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Clinical Practice Guideline on Childhood Obesity

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Catherine Manga

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Walden University

2021

Abstract

Clinical Practice Guideline on Childhood Obesity

by

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MSN, Walden University, 2013

BSN, Lamar University, 2009

Project Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Nursing Practice

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August 2021

Abstract

Family care practitioners (FCPs) are important players in the treatment of childhood obesity. However, the evidence-based literature shows that practitioners lack both knowledge of how to diagnose the condition as well as the confidence and education to care for patients with obesity. The primary care setting for this project has a 77% obesity rate among the clinic pediatric population compared to a national average of 19%; the FCPs at the target clinic lacked sufficient knowledge on the diagnosis and treatment of obesity, limiting their ability and confidence to counsel families on weight control measures. Following the Walden University Clinical Practice Guideline (CPG) Manual and guided by The Appraisal of Guidelines for Research & Evaluation (AGREE II) Instrument, the childhood obesity problem was addressed through developing an evidence-based CPG based on the Pediatric Obesity Algorithm (POA) as a standardized guideline for FCPs in the facility; the CPG was scored by a panel of 3 content experts using the AGREE II Instrument. Domain scores ranged from 85% for applicability to 98% for clarity of presentation, all with greater than the 75% benchmark indicating no need for revision, with a 95% agreement rate that the POA CPG should be used in the clinic setting, fulfilling the purpose, and answering the project-focused questions. Social change can be anticipated through the POA CPG to enhance the prevention, treatment, and management of childhood obesity thereby reducing associated health and financial burdens and improving patient outcomes.

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Section 1: Nature of the Project

Introduction

Family care practitioners (FCPs), to include physicians, nurses, and nurse practitioners, are important players in the treatment of childhood obesity; as such, their knowledge of pediatric guidelines is especially important. However, Bucher Della Torre et al. (2018) found that practitioners lack both knowledge of how to diagnose obesity as well as the confidence and education to care for patients with obesity. Thirty three percent of providers did not know how to calculate body mass index, whereas 55% believed they lacked adequate education. Similarly, Wong et al. (2016) found that, regardless of their crucial role in prevention and treatment of obesity, health care providers felt they were not competent in taking care of patients with obesity and sometimes doubted the long-term effectiveness of their decisions. Likewise, Uerlich et al. (2016) found that among 1119 primary care providers, 22%, 18%, and 44% lacked knowledge to correctly identify childhood obesity, discuss physical activity, and discuss nutrition, respectively. Bucher Della Torre et al. recommended educating providers on the use of evidence-based guidelines for treating patients living with obesity, such as the Pediatric Obesity Algorithm (POA; Cuda & Censani, 2019), an evidence-based roadmap for the diagnosis and management of children with obesity. This algorithm emphasizes the lack of knowledge and the importance of developing clinical practice guidelines (CPGs) that can be followed by FCPs in prevention and treatment of childhood obesity.

In this CPG Doctor of Nursing Practice (DNP) project, I developed a POA CPG that can be used in the family care practice to prevent and manage childhood obesity. The

use of a standardized method of caring for children with obesity has been shown to be effective in managing the disease (Bucher Della Torre et al., 2018); however, the primary care setting where the project was carried out lacked a standardized method of evaluating, diagnosing, and managing children who are obese.

A positive social change is anticipated from this project, with earlier and more comprehensive management of children with weight issues through resources such as the POA. The CPG based on the algorithm will serve to help guide health care practitioners with a practical and evidence-based approach in the diagnosis and management of children with obesity and provide families with the tools needed to create a healthy future, thus creating improved quality of life in the children (Cuda & Censani, 2019). As such, it is anticipated that, with the implementation of the newly developed CPG, there will be a reduction in the health burden associated with childhood obesity.

Problem Statement

The problem identified in this DNP project was the lack of an effective and standardized comprehensive childhood obesity guideline in the target family care clinic (FCC) where the project was carried out. As one of the FCPs in the clinic, I have witnessed this problem firsthand. The clinic treats about 100 cases of childhood obesity from a total of 130 children treated at the clinic on a monthly basis, for a childhood obesity rate of about 76.9%, much higher than the national childhood obesity rate of 18.5% as per 2015–2016 data (Sanyaolu et al., 2019) and 19.3% per 2017–2018 data accounting for an estimated 14.4 million children and adolescents (Centers for Disease Control & Prevention [CDC], 2021). The prevalence among 2- to 5-year-old children was

13.4% compared to 20.3% among 6- to 11- year-old children. Childhood obesity was more prevalent among 12- to 19-year-olds as indicated by a prevalence rate of 21.2% (CDC, 2021).

Regardless of the high percentage of children with obesity seen in the FCC, the FNPs rarely counsel, guide, or educate families and patients on healthy habits to prevent and curb obesity or promote healthy weight as per my observation and from interviewing FNPs. In addition, they rarely follow up on the patients to ensure that they are adhering to healthy dietary plans and physical exercise regimes. The lack of patient counseling is partially attributed to the fact that the providers in the clinic lack a guideline for monitoring and educating children and families with childhood obesity. Studies have shown that providers do not have sufficient relevant knowledge and skills to effectively manage childhood obesity (Aggarwal et al., 2018); inadequate knowledge of nutrition has also been reported by the physicians (Croghan et al., 2019). According to Vine et al. (2013), a 2008 national survey indicated that less than half of all the surveyed FCPs regularly evaluated body mass index (BMI) percentiles in children and only 18% indicated that they had, in at least one instance, referred children for further evaluation and management. FCPs are best suited to provide quality preventative care and education as well as treatment for chronic diseases using evidence-based interventions (Buckley & Bennett-Murray, 2018).

Nursing practice may benefit from the POA CPG project through empowerment of FCPs with clinical guidelines to direct the management of childhood obesity. By providing standardized guidelines, the project will better prepare FCPs in the clinic to

teach families about the health benefits of sustained physical activity, encourage them to engage in physical exercise, and advise them on the dietary changes necessary for preventing or managing childhood obesity. FCPs are encouraged to offer dietary education to families with an emphasis on meal size, potential for fewer calories, as well as samples for healthy menus (Rabbitt & Coyne, 2012). A long-term goal of the application of this comprehensive algorithm is to reduce the number of obese children in this primary care setting, thereby demonstrating improved quality of care among this population (Cuda & Censani, 2019). Consequently, the practitioners may experience improved job satisfaction from their positive impact on the lives of children with obesity. Research indicates that work resulting in positive social change influences job satisfaction among healthcare practitioners (Singh et al., 2019).

Purpose Statement

The purpose of this POA CPG project was to develop a CPG to guide FCPs in their efforts toward preventing and managing childhood obesity. At the FCC where the project was conducted there was a gap in practice: according to a nurse practitioner, even though there is a 77% childhood obesity rate at the target setting, the providers had no guidelines for the treatment of children with obesity. The practice-focused questions that drove this project were: Does the literature support the use of a standardized tool for identifying and managing childhood obesity? and What evidence from the literature is available for the development of a CPG for the treatment of children with obesity based on the POA?

This POA CPG project addressed the lack of a standardized comprehensive childhood obesity guideline at the FCC through the development of a CPG that will provide a standardized tool for the management of obesity and increase the FCPs' knowledge related to the treatment of childhood obesity. Using the CPG is anticipated to improve weight management practices among providers at the clinic for better management of the children who visit the clinic, thereby reducing the incidence of childhood obesity and the associated health burdens.

Nature of the Doctoral Project

Following the Walden University CPG Manual, I identified the practice problem to be a lack of a standardized and comprehensive guideline on childhood obesity at the practice site and developed practice-focused questions to address the problem. The next step involved conducting an in-depth literature review to identify evidence supporting the use of standardized guidelines in the management of childhood obesity. The literature search was conducted on several databases including PubMed, MEDLINE, and Turning Research into Practice (TRIP), Cochrane, and Google Scholar. To query the databases and retrieve relevant articles, I used the keywords *POA AND childhood obesity, guidelines on managing childhood obesity, and prevention of childhood obesity.*

I critically appraised the retrieved articles using the criteria developed by Melnyk and Fineout-Overholt (2011) and organized pertinent articles in a literature matrix (see Appendix A). The evidence from the literature was used to develop a CPG on prevention and management of childhood obesity, which was reviewed by a panel of experts using the Appraisal of Guidelines for Research and Evaluation (AGREE) II Instrument (The

Agree Enterprise Trust, 2009) to validate the content of the CPG. I then revised the CPG as per the experts' recommendations. Once consensus was met, I presented the CPG to the FCPs to validate content and ensure usability. I will present the CPG to management of the FCC for consideration of adoption after my graduation. The clinic will benefit from an evidence-based guideline for prevention and management of childhood obesity through improved patient care and patient outcomes and patients being equipped with the tools they need to live a healthier life.

Significance

Key stakeholders who will be impacted by this POA CPG project include the FCPs, patients, families, and the community by providing the FCPs with a CPG for managing childhood obesity. FCPs experience repeated contact with patients during key stages from preconception through old age. These contacts present them with opportunities for educating families about childhood obesity prevention and provide tailored information (Sutaria & Saxena, 2019). Providing the FCPs with standardized and evidence-based guidelines on childhood obesity will enable them to address barriers that hinder treatment/management of obesity such as lack of knowledge and self-efficacy in addressing weight matters, thereby empowering them to take advantage of patients' routine visits to educate families about childhood obesity. The FCPs will also be more likely to take weight measurements and assess the children's lifestyles with the aim of identifying high-risk families as well as providing tailored advice and weight management goals during routine visits (Sutaria & Saxena, 2019). With improved

outcomes for childhood obesity, the clinic benefits through improved patient outcomes and satisfaction, improved nurse satisfaction, and better use of resources.

The high incidence of childhood obesity in this facility is an indication of the urgency to address the issue. Introducing an evidence-based clinical tool to assess, diagnose, and manage childhood obesity will benefit children and families by ensuring they access current and appropriate evidence-based guidelines to manage the condition, and improved patient education on the appropriate dietary and lifestyle changes required to manage the disease potentially leading to improved health outcomes among children. Children will also gain improved quality of life due to the reduction in risk factors for obesity-related chronic illnesses.

The project will potentially benefit the general community as better management of childhood obesity will create a healthier community and reduce the health and financial burden associated with the disease. In 2014, the lifetime medical costs for an obese 10-year-old in the United States was an estimated \$14 billion (Finkelstein et al., 2014). More current data indicates that obesity was linked with a \$116 increase in annual healthcare costs per child. In children with severe obesity, the annual increment in healthcare costs is estimated at \$300 per child per year. Further, childhood obesity is associated with a total increase of over \$1 billion in annual medical costs in the United States (Varanasi, 2021; Ward et al., 2021). Carroll (2020) reported that obesity costs the United States approximately \$150 billion in annual health care expenditure.

Apart from the direct medical costs, childhood obesity is associated with indirect costs arising from absenteeism and lost productivity among working parents (Hamilton et

al., 2018). Early diagnosis and management are a necessity, without which these children, their families, communities, and the entire country will have to deal with the long-term consequences of childhood obesity (Cuda & Censani, 2019; Finkelstein et al. 2014).

Nursing practice may benefit from the project through empowerment of FCPs with knowledge on childhood obesity. FCPs should evaluate children and the association of behavioral change to weight gain. Conducting a holistic assessment while treating pediatric patients with obesity is important (Rabbitt & Coyne, 2012), which should include evaluating their lifestyles to identify the cause of obesity, measuring their weight, and developing specific advice and goals (Sutaria & Saxena, 2019). Through the knowledge acquired from the project, FCPs will educate families on the role of physical activity and dietary changes in prevention and management of childhood obesity. The project can be replicated in similar settings; childhood obesity is a national problem (Sanyaolu et al., 2019) and the education and treatment would be the same no matter the child's residential setting or area.

The project aligns with the Walden University mission of promoting social change. The university is dedicated towards transforming students into scholar-practitioners who can apply the knowledge acquired in class to effect positive social change. Walden University perceives social change as a deliberate development and application of ideas, strategies, and actions towards promoting worth, dignity, and the development of individuals, organizations, cultures, and the society at large. Through the project, I applied available research evidence to develop clinical guidelines to be used by FCPs in preventing and treating childhood obesity. Taking proactive measures to prevent

and manage childhood obesity will promote children's worth, dignity, and their development. Further, the project promotes and supports the development of FCPs by increasing their knowledge and better preparing FCPs to empower parents and families to adopt healthy dietary practices as well as healthy lifestyles such as engaging in physical activities as a means of addressing childhood obesity and improving quality of life.

Summary

FCPs play a significant role in the management of childhood obesity, however, most lack sufficient knowledge and standardized guidelines for managing the condition (Bucher Della Torre et al., 2018; Uerlich et al., 2016; Wong et al., 2016). At the FCC that served as the project setting, the FCPs do not counsel patients on nutrition and weight management due to lack of education and skills in managing childhood obesity. Additionally, the clinic lacked a standardized guideline to guide the FCPs in managing the disease. Through this DNP project, I addressed this practice gap by developing a childhood obesity management guideline based on the POA (Cuda & Censani, 2019), an evidence-based roadmap for diagnosis and management of children with obesity. The project will benefit the FCPs in the clinic by increasing their obesity management knowledge, the clinic and patients and their families through improved quality of care to obese, and lastly, the community, indirectly, from the decrease in the health burden associated with the disease. In the following section, I present the background and context of the project with a focus on models, definition of terms, relevance to nursing practice, local background and context, and my role as the DNP student.

Section 2: Background and Context

Introduction

The practice problem for this POA CPG project was that at the target clinic FCPs lacked effective and comprehensive childhood obesity clinical management knowledge and guidelines. As such, the purpose of this project was to develop a POA CPG for preventing and managing childhood obesity and have the CPG evaluated by a panel of experts using the AGREE II Scoring Instrument. The practice-focused questions were: Does the literature support the use of a standardized tool for identifying and managing childhood obesity? and What evidence from the literature is available for the development of a CPG for the treatment of children with obesity based on the POA? In this section, I present a discussion of the theoretical framework that guided the project. The section further covers the project's relevance to nursing practice as well as local background and context, along with the role of the DNP student.

Concepts, Models, and Theories

The DNP project was framed by the AGREE II (The Agree Enterprise Trust, 2009), which is used by scholars in the development of CPGs and evaluation of their quality. The instrument contains 23 key items categorized into six domains. The first domain focuses on the scope and purpose of the guidelines and covers elements such as objectives, health questions, and the target patient population. The second domain, stakeholder involvement, focuses on the inclusion of relevant professional groups, patients, and target users. Rigor of development is the third domain, which focuses on the process of gathering and synthesizing evidence used to create the guideline. The fourth

domain is clarity of presentation, which focuses on language, structure, and format of the guideline. The fifth domain focuses on applicability, particularly the barriers and facilitators, strategies for improving uptake, and cost implications. The final domain involves editorial independence, which ensures that the recommendations made in the guideline are not biased due to competing interests (The Agree Enterprise Trust, 2009).

The AGREE II Instrument is valid and reliable for evaluating CPGs; Brouwers et al. (2010) established that five to six domains of the instrument are significant predictors of participants' outcome measures ($p < .05$). Further, reviewers rated all domains and items as useful (mean scores > 4.0), and there were no significant differences with user type ($p < .05$). In terms of reliability, the internal consistency of the instrument ranged between .64 and .89. The tool was also associated with good inter-rater reliability (Brouwers et al., 2010). Rapoport et al. (2015) associated the AGREE II Instrument with good inter-rater reliability with the intra-class correlation coefficients falling between .57 and .79 as well as acceptable internal consistency as indicated by Cronbach's alpha values of between .23 and .88. Rapoport et al. reported the clarity of presentation had the lowest internal consistency (.23) followed by editorial independence (.59). Similarly, Radwan et al. (2017) established that each domain of the tool had an internal consistency of over .87 and internal correlation coefficients of between .56 and .88, which represents moderate and good reliability.

The AGREE II Instrument was suitable for the evaluation of this newly developed POA CPG because the instrument's reliability and validity have been validated (Radwan et al., 2017; Rapoport et al., 2015), and the instrument has been applied successfully in

CPG development projects in the past. For instance, Yang et al. (2018) used the tool to evaluate a CPG on tic disorders and established that the guideline had methodological quality in domains such as scope and purpose, stakeholder involvement, and clarity of presentation. Similarly, Wu et al. (2015) used the tool to assess CPGs on age-related macular degeneration and established that the most robust domains in the CPGs were scope and purpose as well as clarity of purpose.

Definition of Terms

Standardized guideline: This is a document that contains statements or recommendations aimed at optimizing patient care by serving as a foundation of clinical decisions and best practices (American Academy of Family Physicians, 2020).

Relevance to Nursing Practice

FCPs play a crucial role in the management of obesity, participating in all interventions for preventing and controlling obesity especially clinical counselling focused on diet, physical activity, behavior change, and pharmacotherapy (Aggarwal et al., 2018; Croghan et al., 2019). Seburg et al. (2015) agreed, noting that providers play an important role in obesity interventions which are focused on multiple behaviors, weight management components, and monitoring of weight-related behaviors such as dietary intake, physical activity, or sedentary behaviors. As such, FCPs are expected to implement existing guidelines when attending to obese patients. Bucher Della Torre et al. (2018) found that, among FCPs, there was a lack of knowledge to diagnose obesity in adults and children, as well as confidence to care for patients with obesity.

The prevalence of overweight and obesity has increased globally with major effects on population health and healthcare costs (Flodgren et al., 2017). In the global context, the rate of obesity has more than doubled since 1980 with an estimated 65% of the global population living in countries where overweight and obesity leads to more fatalities than underweight (Khan & Ahmad, 2017). Although obesity has traditionally been associated with adults, over the last 2 decades the condition has increasingly affected children (Andolfi & Fisichella, 2018). In developed countries, for instance, obesity is among the most common health issue seen in children. In the United States, the Centers for Disease Control and Prevention (CDC, 2021) observed an increase in childhood obesity in epidemic proportions. Between 2011 and 2014, the prevalence of obesity among children between the ages of 2 and 19 years was 17% with a prevalence of extreme obesity in the same age group at 5.8%; between 2015 and 2016, the prevalence rate had increased to 18.5% (Williams & Greene, 2018). According to CDC (2021) estimates, there were 13.7 million American children suffering from obesity.

Childhood obesity is a growing global health problem affecting children's psychological and physical state of existence (CDC, 2011a, 2021). Generally, treatment of pediatric obesity entails promoting lifestyle changes related to physical activity and diet; even though there are strategies that focus only on diet or physical activity, multicomponent interventions consisting of dietary modification, physical activity, behavioral therapy, and education have shown to be most effective (Rajjo et al., 2017; Wilfley et al., 2017). The treatment of pediatric obesity carried out in settings such as community and school based primary care and in specialized clinical settings have shown

varying results. In this regard, governments and stakeholders have developed obesity management guidelines (Brown & Perrin, 2018; Ek et al., 2019; Uerlich et al., 2016; Wong et al., 2016). The American Academy of Pediatrics guidelines outline that family care practices should educate families to realize changes in lifestyle needed and provide children with structured weight management plans (Brown & Perrin, 2018); however, simply providing education on obesity-related health risks, nutrition, and physical activity is inadequate to induce behavioral change (Pandita et al., 2016). This inadequacy is evident from the increase of childhood obesity in the last 30 years even though guidelines from the American Academy of Pediatrics have been implemented, thereby demonstrating that existing guidelines have not been sufficient, which underscores the need for better protocols.

The childhood obesity problem continues to be important in nursing due to immediate and long-term consequences of the problem. According to Andolfi and Fisichella (2018), consequences of obesity in children affect their health and can persist even into adulthood, hence the need for early intervention. Some of the immediate risks to overweight children include Type 2 diabetes, hypertension, high cholesterol levels, and breathing challenges including asthma, and joint problems as well as gallstones. Long-term effects of obesity encompass coronary artery disease, hip fractures, and atherosclerosis. In addition to these risks, obesity in children is attributable to significant psychological issues such as difficulty in forming friendships, poor self-perceptions, and self-esteem issues, in addition to increased rates of psychiatric diagnoses. These risks and

issues enhance the importance of developing interventions for addressing childhood obesity by the FCPs.

Despite the increasing rates of childhood obesity in the United States, no clear treatment strategies exist. With limited evidence-based research addressing the treatment of childhood obesity, practitioners are left to rely on their own clinical judgment and persuasion to manage and treat the condition (Cuda & Censani, 2019). Societal barriers occasionally prevent early diagnosis and treatment of childhood obesity where parents fail to recognize the problem in a timely manner. Consequently, when the problem is advanced, the FCPs either lack adequate education or the support needed for provisions of ongoing chronic care management. Interventions such as bariatric surgery are reserved for adolescents with severe obesity and can be best accomplished in a specialty center. Additionally, although newer medications have been developed for treatment of obesity, none of them are approved by the U.S. Food and Drug Administration for use in children. Endoscopic procedures are also being clinically tried but adults remain the target (Cuda & Censani, 2019). Practitioners lack knowledge on appropriate guidelines for managing childhood obesity.

According to World Health Commission Report on Ending Childhood Obesity, practitioners should support healthy environments by being involved in monitoring children's health behaviors and growth through a holistic assessment of child and family behaviors as well as social correlates of weight gain (Rabbitt & Coyne, 2012; Sutaria & Saxena, 2019). Stakeholders in the health care sector have developed recommendations to improve treatment and management of childhood obesity. For instance, the U.S.

Department of Health and Human Services, in collaboration with the U.S. Department of Agriculture, developed Dietary Guidelines for Americans 2015–2020 to guide citizens on healthy dietary habits (U.S. Department of Health and Human Services & U.S. Department of Agriculture, 2015). The CDC has also published guidelines on strategies for increasing the consumption of fruits and vegetables (CDC, 2011a, 2021), as well as guidelines for preventing obesity and other chronic diseases by increasing physical activity in the community (CDC, 2011b, 2021).

Effective management of obesity among children faces a number of barriers including lack of effective education and administrative support and facilities, poor patient adherence to the plan, and lack of provider confidence in management (Kahan, 2018). As such, providers are encouraged to collaborate among themselves towards overcoming individual shortcomings in obesity management by implementing decision support tools such as CPGs and clinical information systems to assist providers, providing self-management support and case management to help patients successfully navigate the health care system (Masse et al., 2018).

One gap that has been found in the current interventions to address childhood obesity is the lack of guidelines to guide practitioners on appropriate diagnosis and treatment of childhood obesity. Yi et al. (2019) emphasized the importance of comprehensive guidelines outlining multidisciplinary behavioral interventions for managing the disease including calorie-controlled balanced diet, physical activity, and reduction of sedentary habits. As such, the newly developed guideline addresses different interventions for addressing childhood obesity. CPGs on childhood obesity can

effectively address the barriers experienced by practitioners in managing childhood obesity and should not only increase practitioner confidence and ease in counseling patients about pediatric weight, but also increase the frequency of childhood obesity counseling in pediatric care settings. The newly developed guideline will empower practitioners with knowledge on the disease, thereby better preparing them to address obesity during pediatric appointments and encourage families to adopt healthy lifestyles.

Local Background and Context

The POA CPG project was implemented in an FCC located in the South-Central United States. The city in which the clinic is located has a population of over 149,000 people with a density of 3,208 square meters. In terms of the racial makeup, the region is predominantly occupied by Whites who constitute 83.3% of the entire population. Other groups include African Americans at 2.7%, American Indian at 1.5%, and 11.6% other races. The mission of the clinic is to provide the best level of care to the locals at the lowest possible cost. The clinic currently serves approximately 100 obese children out of over 130 children treated at the facility on a monthly basis. Through reviewing documentation and discussion, I found that the healthcare providers in the clinic rarely counsel, guide, or educate the patients and their families on healthy eating and lifestyle habits for preventing obesity even though these patients report poor nutritional habits such as high intake of fast foods and sedentary lifestyles. Additionally, the practitioners admit to rarely following up to ensure the patients observe healthy dietary plans and physical exercise programs. Lack of education and follow-up are partially attributed to lack of resources, including a CPG, and lack of sufficient knowledge on childhood

obesity, which limits patient education on obesity management. As such, the FCPs at the clinic could benefit from increased knowledge on suitable childhood obesity management interventions and skills for educating patients/families on weight management.

At the federal level, different laws have been passed to address the problem of childhood obesity. The federal government enacted the Healthy, Hunger-Free Kids Act (HHFKA) of 2010 as a means of improving meal patterns and nutritional standards of the National School Lunch Program and the School Breakfast Program by aligning them with the 2010 Dietary Guidelines for Americans (Johnson et al., 2016). Particularly, the legislation sought to ensure that students had access to sufficient whole grains, vegetables, and fruits. Portion sizes for vegetables and fruits were increased. The revised standards were enacted in the 2012–2013 school year, potentially benefiting over 31 million students annually (Johnson et al., 2016). The HHFKA has not been associated with any significant changes in obesity trends overall, however the legislation has been associated with significant reductions in the risk of obesity among children living in poverty in the 2013–2018 period. Research indicated that the prevalence of childhood obesity among this population would have been 47% higher in 2018 were it not for the Act (Kenney et al., 2020).

States have also adopted school nutrition policies through legislation and adopting resolutions to compliment the HHFKA. For instance, Arkansas enacted a nutritional program for public schools and the Whole Child Recognition Program to reinforce healthy dietary patterns (National Conference of State Legislatures [NCSL], 2020). Similarly, Colorado has implemented the Breakfast After the Bell Nutrition Program

aimed at fostering access to breakfasts that meet the federal nutrition standards and meal patterns. Under the Child Day Care Act, California requires teachers and directors of day care centers and family day care homes to have a minimum of 1 hour of training annually on childhood nutrition as a key component of preventative health practices. In my state, a strategic plan was developed in 2010 to curtail the epidemic through public and private partnership with common goals. Some of the goals developed include creating awareness of obesity as a public health issue with major impacts on quality of life; mobilization of families, schools, and communities to live lifestyles that enhance healthy weight; and promoting policies and environmental changes that fosters healthy weight (NCSL, 2020).

Role of the DNP Student

I am a nurse practitioner in the clinic where the project was implemented. I had observed that the practitioners in the clinic rarely engage the patients' families in obesity management due to lack of sufficient knowledge and a standardized guideline on how to address obesity. This motivated me to develop the POA CPG for guiding the FCPs in prevention, diagnosis, and management of childhood obesity. I believed that this practice problem was worthwhile considering the costs incurred by individual patients and the healthcare systems in general due to childhood obesity. Addressing the prevention and management of childhood obesity is important owing to the long-term health effects of the disease including diabetes, cardiovascular disease, some cancers, as well as musculoskeletal disorders that lead to disability in adulthood (Di Cesare et al., 2019).

I served as the project leader as well as change champion, discussing the needs of the practitioners as well as the clinical guideline development goals with the clinic's

management to advocate for the project. Additionally, I created awareness among the practitioners on their role in childhood obesity prevention and management. After an in-depth literature review, I developed the POA CPG, chose four content experts to evaluate the guideline, presented the newly developed CPG to end users to determine usability, and presented the newly developed CPG to management for final approval. The selected content experts included two nurse practitioners and two physicians who have diagnosed and treated hundreds of children with childhood obesity; one physician was unable to complete the evaluation, so only three evaluated the CPG. The nurse practitioners have 8 and 9 years of experience, respectively, whereas each physician has practiced for 12 years.

I may have had confirmation bias, whereby I may have chosen the recommendations that appeal to me because of my family experiences with childhood obesity. To ensure I avoided this, I developed the CPG based on peer-reviewed, evidence-based literature and had a team of experts review the CPG, making revisions as needed.

Summary

Childhood obesity is a key public health concern in the United States. Federal and state governments have adopted different measures to ensure families with children have access to information on required nutritional standards and health care organizations, such as the Institute of Medicine (IOM), have recommended preventative measures for addressing the disease. FCPs should be at the forefront in combating childhood obesity, however, their involvement is limited by barriers that include resources, clinical

guidelines, knowledge, and skills. These barriers hinder them from routinely assessing growth and development among children and counseling families of overweight and obese children on appropriate lifestyle changes to prevent and manage the condition. Through the POA CPG project, I addressed the barrier of lack of knowledge and tools through the development of a childhood obesity CPG based on the POA. The project was guided by the AGREE II framework which identifies the six key domains that should be satisfied by CPGs. I served as the project leader and a change champion by advocating for the project to the management of the FCC. I developed the guideline which was evaluated by a panel of experts. In the next section, I review how the evidence used in the project was collected and analyzed, along with a review of the practice focused question, sources of evidence, protections, and analysis and synthesis.

Section 3: Collection and Analysis of Evidence

Introduction

Childhood obesity is a key public health problem in the United States. The disease affects a significant portion of the country's pediatric population, with 2015–2016 statistics indicating that the prevalence of childhood obesity among U.S. youth was 18.5% (Williams & Greene, 2018) increasing to 19.3% in the 2017–2018 data (CDC, 2021). In the project setting, the clinic population has a 77% obesity rate in the children it serves on a monthly basis. These patients report poor eating habits and sedentary lifestyles; however, the FCPs in the clinic rarely counsel the patients and their families on the measures for preventing and managing childhood obesity. This gap in care is attributed to the lack of knowledge and low self-efficacy, which limits their capability to introduce weight discussions with the families. Researchers have documented that a lack of knowledge on childhood obesity is a common challenge among primary care providers (Pearce et al., 2019; Rhee et al., 2018; Vine et al., 2013). The purpose of this project was to develop a POA CPG that can be used by the FCPs at the clinic to diagnose, treat, and prevent childhood obesity.

In Section 3, I present the procedures I adopted for collection and analysis of evidence for the project. The section will also cover several subtopics including the practice-focused questions, sources of evidence, and analysis and synthesis.

Practice-Focused Questions

The problem identified in this DNP project was that FCPs rarely counsel patients and families on childhood obesity due to a lack of knowledge and confidence for tackling

the topic (Pearce et al., 2019). The family practice clinic where the project was implemented serves approximately 100 obese children on a monthly basis. These patients report poor nutritional habits such as high intake of fast foods and sedentary lifestyles; however, the healthcare providers in the clinic rarely counsel, guide, or educate the patients and their families on health eating and lifestyle habits for preventing obesity. Additionally, they rarely follow up on the patients to ensure they observe healthy dietary plans and physical exercise programs. This gap in practice is partially attributed to lack of practice guidelines on childhood obesity, which limits their self-efficacy and the ability to initiate weight-related discussions. Researchers and institutions such as the IOM advocate the FCP role in educating patients as a means of promoting healthy lifestyles and diets (Sutaria & Saxena, 2019; Vine et al., 2013). As such, I sought to address this practice problem by developing an evidence-based CPG on childhood obesity based on the POA. The project was guided by the following practice-focused questions: Does the literature support the use of a standardized tool for identifying and addressing childhood obesity? and What evidence from the literature is available for the development of a CPG for the treatment of children with obesity based on the POA?

In the FCC that served as the project setting, the practitioners lack practice guidelines for facilitating patient education on childhood obesity. The purpose of this DNP CPG project was to address the practice-focused question by providing practitioners in the family clinic with a teaching tool based on the POA, which is an evidence-based roadmap for guiding practitioners in the diagnosis and management of childhood obesity (Cuda & Censani, 2019; Obesity Medicine Association, 2020). This newly developed

tool should empower practitioners to make age-specific recommendations for children with obesity.

Sources of Evidence

The key sources of evidence that were used to develop the CPG included current evidence-based literature found through an extensive literature search and graded using the grading criteria by Melnyk and Fineout-Overholt (see Appendix B). The search was restricted to peer-reviewed journal articles published in the last 5 years (2015–2020) and published in English. The evidence derived from the published outcomes and research aided in answering the first practice-focused question, whereas the POA aided in answering the second practice-focused question.

Evidence Generated for the Project

A literature review matrix (see Appendix A) was developed from the retrieved studies to provide easy access to the pertinent information needed to carry out the development of the CPG. Further, upon completion of the CPG, the expert panel, consisting of three content experts, evaluated the CPG using the AGREE II Instrument (see Appendix C; The Agree Enterprise Trust, 2009) for methodological rigor and transparency. The AGREE II scores were averaged and reviewed, and the recommendations provided by the experts were used to revise the CPG. Once consensus was reached with the content experts, a group of end-users reviewed the CPG to validate content and ensure usability. The evaluations provided data on the newly developed CPG.

Participants

The AGREE II framework recommends the use of two to four content experts to appraise the new guideline, with four being the optimal number to support the reliability of the assessment (Brouwers et al., 2017). Adhering to the recommendation, I invited four content experts, via an introductory letter, to review the CPG. With one physician dropping out due to time constraints, the recommended number was still met. These three participants consisted of two nurse practitioners, one with a master's degree and the other a doctorate, and one physician, a general practitioner, drawn from hospitals within the FCC's locality with extensive knowledge on childhood obesity, having diagnosed and treated hundreds of children with childhood obesity. The nurse practitioners have 8 and 9 years of experience, and the physician has practiced for 12 years. The experts were selected based on their broad experience with prevention and management of childhood obesity. However, one of the physicians did not review the guideline due to other commitments.

Procedures

The literature matrix was used to organize the evidence-based literature that was used for the development of the POA CPG. For evaluation purposes, I signed up on the AGREE Enterprise Trust website and uploaded the CPG. I then used the site to invite the experts to review the guideline. Using the AGREE II website, the expert panel evaluated the newly developed CPG rating each domain. The AGREE II is a valid and reliable Instrument that provides a methodological strategy of determining the information that should be included in CPGs and how the results should be reported (The Agree

Enterprise Trust, 2009). I revised the CPG based on the experts' recommendations and presented the revisions to the group of end-users to review for content and usability.

After full agreement was reached, I presented the CPG to the management at the clinic for review and consideration for adoption.

Protections

There were no identified ethical risks involved in completing the POA CPG. Ethics approval was obtained from the Walden University Institutional Review Board (02-08-21-0360114) to show compliance with ethical requirements. Written agreement was also obtained from the target facility. Each expert panelist received the preapproved Disclosure to Expert Panelist form with an accompanying letter introducing them to the form. The AGREE II website ensures privacy and confidentiality by collecting no identifying data and not sharing the email addresses of the participants when sending results so the reviewers remained anonymous with all paperwork identified with numbers rather than names. The expert panelists were not compensated financially for participating in the project. Electronic copies of the data will be kept in a password-protected computer, stored for 5 years after project completion, and then deleted.

Analysis and Synthesis

The literature review matrix was used to summarize the available evidence-based literature used to develop the CPG. The AGREE II scores and a summative and formative evaluation were used to collect data that was analyzed and synthesized for the CPG development. The AGREE II scores were averaged through the AGREEtrust.org website, assuring integrity and accuracy. The data analysis followed a two-step process, collecting

the initial feedback from the first review and collecting the subsequent feedback on the revised guideline. The AGREE II Instrument comprises 23 items and six quality domains: (a) scope and purpose, (b) stakeholder involvement, (c) rigor of development, (d) clarity of presentation, (e) applicability, and (f) and editorial independence.

Summary

FCPs rarely counsel patients and families on childhood obesity due to lack of knowledge and confidence for tackling the topic (Pearce et al., 2019). In the target FCC, the practitioners lacked a standardized guideline for facilitating patient education on childhood obesity. Through this DNP CPG project, I addressed the identified practice gap through the development of a POA CPG. Project evidence was derived from evidence-based literature addressing the need to diagnose and manage childhood obesity. The AGREE II Instrument was used to collect data on the expert panelists' ratings of the CPG. The experts rated the CPG on the AGREE site to ensure privacy and confidentiality. The findings were exported from the site and presented using descriptive statistics. In the next section, I present the project findings, recommendations, and strengths and limitations.

Section 4: Findings and Recommendations

Introduction

Childhood obesity is a major public health problem in the United States with a prevalence of the disease among youth in the country at 18.5% as per 2015–2016 statistics (Williams & Greene, 2018). In 2017–2018, the prevalence increased to 19.3% affecting approximately 14.4 million children and adolescents. Among 2- to 5-year-olds, the prevalence was 13.4% compared to 20.3% among 6- to 11-year-olds. Childhood obesity was more prevalent among 12- to 19-year-olds as indicated by a prevalence rate of 21.2% (CDC, 2021). In the target FCC, the obesity rate among the children served is 77%, which accounts for about 100 of the 130 children treated at the clinic on a monthly basis being obese. These children demonstrate poor dietary habits and sedentary lifestyles; however, the FCPs in the clinic rarely counsel them and their families on the measures for preventing and managing childhood obesity. Reflecting the literature (Pearce et al., 2019; Rhee et al., 2018; Vine et al., 2013), the FCPs reported a lack of knowledge and low self-efficacy as the key barriers to patient counseling on childhood obesity. The clinic lacked an effective, comprehensive, standardized childhood obesity guideline. The purpose of this project was to develop a POA CPG to be used by the FCPs at the clinic to diagnose, treat, and prevent childhood obesity. The project was guided by the following practice-focused questions: Does the literature support the use of a standardized tool for identifying and addressing childhood obesity? and What evidence from the literature is available for the development of a CPG based on the POA for the treatment of children with obesity?

The project was based on current published evidence retrieved through an extensive literature search that supported the use of a standardized tool for identifying and addressing childhood obesity. With the selected literature, a literature matrix (see Appendix A) was developed to rate the strength and organize the evidence, as well as summarize the key findings. From the selected articles, I developed the CPG. An expert panel consisting of three content experts reviewed the newly developed POA CPG for methodological rigor and transparency using the AGREE II Instrument. In Section 4, I present the findings and implications for practice along with recommendations and the strengths and limitations of the project.

Findings and Implications

Through the literature review, I found 21 studies that supported the use of a standardized tool for identifying and addressing childhood obesity. I adapted and combined the findings and recommendations from these studies to develop the POA CPG that was implemented in the FCC. The CPG (see Appendix D) addresses pediatric weight assessment, diagnosis of childhood obesity, management of the disease, and a treatment plan. The CPG was evaluated by a team of three content experts, as one reviewer who had agreed was no longer available when the CPG was completed, for methodological rigor and quality using the AGREE II Instrument (The AGREE Enterprise Trust, 2009). The AGREE II Instrument consists of six domains, with 23 items, each graded using a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). The experts' scores and comments under each domain are presented in Table 1, whereas Table 2 presents a summary of the scores for each of the six domains.

Table 1*Experts' Scores and Comments*

AGREE Domains	Scores	Comments
Scope and Purpose		
1. The overall objective of the guideline is specifically described.	7, 7, 7	<ul style="list-style-type: none"> Overall objectives are presented under recommendations Concise and well-written
2. The health question(s) covered by the guideline is (are) specifically described.	6, 5, 7	<ul style="list-style-type: none"> Questions address prevention of childhood obesity Emphasize the need to integrate treatment of the disease on presentation
3. The population (patients, public, etc.) to whom the guideline is meant to apply is specifically described.	7, 7, 7	<ul style="list-style-type: none"> Target population is specific
Stakeholder Involvement		
4. The guideline development group includes individuals from all the relevant professional groups.	6, 3, 7	<ul style="list-style-type: none"> Add the specific location, name of clinic, city, and state of implementation
5. The views and preferences of the target population (patients, public, etc.) have been sought.	6, 7, 7	<ul style="list-style-type: none"> Based on literature reviews Aimed at the target population
6. The target users of the guideline are clearly defined.	7, 7, 7	<ul style="list-style-type: none"> Clearly defined as the FCPs
Rigor of Development		
7. Systematic methods were used to search for evidence.	7, 5, 7	<ul style="list-style-type: none"> Guideline developed based on literature review with levels of evidence present and robust. Description of search terms, time-periods of the search, and electronic databases used are missing
8. The criteria for selecting the evidence are clearly described.	7, 3, 7	<ul style="list-style-type: none"> Inclusion/exclusion criteria for the literature is missing
9. The strengths and limitations of the body of evidence are clearly described.	7, 7, 6	<ul style="list-style-type: none"> Each article used to support the guideline is well analyzed, evaluated, and ranked
10. The methods used for formulating the recommendations are clearly described.	7, 1, 6	<ul style="list-style-type: none"> The methods for formulating the recommendations are missing One element of the guideline is unclear
11. The health benefits, side effects, and risks have been considered in formulating the recommendations.	7, 7, 7	<ul style="list-style-type: none"> Benefits and harms are listed
12. There is an explicit link between the recommendations and the supporting evidence.	7, 7, 7	<ul style="list-style-type: none"> The recommendations are linked to key evidence
13. The guideline has been externally reviewed by experts prior to its publication.	6, 1, 6	<ul style="list-style-type: none"> The information on external review is missing
14. A procedure for updating the guideline is provided.	6, 7, 7	<ul style="list-style-type: none"> The guideline will be updated every three years or when new recommendations are released

AGREE Domains	Scores	Comments
Clarity and Presentation		
15. The recommendations are specific and unambiguous.	6, 7, 7	<ul style="list-style-type: none"> The recommendations are concise and measurable Separation of the dos and do nots for easier reading and comprehension
16. The different options for management of the condition or health issue are clearly presented.	7, 7, 7	<ul style="list-style-type: none"> All options for managing childhood obesity are included
17. Key recommendations are easily identifiable.	7, 7, 7	<ul style="list-style-type: none"> Recommendations are easy to find and read Separation of the dos and do nots under dietary modification for easier reading and comprehension
Applicability		
18. The guideline describes facilitators and barriers to its application.	7, 1, 7	<ul style="list-style-type: none"> Facilitators and barriers to the guideline's application are not described
19. The guideline provides advice and/or tools on how the recommendations can be put into practice.	6, 7, 7	<ul style="list-style-type: none"> Recommendations on how to put the guideline into practice are clear
20. The potential resource implications of applying the recommendations have been considered.	7, 1, 7	<ul style="list-style-type: none"> The guideline lacks a discussion on the resource implications
21. The guideline presents monitoring and/ or auditing criteria.	7,7,7	<ul style="list-style-type: none"> The monitoring criteria was present.
Editorial Independence		
22. The views of the funding body have not influenced the content of the guideline.	7, 7, 7	<ul style="list-style-type: none"> No funding body was used in the development of the POA CPG
23. Competing interests of guideline development group members have been recorded and addressed.	7, 7, 1	<ul style="list-style-type: none"> The guideline was not developed by a group of members; hence, no conflict of interest
Overall Assessment	Would you recommend these guidelines for use in practice? Yes (7, 6, 7)	Why? It is useful, concise, and evidence based.

Table 2*Summary of the Scores for Each of the AGREE Domains*

Domains	Minimum/maximum score possible	Appraiser 1	Appraiser 2	Appraiser 3	Total points	Percentage
Domain 1: Scope and Practice	1/7 per item (3)	20/21	19/21	21/21	60/63	95%
Domain 2: Stakeholder involvement	1/7 per item (3)	19/21	17/21	21/21	57/63	90%
Domain 3: Rigor of Development	1/7 per item (8)	54/56	38/56	53/56	145/168	86%
Domain 4: Clarity of Presentation	1/7 per item (3)	20/21	21/21	21/21	62/63	98%
Domain 5: Applicability	1/7 per item (4)	27/28	16/28	28/28	71/84	85%
Domain 6: Editorial Independence	1/7 per item (2)	14/14	14/14	8/14	36/42	86%
Overall assessment	1/7 per item (1)	7/7	6/7	7/7	20/21	95%

*Threshold for guideline quality is 50% or greater, however scores below 75% should be reviewed (Brouwers et al., 2010).

The last section of the AGREE II Instrument allowed the experts to evaluate whether the guideline should be adopted into practice. The experts agreed with a 95% score that the POA CPG should be implemented in the targeted FCC setting, and eventually in other FCCs, and noted that the recommendations presented were clear, concise, well organized, and appropriate for the practice setting. The panel of experts stated that the CPG will improve the prevention, management, and treatment of childhood obesity. One content expert recommended the separation of the “dos and do nots” under the dietary modification and clarification on the use of BMI versus percentile was needed. These revisions were made before the CPG was presented to the FCPs and

the clinic's management. Further, the experts recommended outlining the inclusion criteria, search terms, time-periods for the search, and electronic databases used to retrieve the articles used to develop the guideline. These details are outlined in Section 3 of this report but were determined unnecessary in the CPG. One of the experts raised a query on how the CPG recommendations were developed. The evidence derived from the journal articles in the literature review matrix was used to develop the recommendations. The reviewer who commented that the expert review was missing did not realize the review they were completing was the expert review being asked about; explaining what the AGREE II review was answered the question. Lastly, there was no conflict of interest during the development of the CPG as there was no funding source and I was the sole developer.

The CPG was presented to the FCPs in the FCC, as end users, to review for usability and content. The nurses mentioned that the guideline was good but too long and would not be easy to use. I advised them to only pay attention to the pathways as each child's BMI is calculated on weigh-in during admission; these pathways present the treatment plans after assessment and identification of a child with obesity. The front matter and physical assessment should be presented during staff meetings or during the orientation of newly employed FCPs and reviewed annually, so that the physical exam done at each visit can be focused on areas of concern or when a child shows weight gain moving from one category to the next, thus presenting with a weight issue. I also presented the CPG to the clinic administrators who noted that the recommendations in the

guideline would assist the FCPs to address the increasing cases of childhood obesity at the clinic.

An unanticipated limitation of the scoring process included the failure of the fourth expert to participate in the review process citing time limitations due to professional and personal responsibilities. According to Brouwers et al. (2017), four is the optimal number of reviewers as the number improves reliability of the CPG evaluation; however, three are acceptable. The set threshold was met since I proposed to involve between two to four experts. The CPG will result in positive social change for the community, the organization, and families and children with obesity by the FCPs' increased knowledge of diagnosing, preventing, managing, and treating childhood obesity. The children will lead healthier lives. The application of the guideline could benefit the community by reducing the healthcare costs associated with childhood obesity. The administrators/management will also benefit since their facilities will have a guideline that serves as an evidence-based roadmap for the diagnosis and management of childhood obesity, thereby, contributing to a healthy future.

Recommendations

The experts proposed changes to the CPG including the addition of the details about where the CPG was to be implemented. Walden University IRB guidelines state that the site is to be masked and that identifying a specific site is not appropriate; also, site identification would not be appropriate since I intend to share the CPG with other facilities for widespread implementation after graduation. Further, the experts recommended the separation of the dos and do nots under diet and activity

recommendations to enhance readability and comprehension, and I revised the CPG before presenting the project to the FCPs. Another recommendation was the evaluation of the barriers and facilitators for implementation of the guideline at the FCC. The barriers could include negative attitudes from practitioners, resistance to change, and an organizational culture that does not support evidence-based practice (Warren et al., 2016). These are areas the administrators at the clinic should evaluate to ensure a smooth transition towards the application of the guideline in practice. To overcome these barriers, the stakeholders should be trained on the importance of the CPG, the administrators should support application of the guideline in the clinic, and change champions should be selected to spearhead the implementation of the CPG in the practice. The administrators should ensure that the CPG is available within the clinic's electronic records where the information can be accessed easily by the FCPs. Last, the panel of experts recommended the implementation of the POA CPG at the FCC.

Training sessions will be recommended to introduce the end users to the CPG. The front matter is informational and educational and once the CPG has been presented, can be reviewed as necessary at the nurses' availability. The training sessions should include demonstrations on height/weight measurement, conducting a physical exam, and how to choose a pathway that fits the child's weight status. Depending on the results obtained, the facility educator should review how to choose the pathway that fits the child's weight status. Ideal weight should be a goal of all providers (Bucher Della Torre et al., 2018), and by following the steps of the CPG, the clinic staff can help the child

meet this goal, improving patient outcomes, minimizing related health complications, and saving healthcare dollars (Ward et al., 2021).

Administrative decision makers in FCCs should adopt policies supporting the implementation of the CPG in the clinical settings to ensure that use of the CPG becomes a part of the organizational norm and culture. The application of the CPG in the settings should be evaluated based on the number of at-risk children assessed and their parents educated on the measures for preventing childhood obesity, and the number of obese children prescribed with dietary and behavioral measures to manage the disease, and those who are treated successfully.

Strengths and Limitations of the Project

One of the strengths of the project is that the panel of experts who appraised and rated the guideline were experts on childhood obesity. The involvement of the panel of experts addressed the concerns relating to external review. A second strength was the use of current, peer-reviewed evidence published within the last 5 years, to inform the recommendations presented in the CPG.

The limitations included the failure of the fourth reviewer to appraise the CPG due to time constraints. Having one less reviewer affected the depth of the feedback on the guideline. The other limitation is that I developed the guideline single-handedly, which may have introduced the risk of bias in the project. Using current, evidence-based literature to develop the CPG minimized the risk of this bias. Nevertheless, the guideline was reviewed by my project chair who offered insights on needed improvements before presentation to the panel of experts further minimized this risk. I struggled with juggling

personal, professional, and school commitments. The busy nature of my clinical environment and responsibilities of mother and wife made it difficult to spend the time needed to work on the project. The COVID-19 pandemic, thankfully, did not interfere with the last step, and I was able to present the CPG to the clinic's end users and management in person. End users reported that the CPG is good, but the information has too much material for their short time with patients. However, I advised the FCPs to only focus on the pathways as each child's BMI is calculated on weigh-in during admission. The pathways outline the treatment plans after evaluation and identification of a child with obesity.

A proposed follow-up project is the evaluation of the impact of the implementation of the CPG at the clinic. The project could adopt a quantitative methodology whereby the managed cases of childhood obesity before and after the adoption of the CPG would be compared. Further, future projects will involve evaluating the FCPs' knowledge related to the recognition and treatment of childhood obesity.

Summary

Childhood obesity is a global epidemic and the development of a POA CPG to address childhood obesity is one approach to answering to the problem. A panel of experts reviewed and validated the newly developed CPG and recommended the CPG to be used at the clinic, noting the recommendations in the guideline were evidence-based, clear, and well-organized. In Section 5, I will present my dissemination plan and provide a self-evaluation.

Section 5: Dissemination Plan

As a professional responsibility, dissemination of knowledge is engraved in the 2015 American Nurses Association Code of Ethics, which calls for nurses to be involved in advancing the nursing profession through knowledge development, appraisal, dissemination, and application to practice (Milner, 2016). The key goal for knowledge dissemination is to inform practice changes and improve patient outcomes and experiences. I shared the findings from this DNP project with the management at the target FCC. After approval by the management, I shared the newly developed CPG with the practitioners at the clinic.

Project dissemination beyond the FCC will target different audiences including primary care practitioners and administrators whose concerted efforts contribute towards combating the childhood obesity epidemic. The key goal will be to empower the practitioners with knowledge to educate families about childhood obesity and deliver interventions for preventing and managing the disease (Seburg et al., 2015). Primary care practitioners, such as nurses and physicians, are responsible for diagnosing childhood obesity emphasizing the need to present clinical guidelines and recommendations to them. The providers are trusted sources of health information and the professional relationships developed with families can serve as a foundation for the delivery of interventions for preventing and managing childhood obesity (Seburg et al., 2015). Additionally, primary care practitioners can link families with community resources that offer support towards developing and sustaining healthy weight-related behaviors (Seburg et al., 2015). Primary care administrators are a crucial audience for the project

findings since their support will play a crucial role in the application of the CPG in practice.

I will submit a letter of query to the *Journal of Childhood Obesity* for consideration for publication. The journal targets practitioners, including primary and family care practitioners. The POA CPG project aligns with the issues covered in the journal, which focus on matters related to childhood obesity, and publication in the journal will ensure that the findings are disseminated to practitioners interested in childhood obesity.

I will share the project findings with other scholars and practitioners through nursing conferences. Examples of suitable conferences are Fundamentals of Obesity Treatment and Overcoming Obesity, both organized by the Obesity Medicine Association (Obesity Medicine Association, 2021). I will submit an abstract for consideration to present the project findings at World Obesity and Weight Management Congress which will be held in Orlando in October 2021 (Magnus Group Conferences, 2021). I will develop a poster presenting the background, methods, findings, and implication to practice sharing with other practitioners during the conference. Poster presentations should summarize distinct sections of the project including the background, methods, findings, and implication to practice (Sousa & Clark, 2019). Poster presentations are widely used in nursing to share evidence-based practices. Sharing with nurse scholars could serve as a launch pad for further research on the CPG. Nurse educators can use the findings to empower nursing students with knowledge on prevention and management of childhood obesity.

Analysis of Self

This POA CPG project has been instrumental in increasing my knowledge on childhood obesity. The project also created an opportunity for me to contribute to evidence-based practice through the development of the POA CPG. I envision the guideline will assist FCPs at the project setting and other clinics to diagnose, prevent, and manage childhood obesity. The project has also provided me with an opportunity to be involved in translation of evidence into effective nursing practices and policies. The experiences gained from the project will serve as a foundation for me to continue pursuing evidence-based practices and developing resources that can be used to address different problems in nursing practice. DNP-prepared nurses have a responsibility to improve clinical practices through the application of innovation and evidence as well as provide leadership towards quality improvement (Trautman et al., 2018).

The project contributed towards me as a scholar in the development of theoretical and practical knowledge on management of childhood obesity. The project has provided me with crucial skills needed for developing CPGs for application in practice. I will apply these skills toward the implementation of related projects to address other healthcare problems.

The project has equipped me, as a project manager, with important project management skills. For instance, I struggled to apply effective time-management skills to ensure each project deliverable was completed on time. The project also provided me with an opportunity to collaborate with the project chair towards developing a quality, evidence-based CPG on childhood obesity. I had to consult the project chair on different

issues and effect recommended changes. I also had to apply effective communication skills to enhance project success. I will apply these skills to manage and implement future projects in clinical practice. The project has increased my evidence-based practice skills as a DNP-prepared nurse. I will apply these skills, along with the leadership and project management competencies acquired from this experience, to achieve my long-term professional goals of becoming a nurse leader and practice scholar.

I experienced several challenges while working on the project. For instance, one of the content experts did not review the CPG due to other work commitments. I learned that it is important to consider such eventualities when developing the project plan. I also experienced challenges balancing personal, professional, and project responsibilities; I had to pause work on the project due to family problems. Additionally, the busy nature of the clinical environment meant I had little time to work on the project; I struggled to complete project deliverables in a timely manner, finding I had to create time for project-related activities. I had to revise the project report and CPG several times to ensure that my work was of high quality and met the scholarly expectations set for doctoral education. Despite feeling overwhelmed, I remained resilient and focused, and I managed to complete the project successfully. This experience has taught me the importance of focusing on the end goal and avoiding being distracted by challenges that manifested along the way.

Summary

Childhood obesity is a noteworthy public health problem at both the local and national levels. FCPs can play a major role in the prevention and management of

childhood obesity since they are the first point of contact in the health care system; however, they lack knowledge, confidence, and resources to care for patients with obesity. The target project setting lacked an effective, comprehensive, standardized childhood obesity guideline. Through this DNP project, I addressed this practice gap through the development of a POA CPG. With the implementation of the guideline, the expectation is that weight management practices among the FCPs will improve, leading to a reduction in the incidences of childhood obesity and related health burdens. The FCPs will use the guideline to educate families about the benefits of engaging in sustained physical activity and adopting healthy dietary changes. The CPG will become a new standard of care and will be shared with other FCCs to ensure wider adoption. The CPG will also be shared with other practitioners through conferences and publications; thereby serving as a source of knowledge on the prevention, treatment, and management of childhood obesity. The project provided me with an opportunity to apply project management skills such as time management, teamwork, and communication skills as well as skills on evidence-based practice.

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Appendix A: Literature Review Matrix

Levels of Evidence adapted from Melnyk & Fineout-Overholt's (2011) Rating System

Reference	Theoretical/ Conceptual Framework	Research Question(s)/ Hypotheses	Research Methodology	Analysis & Results	Conclusions	Grading the Evidence
<p>Cuda, S. E., & Censani, M. (2019). Pediatric obesity algorithm: A practical approach to obesity diagnosis and management. <i>Frontiers in Pediatrics</i>, 6(3), 431- 445. doi:10.3389/fped.2018.00431</p>	<p>Pediatric Obesity Algorithm</p>	<p>To summarize the points covered in the Pediatric Obesity Algorithm (POA) including pediatric obesity diagnosis, evaluation, and management.</p>	<p>Clinical guideline</p>	<p>Practitioners should physically examine children with obesity and educate parents about physiology of glucose metabolism and process of insulin resistance. The starting point for modification of food intake should be the understanding of suitable intake for a normal weight child.</p>	<p>Resources such as the POA aid in guiding health care practitioners with a practical and evidence-based approach for diagnosing and managing children with obesity while providing families with the tools necessary for a healthy future.</p>	<p>Level VII</p>

<p>Johnson, D. B., Podrabsky, M., Rocha, A., & Otten, J. J. (2016). Effect of the Healthy Hunger-Free Kids Act on the nutritional quality of meals selected by students and school lunch participation rates. <i>The Journal of the American Medical Association Pediatrics</i>, 170(1), 1-6. doi:10.1001/jama.pediatrics.2015.3918</p>	<p>Healthy Hunger-Free Kids Act</p>	<p>Determine the nutritional quality of foods chosen by students and meal participation rates pre and post implementation of new school meal standards authorized through Healthy Hunger-Free Kids Act (HHFKA).</p>	<p>Descriptive, longitudinal study.</p>	<p>-HHFKA leads to significant improvements in students dietary choices.</p>	<p>Food policy through improved nutrition standards linked with adolescent food choices.</p>	<p>Level VI</p>
<p>Jolly, A., Derouin, A., Wachtl, Z., & Sabol, V. (2018). Protocol for</p>	<p>N/A</p>	<p>To standardize screening and treatment of overweight and obese pediatric patients.</p>	<p>Quasi-experimental, pre-test and post-test quality improvement project</p>	<p>Clinicians demonstrated increased knowledge and confidence levels after</p>	<p>The implementation of EBP guidelines and standardizing childhood</p>	<p>Level III</p>

<p>treating obese pediatric patients. <i>The Journal for Nurse Practitioners</i>, 14(4), 77-80. doi:https://doi.org/10.1016/j.nurpra.2017.12.018</p>				<p>attending educational sessions on obesity screening and treatment.-</p>	<p>obesity screening and treatment improves patient care and outcomes.</p>	
<p>Karmali, S., Ng, V., Battram, D., Burke, S., Morrow, D., Pearson, E. S., Tucker, P., Mantler, T., Cramp, A., Petrella, R., & Irwin, J. D. (2019). Coaching and/or education intervention for parents with overweight/obesity and their children: Study</p>	<p>Coaching</p>	<p>Effect of coaching and health education intervention compared to health education on physical activity levels and dietary intake of 2.5-10 obese children and their parents, and parental motivation, and parental perspectives on</p>	<p>Single-center, randomized control trial</p>	<p>In progress</p>	<p>-Expected to offer crucial insights into the effect of coaching on parents with obesity and its role in the family unit.</p>	<p>Level II</p>

<p>protocol of a single center randomized controlled trial. <i>BioMed Central Public Health</i>, 19(1), 345-357. doi:10.1186/s12889-019-6640-5</p>		<p>the intervention program.</p>				
<p>Lien, A. S. Y., Tsai, J. L., Lee, J. T., Wu, M. Y., Jiang, Y. D., & Yen, H. R. (2017). A systematic review and meta-analysis of the effect of lifestyle modification on metabolic control in overweight children. <i>Evidence-Based Complementary and Alternative Medicine</i>, 1, 1-12.</p>	<p>N/A</p>	<p>To determine the effect of lifestyle modifications on fasting plasma glucose and BMI, fasting insulin level, and HbA_{1c} among obese children.</p>	<p>Systematic review & meta-analysis of RCTs.</p>	<p>The intervention groups of the analyzed RCTs had lower FPG levels, BMI, and insulin levels.</p>	<p>Lifestyle modifications programs are effective in reducing FPG levels among obese children.</p>	<p>Level I</p>

https://doi.org/10.1155/2017/5681909						
Pandita, A., Sharma, D., Pandita, D., Pawar, S., Tariq, M., & Kaul, A. (2016). Childhood obesity: Prevention is better than cure. <i>Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy</i> , 9(3), 83-104. doi:10.2147/DMSO.S90783	N/A	Child obesity as a key public health problem that requires early prevention interventions.	Literature review	-Physical activity and dietary interventions key in managing childhood obesity.	Interventions for preventing and managing childhood obesity include limiting sugar and high calorie intake and increasing consumption of vegetable-and fruit-based diet.	Level VI
Pearce, C., Rychetnik, L., Wutzke, S., & Wilson, A. (2019). Obesity prevention and the role of	N/A	Role of adult health services in obesity prevention.	Systematic Review	-Health professionals normally do not adopt obesity screening due to barriers (time and resource	-Health services to integrate obesity prevention through screening and referral.	Level V

<p>hospital and community-based health services: A scoping review. <i>BMC Health Services Research</i>, 19(1), 453-469. doi:10.1186/s12913-019-4262-3</p>				<p>limitations, individual attitudes, and lack of confidence and knowledge on obesity prevention and practice guidelines).</p>	<p>Obesity prevention efforts adopt a systems approach to evaluate how health service structures, policy, and practice interrelationships, service delivery boundaries, processes, and perspective impact on prevention.</p>	
<p>Rajjo, T., Mohammed, K., Alsawas, M., Ahmed, A. T., Farah, W., Asi, N. & Murad, M. H. (2017). Treatment of pediatric obesity: An umbrella</p>	<p>N/A</p>	<p>Interventions for reducing excess body weight in children and their effectiveness.</p>	<p>Systematic review</p>	<p>-Physical activity interventions reduce systolic blood pressure and fasting glucose. -Dietary interventions based on low-carbohydrate</p>	<p>Childhood obesity are effective in enhancing metabolic and anthropometric measures.</p>	<p>Level V</p>

systematic review. <i>The Journal of Clinical Endocrinology & Metabolism</i> , 102(3), 763-775. doi: 10.1210/jc.2016-2574				diets reduce BMI. -Education interventions linked with reduced waist circumference, BMI, and diastolic blood pressure.		
Rhee, K. E., Kessler, S., Lindback, S., Littman, M., & El-Kareh, R. E. (2018). Provider views on childhood obesity management in primary care settings: A mixed methods analysis. <i>BMC Health Services Research</i> , 18(1), 55-65. doi:10.1186/s12913-018-2870-y	N/A	Pediatric providers' views on implementing obesity management in primary care settings, identify potential resources, and care models.	Mixed methods study.	-Provider-level/individual barriers (such as lack of knowledge and confidence), practice-based/systems-level (insufficient time and resources), parent-level barriers (low motivation and follow up). -Environmental barriers such as lack of access to resources.	-Providers reluctant to conduct weight management on their own. -A collaborative approach to care recommended to improve health outcomes for pediatric obesity.	Level VI

				-Solutions: implementation of team-based approach to care, inclusion of best practice guidelines, provision of standardized handouts/resources.		
Salam, R. A., Padhani, Z. A., Das, J. K., Shaikh, A. Y., Hoodbhoy, Z., Jeelani, S. M., Lassi, Z.S. & Bhutta, Z. A. (2020). Effects of lifestyle modification interventions to prevent and manage child and adolescent obesity: A systematic review and meta-analysis.	N/A	To evaluate the impact of lifestyle interventions on childhood and adolescent obesity.	Systematic review	-Dietary changes and physical activity reduces BMI -Integration of behavioral therapy with these interventions yields positive outcomes.	It is best to combine lifestyle modification interventions with behavioral therapy for optimal outcomes.	Level V

<i>Nutrients</i> , 12(8), 2208- 2231. doi:10.3390/nu 12082208						
Smith, J. D., Fu, E., & Kobayashi, M. A. (2020). Prevention and management of childhood obesity and its psychological and health comorbidities. <i>Annual Review of Clinical Psychology</i> , 16, 351-378. doi:10.1146/ann urev-clinpsy- 100219-060201	Biopsychosocial model, ecological systems theory, The Six C's Model, and the developmental cascade model of pediatric obesity.	To describe the extent and nature of childhood obesity, its etiology, and intervention approaches.	Qualitative, descriptive literature review	The primary healthcare interventions that can be adopted to prevent and manage pediatric obesity include health education, physical activity sessions, and behavioral therapy.	EBP interventions for managing childhood obesity are available across developmental stages and contexts. Practitioners should connect the dots between etiology of the disease, child development, and the intervention targets.	Level VI
Srivastava, S. B. (2020). Is there a prescription to treat pediatric obesity?	N/A	To outline the place of pharmacotherapy in childhood obesity management.	Descriptive, literature review	-Orlistat is the only FDA approved medication for managing obesity among	-Clinical guidelines and interdisciplinary approach, individual patient	Level VI

<p><i>American Journal of Lifestyle Medicine</i>, 14(1), 36-39. https://doi.org/10.1177/1559827619881095</p>				<p>adolescents between 12 and 16 years.</p> <ul style="list-style-type: none"> - Pharmacotherapy is only recommended after intensive lifestyle modifications. - Pharmacotherapy to be avoided for <16 years old who are overweight, but not obese. 	<p>evaluation provides opportunities for combating pediatric obesity.</p>	
<p>Styne, D. M., Arslanian, S. A., Connor, E. L., Farooqi, I. S., Murad, M. H., Silverstein, J. H., & Yanovski, J. A. (2017). Pediatric obesity—assessment, treatment, and</p>	<p>N/A</p>	<p>To develop clinical practice guidelines for evaluating, treating, and preventing pediatric obesity.</p>	<p>Tool development</p>	<p>Diagnosis of childhood overweight and obesity should be based on body mass index (BMI). -Practitioners should consider genetic testing to identify genetic obesity</p>	<p>Childhood obesity can be prevented by promoting healthy dietary habits, non-sedentary lifestyles, and lifestyle modification interventions.</p>	<p>Level VII</p>

<p>prevention: An Endocrine Society Clinical Practice guideline. <i>The Journal of Clinical Endocrinology & Metabolism</i>, 102(3), 709-757. doi: 10.1210/jc.2016-2573</p>				<p>syndromes in patients. -Health dietary and activity education, prescription of healthy eating habits, engagement in physical activity, and healthy sleep patterns are among the recommended approaches for preventing childhood obesity. -Practitioners should prescribe and support healthy eating habits such as reduced consumption of fast foods, table sugar, sugar-sweetened beverages, and</p>		
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				recommendation of physical activity (20 minutes), reduce non-academic screen time, and pharmacological interventions accompanied by lifestyle modifications.		
Sutaria, S., & Saxena, S. (2019). How can family physicians contribute to ending childhood obesity? <i>Family Medicine</i> , 51(4), 308-310. doi:10.22454/FamMed.2019.181036	N/A	Family physicians role in child obesity prevention.	Qualitative descriptive literature review	-Limited resources, demands of acute health problems, and lack of confidence and self-efficacy in addressing child obesity limit family physicians child obesity efforts. -Family physicians should help parents understand and	Family physicians must be actively engaged in public health approaches and individual treatment towards ending child obesity.	Level VI

				accept child obesity and guide them on behavioral and diet changes for preventing long-term obesity.		
Valerio, G., Maffei, C., Saggese, G., Ambruzzi, M. A., Balsamo, A., Bellone, S., Bergamini, M., Bernasconi, S., Bona, G., Calcaterra, V., Canali, T., Caroli, M., Chiarelli, F., Corciulo, N., Crino, A., Bonito, P. D., Pietrantonio, V. D., Pietro, M.D., Sessa, A. D., Diamanti, A., Doria, M.,...Zito, E.	N/A	To provide the best evidence-based recommendations for preventing pediatric obesity.	Tool development	<ul style="list-style-type: none"> -The definition of obesity should be based on weight-to-length ratio or BMI. -Dietary and lifestyle changes necessary for a negative caloric balance. -Reduction of sedentary lifestyle and engagement in physical exercise recommended. -Adequate sleep recommended. 	-It is important to promote a healthy diet, physical activity, sleep pattern to prevent pediatric/childhood obesity.	Level VII

<p>(2018). Diagnosis, treatment and prevention of pediatric obesity: consensus position statement of the Italian Society for Pediatric Endocrinology and Diabetology and the Italian Society of Pediatrics. <i>Italian Journal of Pediatrics</i>, 44(88), 1-21.</p>						
<p>Wilfley, D. E., Staiano, A. E., Altman, M., Lindros, J., Lima, A., Hassink, S. G., Dietz, W. H., Cook, S., & Improving</p>	<p>N/A</p>	<p>Recommendations for management of childhood obesity.</p>	<p>Qualitative descriptive study</p>	<p>-Family-based multicomponent behavioral therapy. -Integrated care model. -Multi-disciplinary care.</p>	<p>Continued cross-sector collaboration important to ensure children access quality childhood obesity treatment.</p>	<p>Level VI</p>

<p>Access and Systems of Care for Evidence□ Based Childhood Obesity Treatment Conference Workgroup. (2017). Improving access and systems of care for evidence□ based childhood obesity treatment: Conference key findings and next steps. <i>Obesity</i>, 25(1), 16-29. doi: 10.1002/oby.21712</p>						
<p>Williams, S.E. & Greene, J. L. (2018). Childhood</p>	<p>N/A</p>	<p>Trends, impacts, and intervention efforts for</p>	<p>Qualitative Review</p>	<p>Causative factors for childhood obesity:</p>	<p>-Inclusive interventions targeting</p>	<p>Level VI</p>

<p>overweight and obesity: Affecting factors, education and intervention. <i>Journal of Childhood Obesity</i>, 3(2), 1-7. doi:10.21767/2572-5394.100049</p>		<p>childhood obesity</p>		<p>nutrition, physical inactivity, mental health and mood, and poor sleep hygiene. -Barriers hindering behavioral interventions for childhood obesity: lack of screening and counseling and socio-economic barriers. -Education and other interventions necessary to create awareness of nutritional guidelines.</p>	<p>causative factors needed.</p>	
<p>Yi, D. Y., Kim, S. C., Lee, J. H., Lee, E. H., Kim, J. Y., Kim, Y. J.,</p>	<p>N/A</p>	<p>To develop an evidence-based guideline on the diagnosis and treatment of</p>	<p>Tool development</p>	<p>-National growth charts BMI percentiles should be used to diagnose</p>	<p>Prevention and treatment of obesity should be initiated early in life to</p>	<p>Level VII</p>

<p>Kang, K. S., Hong, J., Shim, J. O., Lee, Y., Kang, B., Lee, Y. J., Kim, M. J., Moon, J. S., Koh, H., You, J., Kwak, Y., Lim H., & Yang, H. R. (2019). Clinical practice guideline for the diagnosis and treatment of pediatric obesity: recommendations from the Committee on Pediatric Obesity of the Korean Society of Pediatric Gastroenterology Hepatology and Nutrition. <i>Pediatric Gastroenterology, Hepatology</i></p>		<p>childhood obesity.</p>		<p>overweight and obesity in children. -The treatment approaches for the disease include lifestyle modification, treatment of comorbidities. - Pharmacotherapy & surgery should be considered on a need basis.</p>	<p>control the risk of developing the associated comorbidities.</p>	
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& <i>Nutrition</i> , 22(1), 1-27.						
Yusop, N. B. M., Shariff, Z. M., Hwu, T. T., Talib, R. A., & Spurrier, N. (2018). The effectiveness of a stage-based lifestyle modification intervention for obese children. <i>BMC Public Health</i> , 18(1), 1-10. doi:10.1186/s12889-018-5206-2	N/A	To evaluate the effectiveness of a stage-based lifestyle modification intervention in managing childhood obesity.	Randomized control trial	The intervention group reported a significant decrease in BMI levels and increase in physical activity. A decrease in calorie and carbohydrates intake was noted in both groups.	A stage-based intervention for modifying dietary and physical activity is effective in managing weight and obesity among children.	Level II

Melnyk, B. M., & Fineout-Overholt, E. (Eds.). (2011). *Evidence-based practice in nursing & healthcare: A guide to best practice*. Lippincott Williams & Wilkins.

Appendix B: Fineout-Overholt and Melynk's Rating System for the Hierarchy of Evidence for Intervention Studies

Hierarchy of Evidence for Intervention Studies		
Type of evidence	Level of evidence	Description
Systematic review or meta-analysis	I	A synthesis of evidence from all relevant randomized controlled trials.
Randomized controlled trial	II	An experiment in which subjects are randomized to a treatment group or control group.
Controlled trial without randomization	III	An experiment in which subjects are nonrandomly assigned to a treatment group or control group.
Case-control or cohort study	IV	Case-control study: a comparison of subjects with a condition (case) with those who don't have the condition (control) to determine characteristics that might predict the condition. Cohort study: an observation of a group(s) (cohort[s]) to determine the development of an outcome(s) such as a disease.
Systematic review of qualitative or descriptive studies	V	A synthesis of evidence from qualitative or descriptive studies to answer a clinical question.
Qualitative or descriptive study	VI	Qualitative study: gathers data on human behavior to understand <i>why</i> and <i>how</i> decisions are made. Descriptive study: provides background information on the <i>what</i> , <i>where</i> , and <i>when</i> of a topic of interest.
Expert opinion or consensus	VII	Authoritative opinion of expert committee.

Adapted with permission from Melynk BM, Fineout-Overholt E, editors. Evidence-based practice in nursing and healthcare: a guide to best practice [forthcoming]. 2nd ed. Philadelphia: Wolters Kluwer Health/Lippincott Williams and Wilkins.

Appendix C: AGREE II Instrument

DOMAIN 1. SCOPE AND PURPOSE

1. The overall objective(s) of the guideline is (are) specifically described.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

Comments

2. The health question(s) covered by the guideline is (are) specifically described.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

Comments

3. The population (patients, public, etc.) to whom the guideline is meant to apply is specifically described.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

Comments

DOMAIN 2: STAKEHOLDER INVOLVEMENT

4. The guideline development group includes individuals from all relevant professional groups.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree
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Comments

5. The views and preferences of the target population (patients, public, etc.) have been sought.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree
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Comments

6. The target users of the guideline are clearly defined.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree
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Comments

DOMAIN 3. RIGOUR OF DEVELOPMENT

7. Systematic methods were used to search for evidence.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree
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Comments

8. The criteria for selecting the evidence are clearly described.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree
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Comments

9. The strengths and limitations of the body of evidence are clearly described.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree
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Comments

DOMAIN 3. RIGOUR OF DEVELOPMENT *continued*

10. The methods for formulating the recommendations are clearly described.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree
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Comments

11. The health benefits, side effects, and risks have been considered in formulating the recommendations.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree
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Comments

12. There is an explicit link between the recommendations and the supporting evidence.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree
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Comments

DOMAIN 3. RIGOUR OF DEVELOPMENT continued

13. The guideline has been externally reviewed by experts prior to its publication.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree
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Comments

14. A procedure for updating the guideline is provided.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree
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Comments

DOMAIN 4. CLARITY OF PRESENTATION

15. The recommendations are specific and unambiguous.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree
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Comments

16. The different options for management of the condition or health issue are clearly presented.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree
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Comments

17. Key recommendations are easily identifiable.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree
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Comments

DOMAIN 5. APPLICABILITY

18. The guideline describes facilitators and barriers to its application.

¹ Strongly Disagree	2	3	4	5	6	⁷ Strongly Agree
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Comments

19. The guideline provides advice and/or tools on how the recommendations can be put into practice.

¹ Strongly Disagree	2	3	4	5	6	⁷ Strongly Agree
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Comments

20. The potential resource implications of applying the recommendations have been considered.

¹ Strongly Disagree	2	3	4	5	6	⁷ Strongly Agree
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Comments

DOMAIN 5. APPLICABILITY continued

21. The guideline presents monitoring and/or auditing criteria.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree
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Comments

DOMAIN 6. EDITORIAL INDEPENDENCE

22. The views of the funding body have not influenced the content of the guideline.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree
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Comments

23. Competing interests of guideline development group members have been recorded and addressed.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree
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Comments

OVERALL GUIDELINE ASSESSMENT

For each question, please choose the response which best characterizes the guideline assessed:

1. Rate the overall quality of this guideline.

1 Lowest possible quality	2	3	4	5	6	7 Highest possible quality
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2. I would recommend this guideline for use.

Yes	
Yes, with modifications	
No	

NOTES

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Appendix D: POA Clinical Practice Guideline on Childhood Obesity

Clinical Practice Guideline for Prevention and Management of Childhood Obesity

Procedures

- The screening for childhood obesity will be performed at the family care clinic upon the at-risk patient's first visit to the facility.
 - For children **below 2 years**, use weight-to-length ratio (WHO, 2006) reference (See Addendum A)
 - For children **between 2 to 5 years**, use body mass index (BMI) based on WHO 2006 reference (See Addendum A).
 - For children **above 5 years**, WHO 2006 reference should be followed (See Addendum B).

NB: The same concept is applied when calculating weight to length ratio or BMI, it is basically dividing a child's weight by its height.
- If a diagnosis of childhood obesity is confirmed
 - Initiate obesity management interventions
- For at-risk children
 - Initiate obesity prevention interventions
- A family-based, comprehensive, multi-disciplinary approach should be adopted to ensure successful implementation of behavioral interventions for managing childhood obesity.

Question

- What can be done by family care practitioners (FCPs) in community clinics to best prevent the occurrence of childhood obesity?

Target Population

- Overweight and obese children in community clinics or settings.

Recommendations

FCPs lack knowledge on how to diagnose childhood obesity and the confidence and education to care for patients with obesity.

- The target family care clinic lacks an effective and standardized comprehensive childhood obesity guideline.
- The clinic treats approximately 100 cases of childhood obesity, with a total of 130 children treated at the facility on a monthly basis.
- The childhood obesity rate at the clinic is 76.9%, much higher than the national rate of 19.3% as per 2017-2018 data (Robert Wood Johnson Foundation, 2020).

- Childhood obesity exposes children to chronic illnesses such as type 2 diabetes, hypertension, asthma, and joint problems (Centers for Disease Control and Prevention, 2016).
- The lifetime medical costs for childhood obesity are estimated at \$14 billion (Finkelstein et al., 2014).
- The high incidence of childhood obesity in this facility is an indication of the urgency to address the issue.
- Introducing evidence-based clinical tool to assess, diagnose, and manage childhood obesity will ensure children and families get access to current and appropriate evidence-based guidelines to manage the condition.
- An evidence-based guideline will also ensure improved patient education on the appropriate dietary and lifestyle changes.
- This clinical guideline will assist FCPs to diagnose childhood obesity and educate families about prevention of the condition.

Key Evidence

- FCPs lack knowledge and skills necessary for counseling, guiding, and educating families and patients on healthy habits to prevent and curb obesity (Aggarwal et al., 2018).
- They rarely evaluate body mass index (BMI) percentiles in children.
- Diagnosis of childhood obesity is based on weight to length ratio and BMI percentiles (Cuda & Censani, 2019; Styne et al., 2017; Valerio et al., 2018).
- Physical examination with a focus on skeletal problems, physical abnormalities, and physical activity levels is necessary (Cuda & Censani, 2019; Styne et al., 2017).
- Dietary changes and physical interventions are key in managing childhood obesity (Pandita et al., 2016; Rajjio et al., 2017; Salam et al., 2020).
- Health education is necessary for empowering families to prevent and manage childhood obesity (Smith et al., 2020; Styne et al., 2017).
- Pharmacotherapy is used after extensive lifestyle modification interventions (Cuda & Censani, 2019; Srivastava, 2020; Valerio et al., 2018).
- Family-based multicomponent behavioral therapy is necessary to support lifestyle modification (Wilfley et al., 2017).
- Bariatric surgery is considered on a need basis in cases of severe childhood obesity (Yi et al., 2019).

Guideline Monitoring

- The guideline should be re-evaluated every 3 years or when new recommendations for childhood obesity are published.
- The FCPs should assess and address barriers to the guideline's application as they arise and prior to implementation.

Diagnosis of Childhood Obesity

- The definition of overweight and obesity is founded on the use of percentiles of the weight-to-length ratio or body mass index, depending on sex and age.
 - Diagnosis of overweight among children **below 2 years** of age should be based on weight-to-length ratio as indicated in the World Health Organization (WHO, 2006) reference curves (See Addendum A).
 - For children aged **between 2 to 5 years**, the diagnosis should be based on body mass index (BMI) based on WHO 2006 reference (See Addendum A).
 - Severe obesity should be diagnosed if a child falls within the BMI > 99th percentile (+ 3 SDS from 2 years upwards).
 - For children **above 5 years**, WHO 2006 reference should be followed (See Addendum B).
 - Behavioral and dietary measures should be recommended for obese children.
 - Pharmacological and surgical interventions may be recommended among those with severe obesity.
- A child should be considered **at risk** of obesity in scenarios where there is no decrease or there is a premature rise in adiposity between ages 2-6 years.
- Clinicians should consider the influence of epigenetics on childhood obesity.
 - Children of obese parents have a higher risk for developing obesity
 - 30% if one parent is obese
 - 90% if both parents are obese

(Cuda & Censani, 2019; Styne et al., 2017)
- FCPs should carefully review a child's history:
 - Family history
 - Prenatal
 - Birth
 - Postnatal care
 - Medical history
 - Complications
 - Medications used to manage any comorbid conditions

Physical Examination

- Physically examine child for excess adipose tissue in areas such as the waist
 - Respect the child's right to privacy and confidentiality
 - Examine sequentially
 - Re-cloth the exposed body parts before moving on to the next part
- Observe for *acanthosis nigricans*
 - A cutaneous marker associated with hyperinsulinemia
 - Hyperpigmented velvety thickening of skin folds especially in the neck, axilla, and groin areas (Duff et al., 2015)
 - If seen:
 - Measures for weight reduction should be initiated if *nigricans* are seen
 - Differential diagnosis should also be conducted to rule out diabetes mellitus.
 - Educate parent on the physiology of glucose metabolism and process of insulin resistance (Cuda & Censani, 2018)
- Perform pubertal or *tanner staging* to determine growth potential
 - Address premature thelarche in females
 - isolated breast development in girls younger than 8 years of age
 - Gynecomastia (presence of breast tissue) among males
 - Excess adiposity exacerbates these conditions; hence confirming the diagnosis of obesity
- Evaluate for skeletal problems and physical abnormalities that occur in children with obesity
 - Blount's disease
 - Evaluate for inward turning (bowing) of the lower leg
 - Slipped capital femoral epiphysis
 - Evaluate for pain in the groin, inner thigh, or knee
 - Manifestation of stiffness and reduced ability to rotate the leg
 - Look for change in gait or walking style
 - Scoliosis.
 - Spinal examination for children aged between 10 to 12 years for females and 13 to 14 years for males:
 - View the iliac crests to examine for pelvic tilt and length of the legs to check for leg-length inequality
 - Scan the spine from the nape of the neck to the pelvis for symmetry

- Pay attention to:
 - Neck positioning
 - Shoulder height asymmetry
 - Asymmetry of the scapula and ribs
 - Paraspinous muscle bulk (McCarthy & Kelly, 2020).
- Assess physical activity levels
 - Inhibited
 - Examine for intertrigo
 - Evaluate for itching, burning, pain, and stinging in skin folds
- Snorers
 - Examine the tonsillar pillars
 - Use the Modified Mallampati Index to assess the soft thick palate and the uvula (See Addendum C).
 - Obesity most likely in patients under Class III and IV of the Index
 - Neck circumference.
 - Use a measuring tape placed immediately below the larynx and held perpendicular to the neck's longitudinal axis to measure neck circumference (Taheri et al., 2016).
 - Neck circumference correlated with body fat percentage. Adolescents with a NC ≥ 37 cm for boys and ≥ 34 cm for girls should be treated for obesity
- Use this opportunity to educate families on the physiology of glucose metabolism as well as the underlying process of insulin resistance. This information will be found in brochures on obesity in the office.

Management of Childhood Obesity

- **DO**
- Modify child's food intake
 - Children should have 3 meals per day and 1-2 nutritious snacks.
 - The daily intake should include
 - 2 servings of protein
 - 1-2 servings of dairy
 - 4-5 servings of non-starchy vegetables
 - Age appropriate portion sizes (See Addendum D)
 - Minimize sugar sweetened beverages and fast foods

- Parents should be educated to model the eating behaviors that need to be instilled in children.
- Parents should be advised to help children maintain a negative caloric balance to reduce their BMI levels
 - Negative caloric balance is burning more calories through activity than you take in with food.
 - To calculate caloric balance
 - Write down everything you eat and drink, including amounts, in each day. Use a nutrition database to look up the caloric content of everything you have consumed and add everything up to find your total caloric intake.
 - Calculate your caloric expenditure, which is the number of calories you burn in a day. The most precise way to do this is to wear a pedometer that calculates calories burned. You can also write down all of your daily activities and how long you did them, determine your energy expenditure during each activity using an online resource, and add them all up to find your total energy expenditure. For a little less precision, use an online tool that estimates your caloric expenditure, which is considered the same as your daily caloric need, based on your age, weight, height and activity level.
- Physical activities such as aerobic and resistance exercises like walking are recommended for fat mass reduction.
- Children to participate in 60 to 90 minutes of modest to vigorous physical exercise such as running and swimming
- Sedentary behaviors such as screen time, internet surfing, and video games, should be limited to 2 hours daily
- Behavioral therapy techniques such as goal setting, self-monitoring, stimulus control, and positive reinforcement should be established
- Family-based behavioral treatment should be applied to alter the lifestyle of entire families to enhance effectiveness
- Bariatric surgery is recommended for managing severe obesity among adolescents
- **DO NOT**
 - Don't prescribe weight loss medications such as orlistat and phentermine in cases of mild or moderate obesity.
 - only prescribe in cases of severe obesity among children aged 16 years and above.
 - keep in consideration the side effects of such medications before prescribing them

- only be administered after extensive lifestyle modification interventions.
- Don't recommend bariatric surgery except in cases involving severe obesity among adolescents.
 - BMI greater than 35/kg/m²

Prevention of Childhood Obesity

- Preventive interventions
 - Healthy food education
 - Promotion of physical activity
 - Behavioral modification.

Complications of Childhood Obesity

- Nonalcoholic fatty liver disease (NAFLD)
 - Screened based on alanine aminotransferase
 - ≥ 26 U/L (boys)
 - ≥ 22 U/L (girls)
 - Screened using an ultrasonography
- Diabetes
 - Prediabetes:
 - Blood sugar levels
 - Diagnosis is based on HbA1c of 5.7% to 6.5% (39 to 48 mmol/mol)
 - Screened based on fasting plasma glucose; 100–125 mg/dL (5.5–6.9 mmol/L) **or**
 - Two-hour plasma glucose; 140–199 mg/dL (7.8–11.0 mmol/L) (Yin et al., 2019)
 - Type 2 Diabetes:
 - Diagnosis based on
 - Abnormally high levels of blood glucose
 - HbA1c $\geq 6.5\%$ (≥ 48 mmol/mol)
 - Screened based on fasting plasma glucose
 - ≥ 126 mg/dL (≥ 7.0 mmol/L) **or**
 - Two-hour plasma glucose
 - ≥ 200 mg/dL (≥ 11.1 mmol/L) during an oral glucose tolerance test (Yin et al., 2019)
- Hypertension denoting high blood pressure.
 - Based on a systolic blood pressure

- 120–129 mm Hg
 - Diastolic blood pressure
 - 80 mm Hg, respectively
 - For children over 13 years
 - 130–139 mm Hg over 80–89 mm Hg - Stage I hypertension
 - >140/90 mm Hg - Stage II hypertension
 - Below 13 years
 - A diagnosis is made in reference to age, sex, and health
(Cuda & Censani, 2019)
- Dyslipidemia
 - Elevated cholesterol levels and low high density lipoprotein (HDL) levels
 - Normal < 150mg/dl
 - High range 200mg/dl to 499
 - Very high level > 500mg/dl
- Sleep disorders
 - apnea linked with snoring
 - disrupted sleeping
 - depression
 - hyperactivity
 - daytime sleepiness
 - audible pauses in breathing
 - nocturnal enuresis
- Other symptoms
 - irritability
 - learning difficulties
(Cuda & Censani, 2019)

Pediatric Weight Assessment

BMI:

Used for children aged 2-19 years

BMI = A. Multiply weight (in pounds) by 703

B. Multiply height (in inches) by itself

C. Divide (A) by (B)

Example:

Weight= 75.5 lb

Height= 56.5"

A. $75.5 \times 703 = 53076.5$

B. $56.5 \times 56.5 = 3,192.25$

C. $53076.5 / 3192.25$

BMI= 16.6 (Normal)

Note: You may also refer to the BMI chart in the clinic for this calculation.

Weight for Length Ratio:

Used for children under 2 years

- Length in centimeters/ Weight (lb)

Example:

Weight= 75.5 lb

Height= 56.5"

$56.5 \text{ inches} \times \text{conversion factor } (2.54) = \text{cm}$

$143.51 / 75.5 = 1.9$

Note: You may also refer to the weight/length chart in the clinic for this calculation.

Treatment Plan

Within normal limits

BMI between the 5th percentile and 85th percentile

Weight for length percentile ≥ 2 and < 98 (Healthy weight)

Continue to monitor at routine visits

Review dietary needs for age and size

Review physical activity needs for age and size

At risk/Overweight

BMI between the 85th and 95th percentile

Weight for length percentile ≥ 98

Follow Path A

Obese

BMI 95th percentile or above

Weight for length percentile > 98

Follow Path B

PATH A

At risk/Overweight: Dietary modification —> Engage in Physical Activity —>
Behavioral Modification

Healthy Food Education

DO

Observe the following dietary guidelines:

- Decrease consumption of fast foods
- Decrease consumption of added table sugar and eliminate sugar-sweetened beverages
- Decrease consumption of high-fructose corn syrup and improved labeling of foods containing high fructose corn syrup
- Decrease consumption of high-fat, high sodium, or processed foods
- Consume whole fruit rather than fruit juices
- Portion control
- Reduce saturated dietary fat intake for children and adolescents >2 years of age
- Increase dietary fiber, fruits, and vegetables
- Timely, regular meals and avoidance of constant eating during the day
- Identifying eating cues in the child's environment like. stress, boredom, screen time

Source: Styne et al. (2017)

Promotion of Physical Activity

WHO recommends the following for children below 5 years:

- Infants below 1 year:
 - Spend at least 30 minutes of physical activity such as floor-based play
 - Not restrained for more than 1 hour at a time
 - No screen time
 - 14-17 hours (0-3 months of age) or 12-16 hours of good quality sleep (4-11 months of age)
- Children aged 1-2 years
 - Spend at least 180 minutes in physical activities
 - Not restrained for over 1 hour at a time
 - No sedentary screen time
 - 11-14 hours of good quality sleep.
- Children aged 3-4 years:
 - At least 180 minutes of physical activity
 - Not restrained for more than 1 hour at a time
 - No more than 1 hour of sedentary screen time
 - 10-13 hours of good quality sleep.

Source: World Health Organization. (2019). Guidelines on physical activity, sedentary behavior, and sleep for children under 5 years of age. <https://apps.who.int/iris/bitstream/handle/10665/325147/WHO-NMH-PND-2019.4-eng.pdf>

WHO recommends the following for children and adolescents aged 5-17 years:

- Perform 60 minutes per day of moderate-to-vigorous intensity, particularly aerobic, physical activity, every week
 - walking

- Perform vigorous-intensity physical activities which strengthen muscle and bone for a minimum of 3 days per week
 - Jogging, jump ropes, jumping jacks, sports
- Limit screen time
 - Less than 2 hours per day

Source: World Health Organization. (2020). Physical activity.

<https://www.who.int/news-room/fact-sheets/detail/physical-activity>

Behavioral Modification

The following behavioral modifications are recommended to address childhood obesity:

- Limit mindless snacking
- Restrict TV and video game time to less than 2 hours per day
- Self-monitor nutritional intake and physical activity
- Meal planning
- Eliminate less healthy foods from home

DO NOT

- Do not prescribe medications such as orlistat
- Do not recommend bariatric surgery.
-

Follow up

- Assess the child's weight routinely during primary care visits

PATH B

Obese: Dietary modification → Engage in Physical Activity → Behavioral Modification
→ Medication as prescribed by physician → Bariatric surgery (in cases of severe obesity).

Follow Path A

Follow –up

- Assess the child’s weight routinely during their weight ,management visits every 4 weeks

Medications

- Consider medications such as orlistat and phentermine prescribed to children aged 16 and above if Plan A is ineffective within 6 months
 - Consider the side effects of the drugs before prescribing them

Surgery

- Bariatric surgery is recommended for managing severe obesity among adolescents
 - Consider after Plan A and medications are ineffective over 1 year

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Addendum A: WHO Child Growth Standards for Children Aged Under 5 Years

BMI-for-age GIRLS

Birth to 5 years (z-scores)

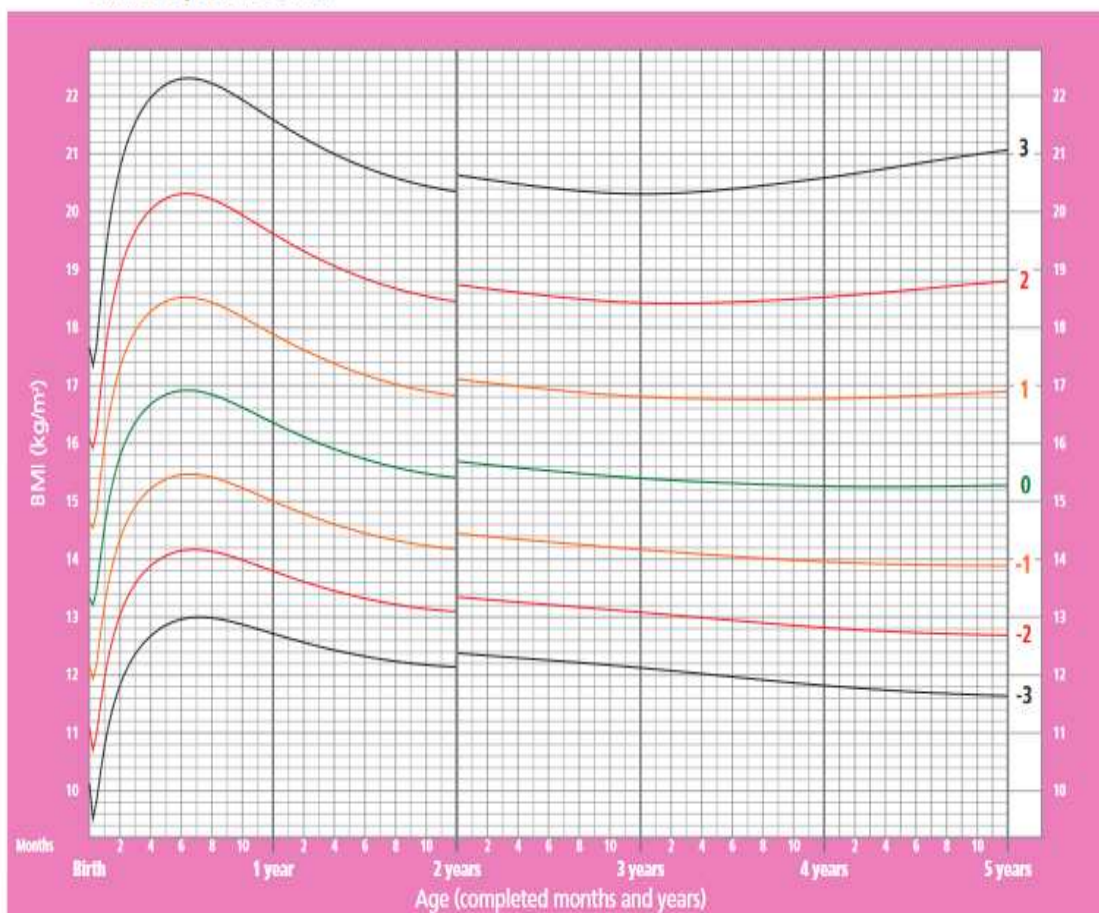
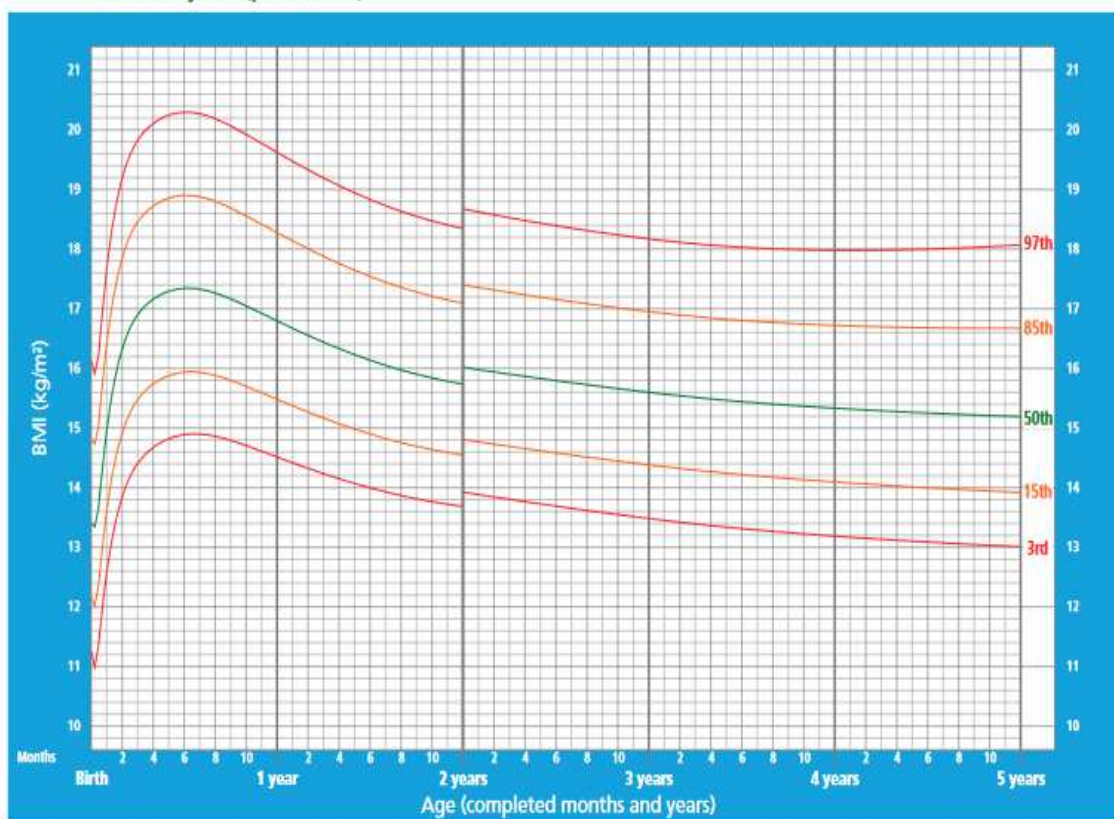


Figure 1. BMI-for-age girls: Birth to 5 years.

World Health Organization. (2020b). BMI-for-age. <https://www.who.int/tools/child-growth-standards/standards/weight-for-length-height>

BMI-for-age BOYS

Birth to 5 years (percentiles)



WHO Child Growth Standards

Figure 2. BMI-for-age boys: Birth to 5 years

World Health Organization. (2020b). BMI-for-age. <https://www.who.int/tools/child-growth-standards/standards/weight-for-length-height>

Addendum B: WHO Growth Reference for Children Aged between 5–19 Years

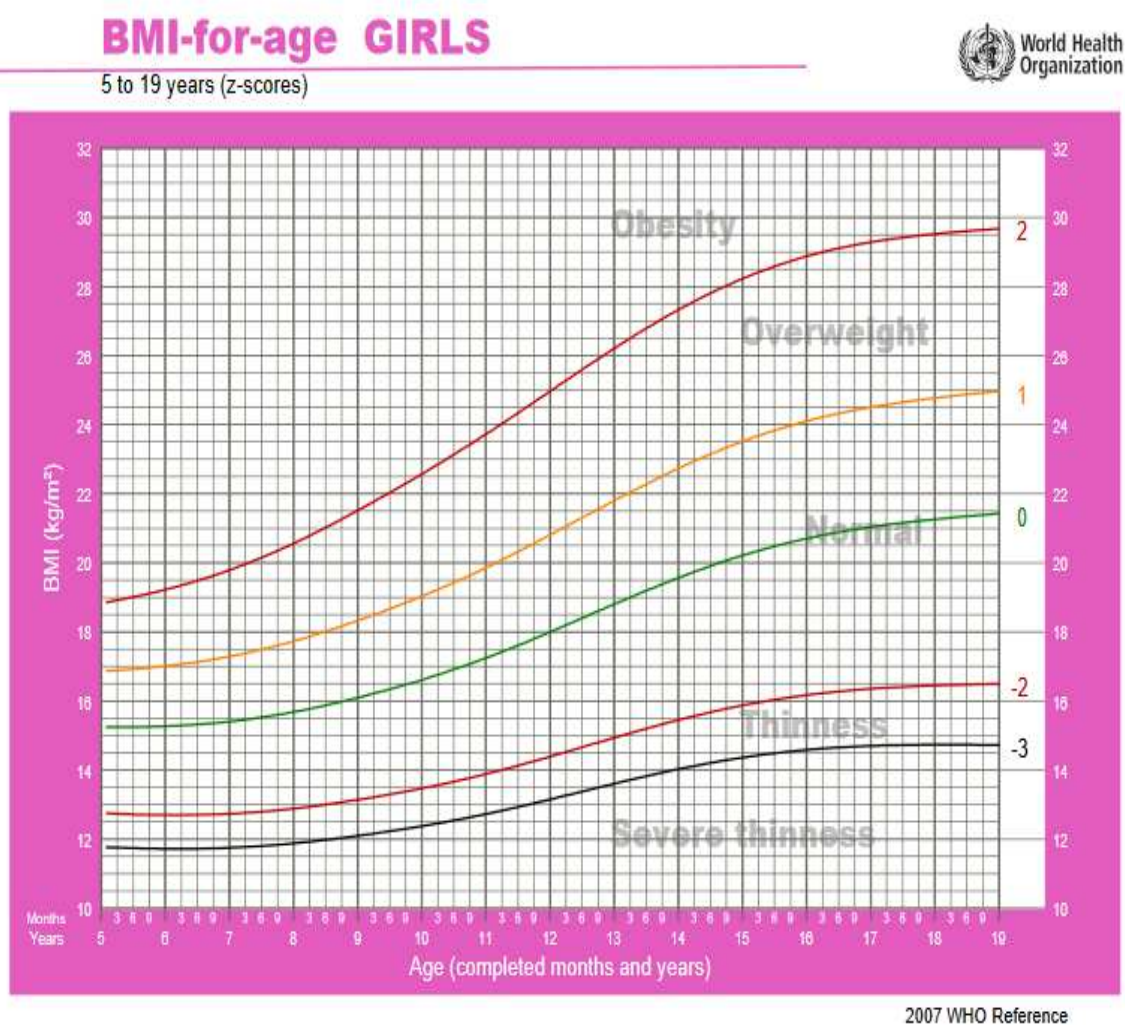


Figure 3. BMI-for-age girls: 5 to 19 years.

World Health Organization. (2020b). BMI-for-age. <https://www.who.int/tools/child-growth-standards/standards/weight-for-length-height>

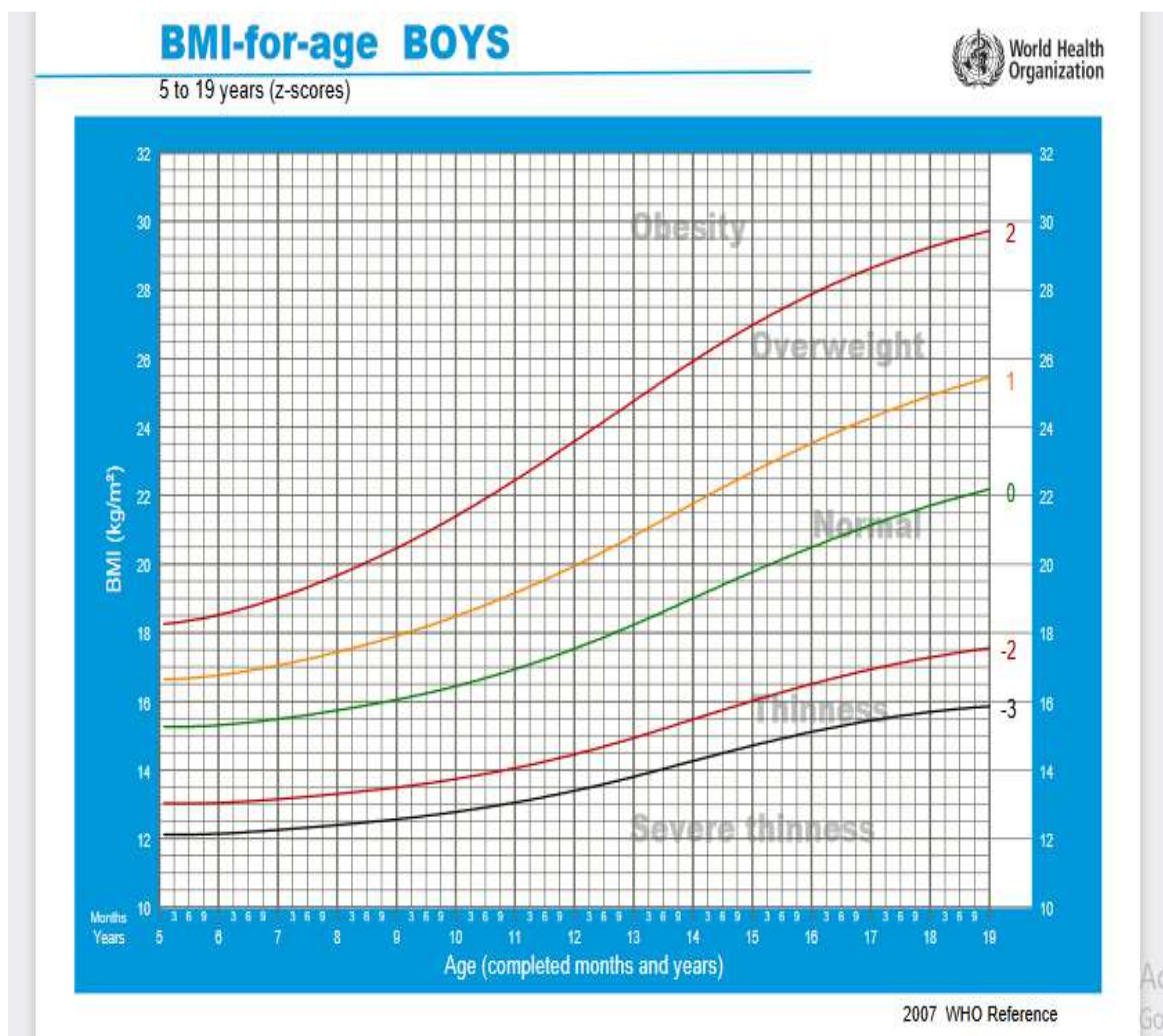
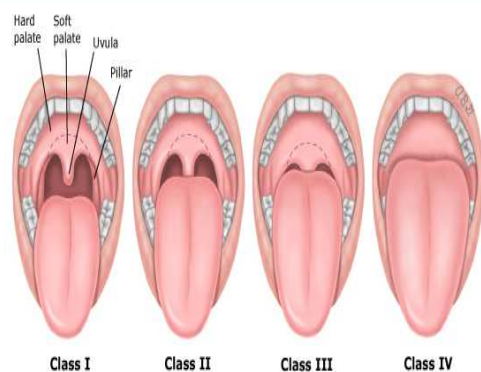


Figure 4. BMI-for-age boys: 5 to 19 years

World Health Organization. (2020c). BMI-for-age (5-19 years).

<https://www.who.int/tools/growth-reference-data-for-5to19-years/indicators/bmi-for-age>

Addendum C: The Modified Mallampati Index



The modified Mallampati classification^[1] is a simple scoring system that relates the amount of mouth opening to the size of the tongue, and provides an estimate of space available for oral intubation by direct laryngoscopy. According to the Mallampati scale, class I is present when the soft palate, uvula, and pillars are visible; class II when the soft palate and the uvula are visible; class III when only the soft palate and base of the uvula are visible; and class IV when only the hard palate is visible.

Reference:

1. Samssoon GL, Young JR. Difficult tracheal intubation: a retrospective study. *Anaesthesia* 1987; 42:487.

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Source: UpToDate (2020)

Addendum D: Guide on Age-Appropriate Portion Sizes

Food Group	Servings per Day	Portion Size for Ages 1 to 3	Portion Size for Ages 4 to 6	Portion Size for Ages 7 to 10
Fruits	2-3 servings	¼ cup cooked, frozen, or canned	¼ cup cooked, frozen, or canned	⅓ cup cooked, frozen, or canned
		½ piece fresh	½ piece fresh	1 piece fresh
		¼ cup 100% juice	⅓ cup 100% juice	½ cup 100% juice
Vegetables	2-3 servings	¼ cup cooked	¼ cup cooked	½ cup cooked
			½ cup salad	1 cup salad
Grains	6-11 servings	½ slice bread	½ slice bread	1 slice bread
		¼ cup cooked cereal, rice, or pasta	⅓ cup cooked cereal, rice, or pasta	½ cup cooked cereal, rice, or pasta
		⅓ cup dry cereal	½ cup dry cereal	¾-1 cup dry cereal
		2-3 crackers	3-4 crackers	4-5 crackers
Meats and other proteins	2 servings	1 ounce meat, fish, chicken, or tofu	1 ounce meat, fish, chicken, or tofu	1 ounce meat, fish, chicken, or tofu
		¼ cup cooked beans	⅓ cup cooked beans	½ cup cooked beans
		½ egg	1 egg	1 or 2 eggs
Dairy	2-3 servings	½ cup milk	½ cup milk	1 cup milk
		½ ounce cheese	1 ounce cheese	1 ounce cheese
		⅓ cup yogurt	½ cup yogurt	¾-1 cup yogurt

Adapted from Dietz WH, Stern L, eds. *Nutrition: What Every Parent Needs to Know*. 2nd ed. Elk Grove Village, IL: American Academy of Pediatrics; 2012:194

FOOD GROUP	TODDLER	PRESCHOOLER	SCHOOL-AGE AND UP
Breads & Starches			
Bread	¼ slice	½ slice	1 slice
Rice/pasta	¼ cup	1/3 cup	½ cup
Cooked oatmeal	¼ cup	1/3 cup	½ cup
Dry cereal	¼ cup	1/3 cup	¾-1 cup
Fruits			
Fresh fruit	2 tbsp.	¼ cup	1 cup
Juice	None	None	None
Canned fruit	2 tbsp.	¼ cup	½ cup
Vegetables			
Cooked	2 tbsp.	1/2 cup	¾ cup
Raw	¼ cup	½ cup	1 cup
Dairy			
Milk	½ cup	¾ cup	1 cup
Yogurt	½ cup	½ cup	1 cup
Cheese	1 oz.	1 & ½ oz.	2 oz.
Meat & protein			
Lean meat (chicken, turkey, fish)	1 oz.	1 & ½ oz.	3 oz.
Egg	½	1	1-2