Recreational center information
8) Increase fluid intake with water, juice, soda, or pop

19) Two goals patients can choose to form within the protocol

5) Five fruits and vegetables a day
6) Six glasses of water, juice, or soda
7) Four hours of screen time
8) Three low fat calcium servings a day

20) An elevated lab values that may indicate that the patient is at risk for childhood obesity.

5) A1c
6) Creatinine level
7) WBC counts
8) ALT

Appendix H

Content Validity Index

Experts Rating Form Instructions

Rating instructions: For each item, please indicate the following:

Please rate how relevant each item is to the overall construct of childhood obesity screening protocol by placing a number in the first box to the right of each item.

1 = Not relevant at all
2 = Slightly relevant
3 = Moderately relevant
4= Highly relevant

Your honest feedback is appreciated and will be used to enhance the quality of this questionnaire. The Pre and Post multiple-choice questions are the same. Hence they are only entered once in this rating form.

Test Construction Activity

Purpose

Learning Objectives:

To evaluate and compare participants' attitudes and understanding of the childhood obesity screening protocol pre and post-education.

Population:

Staff members at the project site, including Physicians, NPs, PAs, RNs, LPNs, MAs

Length of the Test: 15 questions 5 questions Likert scale (testing the general understanding and attitude towards childhood obesity and screening process), 10 questions testing knowledge regarding childhood obesity pre and post-education.

Difficulty and Discrimination Levels of Test Items

Scoring Procedures to be Used: Each question is worth 1 point, and there is no pass or fail for the test. The post-test should have an improved score compared to the pre-test. If a participant gets the same or lower score for both pre and post-test, further education will be provided. Likert, on a scale of 1to 5, Multiple choice questions answered in highlights

Item Format

Test Blueprint

Content	Level of Cognitive Skill				
	K	C	AP	AN	Total
General knowledge and attitude towards childhood obesity	5				5
Knowledge of causes for childhood obesity	1				1
Knowledge of behavioral problems	1				1
Knowledge regarding prevalence	1				1
Knowledge Regarding prevention		1			1
Knowledge how to calculate BMI		1			1
Knowledge regarding Risk factors	2				2
Knowledge regarding goals	1				1
Knowledge regarding resources	1				1
Knowledge of lab values		1			1
Total					15

Appendix I

Chart Audit Tool

Manual Data Collection Sheet

Date of review: _____

Patient Demographics:

Male/Female

Age: _____

Patient age between 5 to 18 years (Circle one) Y/ N

Chart audit measures - Yes/No

Identification measures	✓ Yes	✓ No
a. Assessment measurements (BMI)		
b. Weight class diagnosed		
c. Parental obesity documentation		
d. Family medical history documentation		
e. Sleep problems documentation		
f. Respiratory problems documentation		
g. Gastrointestinal problems documentation		
h. Endocrine disorders documentation		
i. Orthopedic problems documentation		
j. Genetic syndromes documentation		
k. Fruit/vegetable consumption documentation		
l. Water intake documentation		
m. Hours of screen time documentation		
n. Physical activity documentation		
o. Sugared beverage intake documentation		
p. Motivational interviewing documentation		
q. Prevention strategies		

r. Counseling on dietary or physical activity behaviors documented		
s. Dietary or physical activity goal documented		
t. Written patient education given		
u. Follow-up appointment given		

ICD-9, International Classification of Diseases, ninth revision

References

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: official publication of National Association of Pediatric Nurse Associates & Practitioners*, *28*(5), 429–437. https://doi.org/10.1016/j.pedhc.2014.02.002

Appendix J

SECTION A:

Student Name: **_Leena Joseph_**

DNP Project Title: **Reducing Childhood Obesity Utilizing a Nurse-Led Protocol in Primary Care Setting**

DNP Project Instructor: **Dr. Alyssa Sturm _ ___**

Academic Mentor: **Dr. Denise Zabriskie_____**

Quality Improvement or Research Worksheet

Rachel Nosowsky, Esq.

ITEM	Issue and Guidance	Rating
1	Are participants randomized into different intervention groups in order to enhance confidence in differences that might be obscured by nonrandom selection? Randomization done to achieve equitable allocation of a scarce resource need not be considered and would not result in a "yes" here.	____ YES _X___NO
2	Does the project seek to test issues that are beyond current science and experience, such as new treatments (i.e., is there much controversy about whether the intervention will be beneficial to actual patients – or is it designed simply to move existing evidence into practice?). If the project is	____ YES __X_ NO
	performed to implement existing knowledge to improve care – rather than to develop new knowledge – answer "no".	
3	Are there any potential conflicts of interest (financial or otherwise) among any researchers involved in the project? If so, please attach a description of such in an attachment to this form.	____ YES ___X_ NO
4	Is the protocol fixed with a fixed goal, methodology, population, and time period? If frequent adjustments are made in the intervention, the measurement, and even the goal over time as experience accumulates, the answer is more likely "no."	____ YES __X_ NO
5	Will data collection occur in stages with an effort to remove potential bias? If so is there any potential for data skewing from this process?	____ YES _X___NO
6	Is the project funded by an outside organization with a commercial interest in the use of the results? If the answer to this question is "Yes" please also answer question 6a and 6b. If the project is funded by third party payors through clinical reimbursement incentives, or through internal clinical/operations funds vs. research funds, the answer to this question is more likely to be "no."	____ YES _X___NO

6a	Is the sponsor a manufacturer with an interest in the outcome of the project relevant to its products?	____ YES ____ NO
6b	Is it a non-profit foundation that typically funds research, or internal research accounts?	____ YES ____ NO

Adapted from Hastings Center, "The Ethics of Using Quality Improvement Methods to Improve Health Care Quality and Safety" (June 2006) If the weight of the answers tends toward "yes" overall, the project should be considered "research" and approved by an IRB prior to implementation. If the weight of the answers tends toward "no," the project is not "research" and is not subject to IRB oversight unless local institutional policies differ. Answering "yes" to sequence #1 or #2 – even if all other answers are "no" – typically will result in a finding that the project constitutes research. It is important to consult with your local IRB if you are unsure how they would handle a particular case, as the analysis of the above issues cannot always be entirely objective and IRB policies and approaches vary significantly.

Obtained from:

https://irb.research.chop.edu/sites/default/files/documents/quality_improvement_or_research_works heet.pdf

Additional resources:

http://humansubjects.stanford.edu/research/documents/qa_qi_faqs_AID03H16.pdf

https://irb.research.chop.edu/quality-improvement-vs-research

SECTION B:

Project Classification Decision:

The project team consisting of a minimum of two faculty members will select one of the three classifications listed below.

__X___This DNP Project is a quality improvement project. Do not submit to IRB for review.

_____ This DNP Project contains research methodology and an IRB application should be submitted to the TUN IRB committee for exemption determination and/or full IRB review.

_____ This DNP Project is not clearly delineated as quality improvement or research of discovery.

Additional consultation will be obtained from the IRB committee by the project team. The advice of the IRB committee regarding the need for review will be noted in writing and the student will be informed of such (Please attach any pertinent documentation from IRB review as an Appendix to this document.)

By signing below, each member of the project team indicates that they agree with the above selection.

Printed Name of Project Team Member 1:

_____ Alyssa Sturm

Signature of Project Team Member 1:

_____

Printed Name of Project Team Member 2:___Denise Zabriskie DNP, RN_____

Signature of Project Team Member 2: __*Denise Zabriskie DNP, RN*_____