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## BMI Screening Tool to Identify Elementary School Children at Risk for Obesity

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# Walden University

College of Nursing

This is to certify that the doctoral study by

Talia S. Thompson-Jones

has been found to be complete and satisfactory in all respects,  
and that any and all revisions required by  
the review committee have been made.

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Walden University

2022

Abstract

BMI Screening Tool to Identify Elementary School Children at Risk for Obesity

by

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MS, Walden University, 2016

BS, Chicago State University, 2005

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

Walden University

November 2022

## Abstract

Obesity is a public health epidemic and is as relevant in the pediatric population as it is in adults. The purpose of this DNP project was to develop a clinical practice guideline (CPG) that would use existing evidence to support the development of body mass index (BMI) screening in primary schools for the early detection of childhood obesity.

Globally, more than 41 million children were obese or overweight by 2018. Due to incidence rates, developing an effective strategy to address childhood obesity is critical.

The practice-focused question asked whether the evidence supported the development of a CPG for implementing BMI screening in elementary schools. For the literature review,

multiple public data sources were used to search key terms. For this project, the

conceptual model of nursing and health policy was used to identify areas of practice that work and those needing improvement. Using Bloom's taxonomy as a guide, steps were

followed until the CPG was developed to assist practitioners in early identification and treatment of childhood obesity in the identified school district in Illinois. Findings from

literature review were used to develop the practice guideline. The guideline was co-

developed by the school nurse and was reviewed by 22 anonymous expert panelists using

the AGREE II tool. Objectives were met by evaluating the practice problem, analyzing

the current system that was in place, applying knowledge into practice, creating a new

system, then ultimately explaining and educating the school staff on the new system for

possible implementation. This project was designed to help schools become partners with

parents and healthcare providers to identify BMI concerns early, leading to social change

for children, their families, communities, and institutions.

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## Dedication

I want to first give all honor and thanks to GOD, who is the head of my life, for giving me the strength, endurance, and resilience to pursue a career in healthcare and to continue this project to its completion despite the numerous frustrations, hurdles, and setbacks.

This project is dedicated to my family, who have supported me along the way throughout my academic career. Specifically, I want to thank my husband, who has offered support, motivation, and encouragement, especially during those times when I wanted to give up. I want to thank my mother for always telling me there is nothing in this world that I could not do. I want to thank my children for simply being, becoming their mother gave me the driving force to be great for them even when they may not have known. I want to thank my sister for always showing and telling me how proud she is of me. I then dedicate this to my Grandparents, who are watching from the Heavens above Asylean Ford, Catherine Thompson, John Thompson, and Ma and Pa Thompson. I want to thank my colleagues and friends who have supported and encouraged me throughout this project and my entire educational and professional journey.

Lastly, I give the greatest dedication to my daughter Mikaiya who has been the driving force for this project and the foundation for my momentum to close this gap in healthcare for children.

## Acknowledgments

Special thanks go to the faculty and staff at Walden University; I am forever grateful for their professional guidance, mentoring, and patience that enabled me to complete my DNP project successfully. I would also like to thank Dr. Marlyn Hirsch, DNP, for her guidance, insight, and mentorship throughout this program and my professional career. I am grateful to the instructors, academic advisors, and my project committee for the timely feedback and encouragement throughout this challenging process. Furthermore, I would like to pass on my sincere gratitude to my amazing family, friends, and colleagues who have supported me along the way.

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## Section 1: Nature of the Project

### **Introduction**

Obesity is a rapidly increasing and preventable cause of morbidity and mortality and has become just as important in the pediatric population as it is in adults. In 2018, over 41 million children under the age of 5 were obese worldwide (Centers for Disease Control and Prevention [CDC], 2021). Childhood obesity has reached epidemic levels and requires more attention due to significant effects on both physical and psychological health, and associated risks of staying obese in adulthood (Bhadoria et al., 2015). The purpose of this DNP project is to develop a clinical practice guideline (CPG) supporting the use of body mass index (BMI) screening within elementary schools to enhance early detection of obesity. This project will help schools become partners with parents and healthcare providers to identify the number of obese children. Walden University (2020) defined positive social change as a deliberate process of creating and applying ideas, strategies, and actions to promote the worth, dignity, and development of individuals, communities, organizations, institutions, cultures, and societies. Through this project, positive social change can be achieved for children, their families, communities, and institutions. Early identification through screening can lead to early diagnosis and treatment. Since obesity has been linked to poor health outcomes that include insulin resistance, cardiovascular disease, and early mortality. Addressing this problem may lead to an increase in economic and social wellbeing in the United States.

## **Problem Statement**

Obesity in children has not significantly decreased since 2003-2004. As of 2019, 18% of US children and adolescents, or 14.4 million children between the ages of 2 and 19 were affected (CDC, 2021). More recent research showed a break in the trends of childhood obesity. Rates grew from 0.4 to 0.7% per year between 1978 and 2004 but have now slowed to 0.1% per year from 2004-2016. Prevalence of this health issue has more than tripled from 5% in 1978 to 18.5% in 2016 (Anderson et al., 2019). Illinois is currently ranked 16th in the nation for childhood obesity for children between the ages of 10 and 17, which is an improvement compared to its 2009 ranking of four. Although Illinois rates of childhood obesity for this age group dropped from 20.7% to 17.4%, the state still falls above the national average of 16.2% (Eng, 2022). Potentially due to the COVID 19 pandemic, the nationwide obesity rate for children between 2 and 19 has increased from 19.3% in 2019 to 22.4% in 2020 (Antinori, 2021). At the target school district which served as the setting for this project, there is no current available percentage data for children who are obese or overweight.

Obesity has been associated with poor health outcomes that include insulin resistance, cardiovascular disease, and early mortality. Obesity is also linked to significant psychosocial and socioeconomic sequelae, depression, and suicide (Anderson et al., 2019; Häkkänen et al., 2018). To address childhood obesity, it must first be promptly identified in children who are overweight or already obese. Identifying children at risk for obesity could improve early diagnosis, purposeful treatment plans, and collaboration with parents (Häkkänen et al., 2018). Currently, schools in Illinois are

required to collect information on height and weight when children are initially enrolled. However, they are not required to leverage that information to screen for obesity. Parents who receive a report from their child's school that they are at risk for obesity were more likely to plan a visit to a healthcare provider or limit sugar-sweetened drinks compared to parents who did not receive such as report (Bailey-Davis et al., 2017).

This project has significance for nursing practice. Screening for obesity in elementary school students as a CPG would likely alter procedures for many clinics in schools and in pediatrician's offices. Identifying best practices for designing such a guideline could further impact nursing practice as it would enable nurses to screen students more efficiently for obesity.

### **Purpose Statement**

The purpose of this project was to develop a CPG that will assist practitioners in early identification and treatment of childhood obesity. To address this, the following practice-focused question was asked:

Does evidence support the development of a CPG for the implementation of BMI screening in elementary schools?

As previously noted, while schools in Illinois are required to collect information on height and weight when children are being initially enrolled, they are not required to use collected information to screen for obesity. According to White (2016), "Nurses have a pivotal role in keeping patients safe and in narrowing the gap between evidence-based practice (EBP) and common practice" (p. 98). By identifying risks for obesity early,

children could be positively influenced by healthy behaviors that can extend to adulthood. Parents' health is often improved as their children engage in healthy habits, schools fosters healthy lifestyles for all children, communities thrive because less economic resources are required for treating obese children and adults, and overall cultures are improved by having healthy individuals work towards improvements for society (Zaccagnini & Pechacek, 2019). Through this project and the development of a CPG, a gap in healthcare related to childhood obesity screening was addressed.

### **Nature of the Doctoral Project**

There was a current gap in practice related to a CPG that will assist practitioners in early identification and treatment of childhood obesity. This project can fill this gap in practice by developing such a guideline. For this project, multiple public data sources such as the World Health Organization (WHO), the CDC, local news outlets, and peer-reviewed articles found on Google Scholar, CINAHL, Medline, and PubMed databases were used. This project was conducted to develop a CPG that will alert parents when a child is identified as being obese or is at risk of obesity.

The setting for this doctoral project was an elementary school in a school district identified in Illinois. This setting provided needed context for the project, as schools in Illinois are already required to collect information on height and weight when children are being initially enrolled, then again in sixth grade. However, information is not being used for any purpose in this school district. Schools in the district currently do schedule vision, dental, or hearing screening or alert parents if followup care is needed. This

project involved developing a CPG for staff to do BMI screening with guidance to alert parents when a child is either identified as obese or is at risk for obesity and follow up with their healthcare provider.

### **Significance**

When implementing an evidence-based change, it is imperative to involve stakeholders who are representatives of the system undergoing change. In this project, stakeholders include school administrators, school nurses, healthcare providers, parents, and students. Both individuals and organizations who have a vested interest in outcomes and evaluations of changes should be viewed as essential partners (Salabarría-Peña et al., 2007). For this project on childhood obesity, involving children, families, the school system, healthcare team, and community was necessary. This project was designed to help schools become partners with parents and healthcare providers to identify the number of at-risk and obese children.

Preventing and/or correcting obesity by age 10 is significant because obese children become obese adults and develop chronic medical conditions that are typical of adults. Interventions involving promoting healthy behaviors in childhood are a strategy for preventing obesity in adulthood. Treating obesity in adulthood poses more difficulties than changing lifestyle habits during childhood (Lambrinou et al., 2020). Pediatric BMI screening helps to identify children at risk for obesity and could improve early diagnosis, purposeful treatment plans, and collaboration with parents (Häkkinen et al., 2018).

Identifying obese children early is aligned with the DNP's role as described by Essential VII (Clinical Prevention and Population Health for Improving the Nation's Health).

BMI screening in elementary school students as a CPG could easily be transferable to the areas of education, teaching, and school-based literature and journals involving sex education or general health education. Schools are an essential setting for intervening in children's obesity-related behavior because they are able to reach many children in a short period of time (Lambrinou et al., 2020).

Through this project, positive social change can be achieved. By identifying risks for obesity early, children could be positively influenced by healthy behaviors that can extend to adulthood, ultimately decreasing risks of obese children staying obese or becoming obese adults. Decreasing rates of obesity can lead to better economic and social wellbeing for the nation.

### **Summary**

Development of a CPG supporting use of BMI screening within elementary schools to enhance early detection of obesity is the primary focus of this project. CPGs should be developed to optimize patient care by identifying recommendations that are based on a systematic review of evidence while considering benefits and harms of other care options (National Academies of Science Engineering and Medicine [NASEM], 2018).



In the next section, I discuss the nursing theory and model used to guide this project, goals and objectives of the project, and its significance to nursing practice and the target school district in Illinois.

## Section 2: Background and Context

Obesity is a rapidly increasing and preventable cause of morbidity and mortality and has become just as important in the pediatric population as it is in adults. In 2018, over 41 million children under the age of 5 were obese worldwide (CDC, 2021). This project involves identifying evidence that supports the development of a CPG for the implementation of BMI screening in elementary schools. The purpose of this project was to develop a CPG that will assist practitioners in early identification and treatment of childhood obesity.

In this section, the background and context for the project are provided. This includes a discussion of concepts, models, and theories that informed this project. Terms relevant to the project are clarified. The local background and context are also discussed, followed by the role of the DNP student and the project team. Finally, I address the gap in practice that demonstrated the need for this project.

### **Concepts, Models, and Theories**

This doctoral project is guided by the conceptual model of nursing and health policy, Bloom's taxonomy framework, and principles of EBP. The conceptual model of nursing and health policy can guide improvements in practice by identifying areas of practice that work, as well as areas needing improvement (Hartmann, 2013). Bloom's taxonomy was used as a framework for educating school staff on the new CPG for implementation. EBP can guide clinical judgment in many areas of healthcare by supporting researchers and practitioners to make evidence-based decisions that strength

high-quality services (ASHA, 2022). Together, these models and frameworks support the overall goals of this project, which is to develop a CPG that will assist practitioners in early identification and treatment of childhood obesity.

### **Bloom's Taxonomy**

In Bloom's taxonomy, there are six main categories of learning in the cognitive domain: remembering, understanding, applying, analyzing, evaluating, and creating (Thompson, 2010). During the remembering stage, the learner becomes able to recall facts and basic concepts involving the area of study. During the understanding stage, the learner can explain ideas and concepts. During the applying stage, the learner effectively uses information in new situations. During the analyzing stage, the learner draws connections between ideas in original ways. During the evaluating stage, the learner is able to justify a decision. Finally, during the creation stage, the learner produces new and original work based on their understanding and mastery of the concept (Thompson, 2010). This framework was used as the foundation for this project. Using Bloom's taxonomy as a guide, I followed steps until the CPG was developed to assist practitioners in terms of early identification and treatment of childhood obesity.

In keeping with the structure of Bloom's taxonomy, objectives were met by evaluating the practice problem, analyzing the current system that was in place, applying knowledge into practice, and creating a new system, then ultimately explaining on the new system. According to Armstrong (2021):

The framework elaborated by Bloom and his collaborators consisted of six major categories: Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation. The categories after Knowledge were presented as “skills and abilities,” with the understanding that knowledge was the necessary precondition for putting these skills and abilities into practice. (p. 1)

### **Conceptual Model of Nursing and Health Policy**

This project was further guided by the conceptual model of nursing and health policy. The conceptual model of nursing and health policy was designed by and for nurses and was created to expand nursing knowledge through EBP. According to Fawcett and Russell (2001), Level 1 of the conceptual model of nursing and health policy is concerned with the impact of nursing practice processes on the health outcomes of people, families, groups, and communities. Level 2 focuses on the effectiveness of delivery systems for nursing practice. Level 3 focuses on the efficacy and productivity of a particular health care delivery system. Level 4 emphasizes equitable access to effective and efficient nursing practice processes and delivery systems. Level 5 focuses on social justice. Hartmann (2013) indicated that this model can assist practitioners in guiding improvements in patient care by identifying areas where culture change is having positive effects as well as areas that could benefit from modification; and by emphasizing the significance of the countless viewpoints of residents, family members, staff, management, and leadership in culture change. According to Fawcett (2018), this model offers a framework for the investigation and evaluation of health policies that impact the quality as well as the cost of and access to nursing and other types of health care services.

## **Principles of EBP**

Finally, the principles of EBP informed this project. EBP involves integrating clinical expertise and expert opinion with internal and external evidence and client, patient, and caregiver perspectives to create a comprehensive practice guide that can inform clinicians to make best decisions with their patients (American Speech-Language-Hearing Association [ASHA], 2022). According to the ASHA (2022), when clinical expertise, evidence, and client perspectives are taken in conjunction, clinicians can make educated and evidence-based decisions and provide superior services involving activities, beliefs, needs, and choices of individuals with communication disorders.

This doctoral project was guided by the conceptual model of nursing and health policy, Bloom's taxonomy framework, and principles of EBP. By integrating these models and concepts, I developed a CPG that will assist practitioners in early identification and treatment of childhood obesity. I created a framework that outlined key steps to create new information, a model for considering and evaluating best practices, and a framework for implementing such a model into nursing practice.

## **Definitions of Terms**

Throughout this study, the following terms are used repeatedly:

*Clinical practice guidelines (CPG)*: CPGs are recommendations based on evidence gained through systematic review of published literature. Once developed, these guidelines are to be considered by professionals and healthcare providers as generally

recommended courses involving diagnostics, treatment, and interventions in management of patients (National Center for Complementary and Integrative Health, 2022).

### **Relevance to Nursing Practice**

It is critically important to nursing practice to address childhood obesity. Obesity has been associated with poor health outcomes which include insulin resistance, cardiovascular disease, and early mortality. Obesity is also linked to significant psychosocial and socioeconomic sequelae, depression, and suicide (Anderson et al., 2019; Häkkänen et al., 2018). Children between 2 and 10 are often underdiagnosed and undertreated, placing them at risk to become obese adults. According to Lambrinou et al. (2020), in order to enhance health and reduce the risk of obesity, early childhood is the time to instill appropriate lifestyle choices, such as healthy eating habits, physical activity, and limited idle time. Overweight preschoolers are more likely to become obese adults than their normal-weight friends, indicating a correlation between childhood obesity and adulthood.

The WHO (2018) reported physical inactivity as the fourth leading risk factor for global mortality, accounting for 6% of deaths globally. Physical inactivity was responsible for 6% of the incidences of coronary heart disease, 7% of Type 2 diabetes incidences, 10% of breast cancer cases, and 10% of colon cancer incidences (WHO, 2018). Furthermore, if physical inactivity could be decreased by 25%, more than 1.3 million deaths could be averted every year (Lee et al., 2014). The causes and risk factors of chronic diseases such as cardiovascular disease, stroke, diabetes, cancer, obesity, and

arthritis are well established and documented, with a small set of common risk factors being responsible for most of those chronic diseases. These risk factors, which include unhealthy diet, and physical inactivity are modifiable and are the same for men, women, and children.

Childhood obesity has reached epidemic levels and requires more attention, due to the significant effects on both physical and psychological health, and the associated risk of staying obese in adulthood (Bhadoria et al., 2015). It is believed that roughly 17% of children and adolescents under 20 years old in the U.S. are obese, and nearly 32% of juveniles are overweight or have obesity (U.S. Preventive Services Task Force, 2017). Although childhood obesity affects all children between the ages of two to 19 years of age, more emphasis should be placed on control of obesity in children between two and 10 years, as this specific population is not often the focus of research which regularly targets very young children or teenagers (Anderson et al., 2019; Häkkinen et al., 2018). Additionally, there is reason to believe this is the age when interventions can produce the most long-lasting change (Anderson et al., 2019). When data was analyzed across age distribution, birth cohorts and subgroups of interest, there was a steady increase in prevalence of obesity through age ten with no significant changes in levels thereafter (Anderson et al., 2019). Preventing and or correcting obesity by age ten is significant because obese children become obese adults.

The DNP program is built on expanding and developing nursing leadership through education ("AACN Fact Sheet DNP", 2020). Nurses have a pivotal role in

keeping patients safe and in narrowing the gap between EBP and common practice (White et al., 2016). My journey through the DNP program has promoted my professional growth as a clinical leader. By developing my knowledge and skills to use EBP and facilitate changes in healthcare by applying current research to practice problems. I learned through this program that as a DNP prepared nurse practitioner, unlike PHD prepared nurses we do not usually develop research, instead we study ways that existing evidence can be used to answer clinical questions, offer guidance through EBP, initiate ways to improve access to care, identify alternative treatment methods evidenced by current research, identify, and address systematic failures, and educate staff through competency-based education. This DNP project is relevant to nursing practice and closing a gap in the healthcare of children.

Currently, schools in Illinois are required to collect information on height and weight when children are initially enrolled, then again in the sixth grade. However, they are not required to leverage that information to screen for obesity. Research indicates that parents who receive a report from their child's school that they are at-risk for obesity were more likely to plan a visit to a healthcare provider or limit sugar-sweetened drinks than parents who did not receive such a report (Bailey-Davis et al., 2017).

Primary prevention, followed by early identification through screening, with an individualized treatment plan for affected children, which incorporates the child's family, school system, and the medical team would be optimal. The school can be utilized as a primary setting to screen for obesity just in case the identification is missed in the



primary medical setting. Primary care providers (PCP) should play a pivotal role in early detection, diagnosis, and interventions to manage obesity, but research shows that often PCPs fall behind in these areas. In a research study based in Finland, it was identified that providers rarely gave the diagnosis of obesity. Of 157 children identified to be obese only 29% were given the actual diagnosis causing them to not benefit from special programming (Häkkinen et al., 2018). The study also identified a gap between reality and clinical guidelines (Häkkinen et al., 2018). The role of the PCP is monumental in primary prevention of obesity and substantial opportunities are being missed during well-child visits beginning with infancy. According to Young (2010), PCPs were not effective in preventing, recognizing, or treating obesity, and only about half of the pediatricians systematically determine the BMI of their patients. Although primary prevention through education is the standard of care and early screening in the primary medical home is the accepted norm a gap in identification of obese children exists.

Guidelines exist for BMI screening of children and adolescents in a primary care setting (U.S. Preventive Services Task Force, 2017). However, these guidelines do not encompass BMI screening in a school setting. According to the U.S. Preventive Services Task Force (2017) all children and adolescents should be screened for obesity using age- and sex-specific BMI calculation. The BMI is calculated as weight in kilograms divided by the square of height in meters. Percentiles linked to age and sex are then used to judge BMI above or below the expected range (U.S. Preventive Services Task Force, 2017). Children and adolescent are considered obese if they are in the 95% percentile or above for their age and sex. Children and adolescents are considered very obese if they are

above 120% of the range for their age and sex (U.S. Preventive Services Task Force, 2017).

Using BMI to screen for obesity is considered controversial by some providers, as it is not always an accurate measure of overall health and appropriate body mass (U.S. Preventive Services Task Force, 2017). Individuals who are highly muscled, for example, will often screen positive for obesity, since their weight will be greater than expected for their height. Some consider body fat percentage, calculated using circumference measuring, to be a better indicator of overall body condition (U.S. Preventive Services Task Force, 2017). However, this is not the U.S. Preventive Services Task Force's preferred method of BMI screening for children and adolescents as it is considered less feasible to execute in a primary care setting. When used as a screening tool, rather than a definitive test for obesity, BMI measurement is the preferred method as it is less burdensome for the provider, and invasive for the child or adolescent (U.S. Preventive Services Task Force, 2017).

Through this project, a CPG was developed for school staff to screen for obesity then alert parents when a child is either identified as obese or is at risk for obesity and to follow-up with the child's health care provider. The key to closing gaps in healthcare delivery is evaluating the distribution of health outcomes, the determinants that influence distribution and the policies and interventions that effect the determinants in each population (Nash et al.,2021). Interventions promoting healthy behaviors in childhood provide a strategy for preventing obesity since studies proved that treating obesity in

adulthood poses more difficulties than changing lifestyle habits during childhood.

Schools are an essential setting for BMI screening for several reasons. Primary school education is compulsory for all children in most countries and reaches all children with different backgrounds and this setting offers the ability to reach many children in a short period of time (Lambrinou et al., 2020). The purpose of this DNP project was to develop a CPG supporting the use of BMI screening within elementary schools to enhance early detection of obesity, which will hopefully lead to early interventions and corrective action if needed.

### **Local Background and Context**

Illinois is currently ranked 16 in the nation for childhood obesity for children between the ages of 10 and 17 years which is improved from its 2009 ranking of number 4. And although the Illinois rates of childhood obesity for this age group dropped from 20.7% to 17.4%, the state still falls above the national average of 16.2% (Eng, 2022). Potentially due to the COVID 19 pandemic the nationwide obesity rate for children ages two through 19 years has increased from 19.3% in 2019 to 22.4% in 2020 (Antinori, 2021). This global public health epidemic has no race, gender, or age group specific exclusions (Gordon et al., 2021). Current research highlights the lack of provider documented diagnosis of obesity by ICD codes. The documented diagnosis of obesity is disproportionate to the prevalence of this condition in the United States. In one study the prevalence of obesity by ICD code was 0.93% while the national rate of obesity was 20.5% (Reed et al., 2016). The lack of identification and diagnosis is the foundation for the lack of counseling, education, treatment planning, and early intervention. According

to Reed et al. (2016), “Pediatric care providers have opportunities to implement innovative ways to improve their identification, prevention, and management efforts, including decision prompts in the EMR” (p. 865).

The setting for this doctoral project was an elementary school in a school district identified in Illinois. This setting provided the needed context for the project, as schools in Illinois are already required to collect information on height and weight when children are initially enrolled but not again until sixth grade. However, the information is not being used for any purpose in this school district. The schools in the district currently schedule vision screening, dental screening, and hearing screening and alert the parents if follow-up care is needed.

Primary prevention, followed by early identification through screening, with an individualized treatment plan for affected children, which incorporates the child's family, school system, and the medical team would be optimal. The school can be utilized as a primary setting to educate and screen for obesity just in case the identification is missed in the primary medical setting. PCPs should play a pivotal role in early detection, diagnosis, and interventions to manage obesity, but research shows that often PCP's fall behind in these areas. The role of the PCP is monumental in primary prevention of obesity and substantial opportunities are being missed during well-child visits beginning with infancy. Again, primary prevention through education is the standard of care and early screening in the primary medical home is the accepted norm but a gap in identification of obese children exists.

According to the Illinois State Board of Education (ISBE) it is required for schools in Illinois to collect health data for immunizations, dental examinations, and eye examinations. BMI information is required on school entrance forms but there is no monitoring system in place and the data is not consistently available (Deardorff, 2013). In some Illinois schools the information is reported to the state but is not given to the individual students or families and the Chicago public schools system (the largest public school system in Illinois) only reports aggregated information.

### **Role of the DNP Student**

The AACN (2020) defines scholarship in nursing as those activities that systematically advance the teaching, research, and practice of nursing through rigorous inquiry that is significant to the profession, creative, can be documented, can be replicated or elaborated upon, and can be peer-reviewed in a variety of ways. It is the role of the DNP prepared nurse to disseminate evidence into practice. Dissemination is the final phase of evidence translation, and the three main methods include posters, presentation, and publication (White et al., 2016). These three methods of dissemination of evidence are beneficial in the scholarship of nursing practice. Practice scholarship includes all aspects of the delivery of nursing care with direct impact on solving problems in and improving healthcare (AACN, 2020). As DNP prepared nurses, it is not necessarily our role to create new research, but to challenge existing research and put new evidence into practice. Theory through EBP is the foundation of many clinical guidelines and is used to lead practice decisions.

Childhood obesity is a growing issue for society which has been even more intensified by the COVID 19 pandemic. Pre-COVID in 2018 over 41 million children under the age of five were obese worldwide, and obesity affecting children throughout the nation has not been significantly decreased since 2003-2004 (CDC, 2021). As a former emergency department (ED) nurse, it was alarming to see the number of children who presented for care with chronic medical issues such as hypertension (HTN), type 2 diabetes (DM2), and hyperlipidemia (HLD). I have also been personally affected by this epidemic with a child who was never screened or diagnosed which led to a failure in early treatment and/ or interventions. When my daughter was about 11 years old, I took her for her annual checkup, and she got on the scale and weighed 192 pounds, and this was the first time her PCP even mentioned possible interventions. Shortly after she had to have surgery for severe sleep apnea, she was diagnosed with pre-diabetes, HTN, and she developed Acanthosis Nigricans. This was not acceptable, and this is not acceptable for any child. Early screening and identification of childhood obesity is so imperative to the health and wellbeing of the children who become the future. As the project leader I chose a school district for this project that is in the community where I live with the hopes that it will be accepted as a CPG for the district, followed by surrounding school districts and ultimately for the state of Illinois. Provision 8 of the American Nurses Association (ANA) Code of Ethics states: “The nurse collaborates with other health professionals and the public to protect human rights, promote health diplomacy, and reduce health disparities” (para. 4). Through this DNP project, Provision 8 was met.

There are no foreseen biases in developing a CPG to screen for childhood obesity in schools. The goal of this CPG was to identify children at risk for obesity early. There is no benefit in the number of children who are identified as obese or at risk for obesity versus those who are screened to not be obese or at risk. The primary benefit for the development of this CPG is to identify then notify. However, as the project leader I will develop a standardized screening tool for use by the school staff. Using standardized checklists/screening tools is effective, allows for greater opportunities for replication, and eliminates interviewer biases (Friis et al., 2014).

### **Role of the Project Team**

As the project leader, I contacted elementary schools to require permission to conduct the project until one school agreed to participate. If necessary, I could have expanded the geographic location to include additional school districts until a school was recruited to participate. Once an elementary school was recruited to participate in the project, the key project team members were identified. The key project team members targeted were the school nursing staff, administration, physical education staff, and clerical staff. Once the project team was identified the education process began.

Once the school was recruited and the project team was identified and agreed to participate in the project, I worked with the school nurse to begin developing the CPG. I led the professional team in the process of evaluating what if any practices were already in place. This content helped in developing the CPG to meet organizational and patient needs as identified in the guidelines in the Walden University DNP Manual. I followed

the guidelines as outlined in the Manual for CPGD DNP Scholarly Project to develop and evaluate this CPG. The Appraisal of Guidelines Research and Evaluation (AGREE) II tool was used as a systematic method to guide the development of the CPG and to assess the quality of the guideline once it was developed. The screening tool protocol followed CDC guidelines, which recommends that BMI be used to gauge elementary school student's risk of obesity. The screening protocol included a formula for calculating BMI using student's height and weight. The school nursing staff will use the tool to determine if the student's BMI falls within the underweight, healthy weight, overweight, or obese range. The guideline protocol will offer guidance for when to notify parents, who will be sent a report if their child falls within the overweight or obese range to help them understand their child's risk of obesity with instructions for the information to be shared with their healthcare providers as necessary. As stated, as the project leader I helped the schools in the development of a CPG to assist them to implement a BMI screening.

As the project leader I carefully identified all ethical considerations that should be in place prior to conducting the project. The project proposal was reviewed and approved by the DNP project committee and Walden's IRB before recruitment of the project team began. Initially the project team included the school's nurse and the school's administrator. Other secondary project team members included in the expert panel were school nurses and other school staff, community members, and parents. Participation in the project was entirely voluntary, and the project team and the expert panelist were informed that they may withdraw at any time, or refuse to answer any question, for any reason, with or without informing the project leader of the reason. There were no



negative consequences for withdrawing from the project. There were no incentives for participating, other than knowing that findings may provide insights into how childhood obesity can be identified and prevented.

After both the proposal and partner site were approved, as the project leader I contacted the point person identified by the site administration which was the school nurse. I created the standardized screening tool and educated the school nurse on how the tool should be implemented. I helped the school nurse to create the parent notification form which will be used by the school to notify parents of the results of the screening and recommendations to follow up with the primary care provider if needed. After this DNP project, if the school district decides to adopt the CPG and notification tools developed through this project, the CPG and notification processes can be implemented as a normal part of the school's existing process of the school nurse gathering heights/weights of the school children (see Table 1).

**Table 1**

*Project Timeline*

Task	Completion Date
Obtain Site Permission	3/15/2022
Identify the Key Project team members	3/15/2022
Educate Project team members on the Research	5/2/2022
Develop Preliminary Clinical Practice Guideline	5/27/2022
Send Project Summary, Goals, and Objectives of the project and CPG to all possible expert panel members.	6/07/2022

Send Disclosure to Expert Panelist Form	6/10/2022
Send link to anonymous survey	6/14/2022
Collect and analyze Survey Responses	6/17/2022
Seek Feedback from Expert Panelist	6/20/2022
AGREE II Evaluation of the Tool	6/30/2022
Complete and Submit Final Project	

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### **Summary**

The problem in this project is that BMI screening is not currently implemented in elementary schools in the identified district in Illinois. The overall aim of the project is to develop a CPG to assist in the identification of children who are obese or at risk for obesity. Children between 2 and 10 are often underdiagnosed and undertreated, leaving them to become obese adults (Lambrinou et al., 2020). BMI screening for obesity can be used to identify children who may need to be seen by a healthcare provider and gives parents a tool to approach providers with some knowledge regarding their child's health. The problem which was addressed through this project was to develop a CPG that may be recommended for adoption and implementation for BMI screening within elementary schools to enhance detection of obesity.

In Section 3, collection and analysis of evidence in this project is described. This includes a presentation of the practice-focused question, followed by a description of sources of evidence that were used in this project. Published outcomes and research are discussed, followed by archival and operational data. Finally, evidence generated for the doctoral project is discussed, followed by analysis and synthesis methods that were used.

### Section 3: Collection and Analysis of Evidence

Obesity in children has not significantly decreased since 2003-2004. As of 2019, 18% of children and adolescents in the United States, which is equal to 14.4 million children between the ages of 2 and 19 were affected (CDC, 2021). Prevalence of this population health issue has more than tripled from 5% in 1978 to 18.5% in 2016 (Anderson et al., 2019).

Obesity has been associated with poor health outcomes that include insulin resistance, cardiovascular disease, and early mortality. Obesity is also linked to significant psychosocial and socioeconomic sequelae, depression, and suicide (Anderson et al., 2019; Häkkänen et al., 2018). To address childhood obesity, it must first be promptly identified in children who are overweight or already obese. Identifying children at risk for obesity could improve early diagnosis, purposeful treatment plans, and collaboration with parents (Häkkänen et al., 2018). The purpose of this project was to develop a CPG that will assist practitioners in early identification and treatment of childhood obesity. By identifying risks for obesity early, children could be positively influenced by healthy behaviors that can extend to adulthood.

In this section, the practice-focused questions are reviewed. Sources of evidence in this study were discussed, followed by analysis and synthesis of methods that were used. The section ended with a summary.

### **Practice-Focused Question**

Illinois is currently ranked 16th in the nation for childhood obesity for children between the ages of 10 and 17, which is improved from its 2009 ranking of fourth (Eng, 2022). Although Illinois rates of childhood obesity for this age group dropped from 20.7% to 17.4%, the state still falls above the national average of 16.2% (Eng, 2022). Currently, schools in Illinois are required to collect information on height and weight when children are being initially enrolled. However, they are not required to leverage that information to screen for obesity. Based on this understanding, the practice-focused question that guided this project was:

Does evidence support the development of a CPG for the implementation of BMI screening in elementary schools?

The key to closing gaps in healthcare delivery is evaluating distribution of health outcomes as well as determinants that influence distribution, policies, and interventions in each population (Nash et al., 2021). This project was designed to narrow a gap in healthcare by helping schools become partners with parents and healthcare providers to identify the number of obese children. The purpose of this project was to develop a CPG that will assist practitioners in early identification, which can lead to the treatment of childhood obesity.

To answer the question in this project, a systematic review of literature was completed. A systematic literature review is a standardized method for conducting literature reviews. The benefit of a systematic literature review design is that results of

the study are replicable, transparent, objective, unbiased, and rigorous. Furthermore, this design is ideal for performing research when necessary data have already been collected to answer the research questions, but data have not been analyzed in such a way to answer the research questions (Boell & Cecez-Kecmanovic, 2015). Boell and Cecez-Kecmanovic (2015) said that since a systematic approach is standardized in how data is collected in gathered, as opposed to literature review methods that are less systematic, results are easier to replicate. Literature reviews do not typically use tools to assess research quality, which may lead to greater variation between how articles in the review are assessed (Boell & Cecez-Kecmanovic, 2015). Moreover, a systematic literature review approach enables researchers to deliver a clear and comprehensive overview of existing evidence on a given topic (Xiao & Watson, 2019). This method is ideal when initial studies have already been conducted on the topic, but a clear understanding of the phenomenon has not been reached. Finally, a systematic literature review approach can help researchers identify gaps in research while using research that already exists (Xiao & Watson, 2019).

### **Sources of Evidence**

Evidence for this project consisted of secondary data collected from peer-reviewed and high-quality literature released by reputable sources that are not necessarily peer reviewed, such as government documents, that will inform the creation of BMI screening guidelines. I received Walden's Institutional Review Board (IRB) approval prior to beginning the onsite process. Throughout the course of the project, I followed the principles of the Belmont Report. The Belmont Report outlined several key principles

project leaders follow. This includes maintaining respect for participants, beneficence, and justice. I treated each project member with dignity and respect.

### **Published Outcomes and Research**

The data collected in this study came from articles identified through online research databases. Articles were pulled from the following scholarly databases: EBSCOHost, Google Scholar, PsycINFO, PubMed, and ScienceDirect. Reports from trusted government organizations such as the CDC, National Institutes of Health and other trusted organizations such as the State of Childhood Obesity and Trust for America's Health were also used. Search terms were used to identify articles. Search terms in this study were: *obesity, overweight, pediatric obesity, basal metabolic index, BMI, BMI in children, overweight in children, obesity in children, obesity screening, overweight screening, obesity and overweight screening, and screening in schools*. Reference lists for all articles which met inclusion criteria were also individually reviewed for additional information about literature that may not have been found in databases.

To qualify for inclusion in this study, articles were evaluated inclusion criteria. Articles were peer-reviewed or from trusted organizations. Articles were published in the English language. Articles were relevant to the practice-focused question. Articles are published between 2018 and 2022. Articles were primary research. I limited this review to articles which were published between 2018 and 2022 to ensure the most updated research about BMI screening tools. However, some selected articles were published

prior to 2017 in cases where they provided needed historical context. Documents that were not published in English, not peer-reviewed or from trusted organizations, as well as literature that did not include search terms were excluded from the project.

Database search functions were used to enter appropriate key words and limit results to articles published between 2018 and 2002 that were written in English. In extracting articles for this systematic review, I used the systematic literature review protocol developed by Xiao and Watson. This protocol describes three major stages of the data collection process including planning the review, conducting the review and reporting the review.

I used the following procedures for conducting this study, first I formulated the research problem. Then I developed and validated the review protocol. Then I searched the literature. Next, I screened articles for inclusion. Then I assessed the quality of each article. Then I extracted the data. Then I analyzed and synthesize data. Finally, I reported the findings. I used an established risk and bias assessment protocol to evaluate and extract the data, the Cochrane Risk of Bias Tool. This protocol evaluated studies quality based on the publication date, the relevance of the research to the research questions, and any methods used to generate comparable groups in the study being evaluated. In addition, the assessment examined if statistics were missing from the extracted data, any duplicated data in the study, and whether outcomes were not measured or reported. Finally, risk and bias evaluation was used to assess if there was selective outcome reporting, if attrition and exclusions were clearly stated in the research, and if the

outcome data was incomplete. Only studies I judged to be of high quality are included in the final review. Utilizing this structured method of evaluating data prevented bias from affecting the data collection process. Once an article was deemed appropriate for the study, I downloaded the full-text pdf and saved it in a folder to await data analysis.

### **Evidence Generated for the Doctoral Project**

Once the school was recruited and the project team was identified, I worked with the school nurse to develop the CPG. This was initiated by leading the project team in the process of evaluating what practices were already in place. It was identified that due to the COVID 19 pandemic, and the lack of consistent in person learning, height and weight data had not been collected in over two years. The project team was unable to give any insight into why the standard requirement for height and weight data collection which is kindergarten then the sixth grade is spaced so far apart. Especially since this is a time when children grow rapidly. This content, or lack of, helped in developing the clinical practice guideline to meet organizational and patient needs as identified in the guidelines in the Walden University DNP Manual. I did follow the guidelines as outlined in the Manual for CPGD DNP Scholarly Project.

As the project leader, I educated the school nurse on the class-wide BMI screening tool (see Appendix E), use of the CDC's formula for calculating pediatric BMI's using student's height, weight, and sex, and provided guidance into options for the parent notification processes. After this DNP project, if the school district decides to adopt the CPG, I will be willing to help lead the parent notification process to further



support the guideline. Hopefully, the CPG and notification processes can be implemented as a normal part of the school's existing processes. If so, the school nurse will use the height and weight data collected by the school staff to determine if the student's BMI falls within the underweight, healthy weight, overweight, or obese range. The school nurse will then notify the parents of any abnormal findings, offer education if desired, and send a notice with recommendation to follow up with the student's healthcare provider. If the proposed guideline is accepted into the schools practice, optimally, the physical education (PE) staff would collect heights and weights on students annually at a prescheduled time/ period. The nursing staff will use the collected data to calculate the BMI of each student following the CDC guidelines, which recommends that BMI be used to gauge elementary school student's risk of obesity.

Since no student data were obtained from the project partner site this CPG has been developed for future use. As the project leader, I primarily co-created the guideline with the school nurse (see Appendix D) and the obesity screening tool (see Appendix E). I educated the participating staff on the background information, the significance of narrowing this gap in healthcare, and the significant impact of this guideline on clinical practice. I created the expert panel anonymous survey. The nurse and I analyzed the results of expert panel questionnaire and narrative feedback, we then made adjustments to the guideline and project as needed.

### **Analysis and Synthesis**

Data collected in this project consists of secondary data collected from peer-reviewed and high-quality gray literature that informed the creation of BMI screening guidelines. The content validity index (CVI) tool was used to evaluate the appropriateness of the CPG and BMI screening tool. The secondary data gathered through the review of the literature informed the screening practices and the guideline developed through this project. The secondary data was analyzed, and the findings informed the final guideline.

### **Summary**

This project is informed by a systematic review of literature. In extracting articles for the systematic review, I as the project leader adopted guidance by Xiao and Watson outlining the steps to follow in order to perform a systematic review of the literature. Project bias was addressed by employing the Cochrane Risk of Bias Tool. A comprehensive systematic review of literature was conducted using several databases. Data were analyzed using thematic analysis.

In Section 4, results of data analysis are presented. This includes information about findings in the project, including the expert panel and secondary data that were gathered during the systematic review of literature. Limitations of study findings are also discussed.

#### Section 4: Findings and Recommendations

Obesity and being overweight are currently considered one of the world's major public health concerns. The growth disease incidence rates are a result of the increase in unhealthy dietary and lifestyle choices among a large percentage of global consumers (Häkkinen et al., 2018). These choices have been influenced by factors like the growth of the fast food industry. Children are the most affected by this issue. Globally, more than 41 million children were obese or overweight in 2018 (CDC, 2021).

The project question was: Does evidence support the development of a CPG for the implementation of BMI screening in elementary schools?

Schools in Illinois are required to collect data on children's height and weight when they are initially enrolled, then again in the sixth grade. However, they are not required to use collected data for any significant purpose. The CDC's report of 2018 revealed that at least 1 in every five children aged two years and 19 in Illinois was obese or overweight (CDC, 2018). Moreover, the report by the CDC (2018) revealed that of the 42 surveyed for childhood obesity in the United States, Illinois was ranked 20<sup>th</sup> with the largest number of obese high school students at 15.2% against 15.5% of high school students reported as being obese countrywide. The high rates of obesity among children as illustrated by the CDC (2018) is a critical medical worry for the health sector of Illinois that should be addressed with utmost urgency.

Obesity results in poor health outcomes among children, including insulin resistance, early mortality, and cardiovascular disease. There is no standard BMI

screening guideline to ensure that school going children are diagnosed early for obesity or being overweight (Anderson et al., 2019). Early detection would mean these students are placed into appropriate remedial regimens to restore their BMI to proper levels (Hartmann, 2013). Based on this, this DNP project was aimed to develop a CPG for implementing a school-based BMI screening tool to enhance detection of obesity in the school.

### **Findings and Implications**

Relevant studies were generated from database searches. Those that were deemed relevant to the study were included in the literature review. Fifteen percent of sources were published prior to 2018, and 85% of sources were published between 2018 and 2022.

### **Review of Relevant Literature**

In this section, I provide an expanded background to support the practice problem. First, relevant studies are organized in categories, progressing from broad subject matter to the gap that was studied. An extensive discussion of the theoretical framework will be provided followed by a conclusion that describes how the gap was established based on existing literature.

Globally, obesity and overweight are of great concern among all age groups. the CDC (2021) reported that obesity and overweight were ranked among the world's pressing health concerns. Poor dietary habits and physical activity choices have contributed to the rise in the incidences of obesity in the United States climbed from

31.8% in 2018 to 42.4% in 2021 (CDC, 2021). There are diverse factors that are responsible for this increase in prevalence of obesity and overweight (Anderson et al., 2019). According to Wilson (2016), by 2018, the number of children who were either obese or overweight was 39 million. A closer examination of measures that can be used to control obesity and being overweight among children is critical.

## **Obesity and Overweight in Children**

### ***Trends and Statistics***

Obesity impacts 19.7% of adolescents and children or 14.7 million people of adolescents and children in the United States (Burrell et al., 2020). In the United States, 12.7% of 2- to 5-year-olds are obese, compared to 20.7% in the 6- to 11-year-old age group and 22.2% in the 12- to 19-year old age bracket (Smith et al., 2020). Certain ethnic groups are disproportionately affected by obesity in children (Karki et al., 2019). In previous literature, Karki et al. (2019) established that 26.2% of all Hispanic children, 24.8% of non-Hispanic Black children, and 16.6% of non-Hispanic White children were obese. Recent report by the World health organization (WHO) revealed that at least 1 billion were obese with adults being the majority with 650 million, followed by adolescents at 340 million and children at 39 million (Burrell et al., 2020; WHO, 2022). These numbers underpin the reasons for a standard that can be used to manage obesity and overweight among school going children.

The global epidemic of obesity and being overweight continues to pose a significant threat to the management of chronic diseases and human health throughout the

lifespan. Hsu et al. (2022) said more people were becoming obese as a result of economic expansion, mechanized transportation, industrialization, sedentary and urbanization lifestyles, as well as a nutritional shift to high calorie diets and synthetic foods. Hsu et al. (2022) had earlier been reported by Bluher (2019) who found that changes in lifestyle characterized by lack of or limited physical activities exposed children and adults like to obesity and overweight. Similar findings were reported by Sanyaolu et al. (2019) and McCafferty et al. (2020) who reported that intake of high nutritional diets, limited physical activities and sedentary lifestyles contributed to obesity and overweight in children and adults.

The pediatric obesity epidemic will have a significant impact on healthcare systems and individuals in the future. Children who are obese or overweight are more likely to be obese as adults and also more vulnerable to developing chronic conditions like heart disease and type 2 diabetes earlier in life (Nittari et al., 2019). In the European Union, the WHO European region monitoring obesity in the region published a report detailing that 60% adults and one-third of children in Europe were overweight or obese (WHO Europe Region, 2022). One out of every three children in Europe is obese or overweight according to the WHO regional office (WHO European Region, 2022). After high blood pressure, tobacco and dietary risks, the regional office detailed that obese and overweight ranked fourth among the major risk factors for non-communicable diseases. Children who are obese before puberty are more likely to be obese in their early adulthood. Obesity rates among adolescents and children between the ages 5 to 19 since 1975 have risen in practically every country, with countries in the European region currently

reporting a prevalence rate of 30% for overweight and 10% for obesity (Nittari et al. 2019). Developing tendencies involving prevalence and effects of obesity and being overweight warrant correctional measures and habits.

Agustina et al. (2021) established that the national AOO frequency surged by 48% among 13-15-year-olds and by 86% among those 16 and older over the course of 5 years in Indonesia. Agustina et al. (2021) further noted that in Jakarta, Indonesia's capital city, and Papua, a remote island nation, the obesity rates for both areas was high with, 30.1% and 18.4% respectively. In previous findings, Gokosmanoglu et al. (2019) reiterated that 13.5% of children were overweight, whereas 5% were obese. Relative BMI statistics show that 10.4% of children are overweight and 12.9% are obese in Indonesia (Gokosmanoglu et al., 2019). These findings further underscore the criticality of incidence rates of childhood obesity and the need for urgent intervention.

### ***Factors That Affect Incidence Rates of Childhood Overweight and Obesity***

Understanding the factors for the increasing incidence rates of childhood obesity is important as understanding the incidence rates of obesity. Genetics is among the most common causes of being overweight and obese. In the research conducted by Yong et al. (2019), 5% of the diagnosed obese cases among adults and children were as a result of genetics. Yong et al. (2019) however noted that the substantial rise in childhood obesity could not be attributed to genetics. Besides genetics as a risk factor for childhood obesity, other factors including diet, lack of physical exercises and sedentary lifestyle have been attributed to increased cases of childhood obesity.

Sugary and junk foods have been attributed with rising cases of childhood obesity. Children who consume sugary drinks and junk food are likely to gain weight than those who do not (Nittari et al., 2020). When consumed in large quantities, packaged foods are high in sugar, fat, and salt levels that encourage weight gain among children (Nittari et al., 2020), all of which can lead to weight gain. Nittari et al. (2019) found that 62% of parents with obese children stated that their children's obesity was normal. If parents fail to acknowledge the importance of maintain their children' weight, they are less likely to advocate for their children to adopt healthy eating habits. Therefore, contrary to the assumption that obesity and overweight was only as a result of unhealthy lifestyle choices, inherent factors including poor dieting, physical inactivity, and sedentary lifestyle resulted in obesity and overweight in children (AlQuaiz et al., 2021).

The levels of physical activity and physical inactivity have been associated with the development of childhood obesity or a child being overweight. Smith et al. (2020) reported that the number of calories consumed, and the number of calories expended must be equal in order to be considered healthy physically. The bodies of children with limited physical activities and limited exercises store excess calories as fat increasing juvenile obesity (Smith et al., 2020). Sserwanja et al. (2021) argued, the ability of children to engage in physical activities and exercises was influenced by their access to transportation and resident neighborhoods. Children living in dangerous and poorly lighted neighborhoods were less likely to engage in physical activity when compared to children who lived in secure neighborhoods (Sserwanja et al., 2021).



Examining the studies conducted by Smith et al. (2020) and Sserwanja et al. (2021), it is evident that limited physical activities due to lifestyle and restrictions due to Covid-19 increased the number of children with obesity in the United States. Based on the findings reported by both Sserwanja et al. (2021) and Smith et al. (2020), adolescents, children, and young adults who were subjected to COVID-19 restrictions experienced disruptions in their daily routines as well as changes in their dietary habits and physical activity. To ensure their safety, healthcare professionals should raise awareness about the dangers of obesity and offer preventative measures, while also involving parents (Sserwanja et al., 2021). Frameworks that allow for children to engage in physical activities should be implemented particularly for school going children.

Behavioral, environmental, and social influences also play a pivotal role in children becoming obese and weight. Soliman et al. (2021) examined behavioral, environmental, and social influences and their active use in management and prevention of overweight and obesity in infants. The findings revealed that income, education, and urbanization, increased energy intake from unhealthy food and a refined sugars diet expediated childhood obesity and overweight. Moreover, introducing solid food and artificial milk formula early in preterm and small-for-gestational-age newborns increased the epidemic of childhood obesity. Coronado-Ferrer et al. (2022) extended the above research and found pediatric obesity to be linked with a variety of environmental and social factors. Furthermore, besides poor feeding lack of medical education for children and parents, poor healthcare, and limited access to physical engagement increased the risks of childhood obesity in low-income populations (. Therefore,

identification and recognition of behavioral, environmental, and social influences is critical to preventing and managing early childhood obesity.

### ***Obesity and Overweight in School Settings***

Childhood obesity is at an all-time high, and as a consequence, children are consuming more unhealthy foods and getting less exercise than ever before. Childhood obesity and being overweight is particularly noticeable in school settings where the number of target population is highest per time. Karki et al. (2019) said obesity peaked in children as young as 7–8 years old (grade 2) and declined as they grew older, while overweight peaked in children as young as 9–10 years old (grade 4) and 10–11 years old (grade 5). Students' BMI was found to be influenced by their socioeconomic status, poor eating habits, inactivity, and a family history of overweight or obese. These findings are indicative of the rise in the number of school-aged children who are overweight or obese. Moreover, a third of children between the ages of two and 19 are obese or overweight as a result of poor eating habits, family history of obesity and physical inactivity (Burrell et al., 2020). Academically, overweight students' have been found to perform poorly in math than their normal weighted peers (Ratajczak & Petriczko, 2020). When it comes to the correlation between weight classification and grades, Ratajczak and Petriczko (2020) reported that the negative effects of being overweight and obesity could be seen as early as second grade. Given that the reviewed studies have used school settings as ideal grounds for obesity related studies and implementation, this project focus on implementation of a guideline for school screening is warranted.

## **Obesity and Overweight Screening in School Settings**

BMI screening was first introduced in California (Hruby & Hu, 2015). The screening for BMI has its history and roots in school environments where there have been significant concerns over the negative impacts of obesity and overweight among students (Hriby & Hu, 2015). All California education institutions have gathered BMI data on children in grades 5, 6, and 9 for the past 10 years (Hruby & Hu, 2015). As one of the first formal national programs for school-based weight assessment, the 2004 Institute of Medicine (IOM) was implemented (Williams & Greene, 2017). However, several school systems, such as California's public schools, have been gathering student height and weight data prior to the establishment of the Institute of Medicine in 2004. Schools collecting information on students BMI levels hope that by disclosing a child's weight status will spur their families to take suitable steps to address the children's probable weight issue (Williams & Greene, 2017)

Schools in Arkansas, which were among the firsts to adopt and implement the policy of measuring student' weight and BMI levels to inspire necessary medical and behavioral actions from parents, measured and sent the BMI report card to their student' parents and guardians (Williams & Greene, 2017). Legislation supporting BMI screening in schools is in effect across several states, including Florida, Pennsylvania, and Tennessee (Williams & Greene, 2017). The history of BMI screening, therefore, has a strong foundation on the school set up, particularly in the U.S, except for the fact that the guidelines harmonizing its practice in all schools is still not present.

Weight screening in schools was first welcomed as a way to help fight obesity, but early concerns about the likelihood for unexpected consequences reduced the optimism. As a public health measure to combat childhood obesity, the Institute of Medicine (IOM) advocated school-based body mass index (BMI) assessment with parental notification of results (Moussa et al., 2021). Parents should be informed of their child's BMI test findings so that they can take appropriate action to enhance their child's nutrition status (Moussa et al., 2021). There is insufficient data to support a school-based BMI screening, hence the reason why the CDC, AHA and USPSTF are against school BMI screening. Regardless of the evidence, 41% of school districts in the United States required weight and height assessments, and 72% of those districts demanded the outcomes of those examinations to be reported to the student' parents (Ratajczak & Petriczko, 2020). BMI screening outcomes can still be shared with parents, although this is optional. With the now popular application of parental notification, mandatory screening with discretionary notification produces a natural experiment.

### ***Importance of Screening Guidelines in Schools***

BMI screening is important as it assists with the identification of correlations that are integral to developing proper control measures of obesity and being overweight. Park et al. (2019) asserted that BMI z-score was correlated with average income, parents' beliefs, norms for feeding their children, the obesogenic setting in the home, and kid routines (screen time on holidays, sleep times, bedtime) and physical activity setting. Park et al. (2019) concluded that the findings of their study provided a complete picture

of the elements that impacted children' BMI z-scores than previously known. As a result, Park et al. (2019) suggested that preventing childhood obesity by creating a non-obesogenic setting in the family, childcare facility and neighborhood was vital. Because of the ability of BMI screening programs to establish integral correlations, Schutz et al. (2019) suggested that there be official guidelines regulating these programs besides making them mandatory for schools. With BMI screening guidelines, there is no risk of over- or under-diagnosis. As much as BMI screening has its roots already developed in most schools in the U.S, there is still a necessity of a standardized guiding framework.

Guidelines also ensure that screening is conducted in accordance with established ethical standards. Children's dignity and individuality should be respected by individuals performing screening. Autonomy is the ability to make own decisions, free of outside influence (Smith et al., 2020). Non-maleficence, or not harming anyone, is another need for practitioners. Guidelines would similarly ensure that those performing BMI screening are abide by occupational health and safety guidelines that are necessary for the personal protection. The primary goal is to prevent work-associated illness or injury, and it can be used to screen potential employees before hiring to see if the qualify for a screening exercise (Moschonis et al. 2022). The benefits of BMI screening guidelines, from these two literatures stands out as not only important for those being screened, but also for those conducting the screening process.

The successes of guidelines like the Korean Guideline on the Diagnosis and Treatment of Obesity in Children and Adolescents (KGDTOCA) also serves as

motivation for the development of a BMI screening guideline. Yong et al. (2019) reported that the KGDTOCA guideline was effective in the treatment of childhood overweight and obesity. For purposes of the study, new guidelines were introduced with suggestions founded on evidence like obesity treatment options for adolescents and children include a variety of dietary, exercise, and lifestyle changes, as well as psychological counseling and medication. Besides the KGDTOCA, bariatric surgery was used as a last resort to mitigate the impacts of obesity and overweight among children (Yong et al., 2019).

Obese children prefer to take the school bus to school instead of walking, and children of obese caregivers are more probable to be categorized as overweight than those of parents with normal weight (Yong et al., 2019). Tobacco use, soda, cake, ice cream, and potato chips are all linked to childhood obesity for children whose fathers engage in such unhealthy eating habits (Verenna et al., 2018). Therefore, Verenna et al. (2018) developing medical guidelines to promote family-based, multilevel behavioral intervention resolute on lifestyle interventions would help educate parents and guardians on behaviors increasing the risks of their children becoming overweight and obese. The development of a BMI screening guideline for schools is thus supported by the efficiency it would have in the management of childhood obesity and overweight, a status that has persisted despite BMI screening being approved in schools.

### **Literature-Based Arguments for Methodology**

In fields including public policy research and the health sciences, systematic

literature reviews have become an essential tool. Systematic reviews of literature have been to examine the prevalence of obesity and overweight in children. To answer a specific project question, systematic literature reviews are a transparent and reproducible method of synthesizing scientific evidence in order to integrate all published information on the topic and evaluate the quality of this evidence. Burrell et al. (2020) indicated a link between high BMI in children and their obesity systematically analyzing the findings of 118 published articles. William and Greene (2017) also analyzed 60 peer reviewed articles and found that education, interventions, and evaluations of new initiatives aimed at reducing obesity in children are necessary to identify program activities that are likely to succeed.

This systematic review of the literature suggests potential benefits of the developed CPG but also highlights the need for more primary research. The goal for this literature review was to evaluate high quality data for children through age 10 years. There was a limited evidence base for this age group. However, the deduction from this LR is that the adoption of a structured strategy exercising BMI screening for early detection of obesity and overweight and adapted care management in a school setting is important. Although, there is extensive sensitivity on this topic in relation to children, I believe the benefits of this CPG for BMI screening in primary schools far outweigh the risk associated with an assessment in primary schools.

## **Theoretical Framework**

Bloom's taxonomy model was the theoretical framework for this project. In keeping with the structure of Bloom's Taxonomy, objectives were met by evaluating the practice problem, analyzing the current systems that are in place, applying knowledge into practice, and creating a new system, then ultimately explaining, and educating on the new system. Conceptualized in the 1950's by Benjamin Bloom who was an educational psychologist in America, this model is used for educational objectives (Ruhl, 2021). The concept encourages the use of a shared language for discussing learning objectives using cognitive, affective, and psychomotor learning types of learning. Depending on their level of learning, each of these domains is placed in a hierarchy with the likelihood that all new levels might erase the previous levels (Wilson, 2016). Therefore, learners ought to be familiar with a variety of analytical procedures, as well as the numerous components that need to be examined before beginning any investigation and only then will they successfully conduct independent research (Hyder & Bhamani, 2016). A substantial revision was made to the cognitive domain of Bloom's Taxonomy in this revised edition: nouns were replaced with verbs, and the emphasis was shifted from assimilation to active performance at all levels of the hierarchy. Krathwohl and Anderson also decided to remove the term "synthesis" from the domain and replace it with the word "create."

### ***Cognitive Domain***



The cognitive domain encompasses various activities, including critical thinking, problem-solving, and acquiring new information. Various stages of cognition exist in the brain, from simply storing previously acquired information to producing new information based on that information already in storage (Adams, 2015). Students are expected to work their way up the hierarchy, beginning with the lowest level marked as remember all the way up to creating as the highest level in their learning process.

### ***Affective Domain***

Emotional and psychological aspects of learning, such as learning interests and values, are addressed in this topic. Acquiring information is the initial phase, followed by understanding and acting on values, and finally, characterization (Tuma & Nassar, 2021). This domain aims to assist students in gaining a better understanding of their personal beliefs and how they have changed through time.

### ***Psychomotor Domain***

A learner's capacity to do physical tasks and motions falls under the psychomotor domain. Many different types and levels of hierarchy can be found within Harrow's (1972) concept for the psychomotor domain (Verenna et al., 2018). Non-discursive interaction and meaningful expression come before reflexes and fundamental movement in human movement and behavior hierarchy.

Bloom's taxonomy is ideal in creating proper learning methodologies and test direction (Kaymak et al. 2021). Most of the recent research on the management and prevention of pediatric obesity have focused on approaches for weight loss, which

prompted the researchers. Kaymak et al. (2021) established that when improving health behaviors, the HAES paradigm encouraged people of all sizes to pay more attention to emotional, social, and spiritual aspects, as well as physical ones. Besides the HAES paradigm, computer-mediated communication modules, face-to-face verbal communication, together with their websites in addition to the reflection diaries written by respondents, were both put to the test as part of the research conducted by Walter and Ezra (2015). Results revealed that student teachers were able to demonstrate Bloom's Taxonomy's greater domain levels while advancing the HAES ideas. When confronted with practical challenges and theoretical concepts linked to the HAES models of promoting health, well-being, self-worth, and body image these higher levels appeared. These studies underpin the suitability of using the Bloom's taxonomy in the examination of correlation between variables in this study.

Among the rational for the use of this model include the fact that educators can use Bloom's taxonomy to discover the level of intelligence at which each student can work (Kaymak et al., 2021). Additionally, students are encouraged to ask more comprehensive questions and create instructions geared at increasing critical thinking as they attempt to reach the three highest levels of analysis, analytical thinking, and evaluation. Moreover, it has been estimated that teachers ask between 300 and 400 questions a day and need an appropriate test formulation guide as a result (Anderson et al., 2019). Therefore, teachers need a variety of tools to engage students, foster conversation, inspire complex cognitive thinking, and assessing student learning, which also makes Bloom's taxonomy a powerful teaching tool that can be simply used (Adams,

2015). Using Bloom's taxonomy, teachers can ask students difficult questions to test their understanding. Through this engagement, students are empowered to take control of their learning through independent learning and committing to an idea. The Bloom' Taxonomy allows teachers to demonstrate their information on a specific issue.

### **Recommendations**

Closing gaps in healthcare delivery by evaluating the distribution of health outcomes, the determinants that influence distribution, and the policies and interventions that effect the determinants in each population is key in strengthening health care delivery (Nash et al., 2021). Many factors affecting health and disease outcomes should be adequately addressed with program planning and by developing CPG's. The findings published by the Healthy People (2020) revealed that primary prevention which begins at home and in the communities should focus on social determinants that create physical and social environments that promote good health for all. Primary prevention, followed by early identification through screening, can lead to individualized treatment plans for affected children. The findings of this DNP project confirmed a gap in practice associated with early detection and the underdiagnosis of childhood obesity. Widespread BMI screening through the development of this practice guideline for the detection of obesity that incorporates the child's primary community including the family, school, and medical home can lead to large scale identification, early treatment plans, and interventions.

This project recommends the use of the BMI screening tool in the elementary school setting for the early identification of children who are risk for obesity. The school system should create a culture that embraces this CPG by utilizing current knowledge, evidence, and clinical expertise on the benefits of early BMI screening. The schools, in the district, currently do similar vision screening, dental screening, and hearing screening and alert the parents, if follow-up care is needed. Through implementation of this CPG, children would have their heights and weights recorded annually through the school's physical education (PE) program. The measuring of students' weights and height can be done privately by class instructors so that no child is able to see the weight of their peers. The data will be recorded on the BMI screening tool (see Appendix E). Once all data is collected the BMI screening tool will be sent to the school nursing staff to calculate the BMI levels for each student. After calculation, BMI levels that are identified as being of concern are recorded and parents of the children alerted prior to scheduling an appointment with the guardians and parents with the child's PCP for follow up.

Research findings revealed that primary health care providers often underdiagnose and undertreat obesity in children (Gordon et al., 2021). Current research highlights the lack of provider documented diagnosis of obesity by ICD codes and that the documented diagnosis of obesity is disproportionate to the prevalence of this condition in the United States (Reed et al., 2016). only 31% were diagnosed as being overweight (Riley et al., 2005). Riley et al. (2005) said "The majority of overweight children were not diagnosed and did not receive relevant and recommended evaluations and interventions" (p. 35). According to Ingol et al. (2021), a total of 13,697 children had measured obesity but

10,273 which equals 75% of the children were not diagnosed. The BMI screening tool will give the parents the information they need to address concern with their child's medical provider. As a result of the preceding findings, it is important to use of this CPG to implement BMI screening at the partner organization for the early detection of obesity.

### **Contribution of the Doctoral Project Team**

Walden's IRB approval was obtained with approval #06-07-22-0526580.

According to Walden's IRB this project falls within the parameters that the IRB pre-approved for a DNP CPG Development project. This means that I am permitted to collect and analyze data from anonymous expert panelist questionnaires, public data/literature, and internal site documents/data, as per the terms of the pre-approved site agreement (see Appendix A) and Disclosure Form (see Appendix B) in the DNP CPG Development Manual. I was required to use the disclosure form provided in the manual (see Appendix B), but no consent was required.

After Walden's IRB approval was granted, the onsite process was initiated. I met with the school administration to present the problem, discuss goals of the project, and to get help with identifying key stakeholders. The discussion with the school administration identified school staff including school nurses, parents, and community members as key stakeholders. Using the literature that was reviewed and Bloom's taxonomy as a guide, with the assistance of the school nurse, we followed the steps and the practice guideline, and a BMI screening tool were developed.

The AGREE II tool was used as a systematic method to guide the development of the CPG and to assess the quality of the guideline after it was developed. Brouwers et al. (2010) opined that the AGREE II tool was designed to assess the quality of practice guidelines across the spectrum of health, provide direction on guideline development, and guide what specific information ought to be reported in guidelines. The AGREE II tool is comprised of 23 items organized into six quality domains as illustrated in the subsequent paragraphs:

Scope and purpose discussed the aim of the guideline, the target population, and the specific health question are clearly stated. Stakeholder involvement identified the primary stakeholders who included the school nursing staff and parents. The guideline was co-developed by the school nurse and the school staff and parents took part in the expert panel review and approval. Rigor of development was completed through a thorough review of literature (see appendix C) was conducted to support the development of the CPG (see appendix D). Clarity of presentation for the CPG was presented in easy-to-read lay terminology, with the goals, objectives and process clearly stated.

Applicability involved the identification and discussion of the barriers and facilitators to the implementation of CPG which aided the changes that were made to the CPG to make the guideline more socially acceptable. However, some staffing barriers still exist. There were no identified biases, however, there was some competing interest with the expert panel due to the school nurses feeling they already had more responsibility than what they could handle.

The screening tool protocol followed the CDC guidelines, which recommended that BMI be used to gauge elementary school student's risk of obesity. The screening tool included a formula for calculating BMI using student's height and weight. The expert panelist team was developed consisting of 22 anonymous people that included eight school staff, 13 parents, and one community member. The expert panel was solicited by the school nurse through widespread/ mass email. The role of the expert panel was to review the goals and objectives of the project, assess the quality of the guideline after it was developed, suggest any revisions, then decline or approve adoption of the CPG and the associated BMI screening tool.

After identifying the expert panel, the school nurse sent key elements of the CPG via email from the school nurse to the prospective panelist one week prior the scheduled deadline to collect feedback. The CPG elements were set early to allow adequate time for proper review and to give the panelist time to develop any questions or suggested revisions. The expert panelists were instructed to send any questions they may have had regarding the project to the school nurse. The expert panelists that agreed to participate through the school nurse were sent the DNP disclosure for anonymous expert panelist with a link to a completely anonymous survey.

The AGREE II tool was used to guide the expert panelists survey. As the project leader, I documented all recommended revisions, important points, and any other significant information that was useful to the final development of the guideline. Two common concerns included the word obesity sounding offensive when discussing

children and if the school had the staffing resources to implement the project. School staffing and concerns with having the manpower to roll out the program was the only reason given for declining the program. Feedback from the school nurses was positive and in favor of the project however, they did not feel they would be able to manage such a program with their current workloads. As a result of the expert panelists communicated concerns with the use of the term obesity it was decided by the project team to change the title from obesity screening to BMI screening.

At the initial survey close there were a total of 22 respondents which included 13 parents, eight school staff (including school nurses), and one community member which made up the expert panel. At the conclusion of the survey, 36.6% of the expert panel agreed that the guideline was appropriate and should be implemented as it is. Of the expert panel, 36.6% agreed that the guideline was appropriate, but the word obesity should be minimized due to its offensive nature when dealing with children. Approximately 28% of the expert panel opted to decline the program due to school staffing concerns (see Table 2).

After the initial expert panel feedback the title of the project was changed from Obesity Screening to BMI screening and a second survey link was sent to the same respondents. 73% of the panelists agreed this guideline is highly relevant to and should be implemented into practice. A final survey was sent to the same expert panelist to evaluate the CVI of the CPG using the Agree II domains. At the conclusion of the final



survey there were six respondents. Based on the CVI mean of 0.80 the AGREE II domains were met.

**Table 2**

*Initial Expert Panel Questionnaire Results*

Questions	Responses		
1 Have you read the CPG and the provided resource/ background information?	100% Yes	0 % No	
2 Is this guideline relevant to clinical (nursing) practice?	81.8% Yes	18.2 % No	
3 Is this guideline practical for implementation?	59.9% Yes	40.1 % No	
4 Is the term obesity offensive when discussing children?	31.8 % Yes	59.1 % No	9.1 % NR
5 Can this type of program be implemented in your school?	27.3% Yes	36.4% No	36.3 % NR
6 If you were responsible for accepting or declining this program, what would you do.	72.72% <i>agreed to accept the program.</i>	27.28 % <i>declined the program.</i>	

**Table 3***Final Expert Panel AGREE II CVI Survey*

Agree II Domains	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Number In Agreement	Domain CVI
Domain 1	+	+	+	+	+	+	6	1.00
Domain 2	+	—	—	+	+	+	4	0.67
Domain 3	+	+	+	+	+	+	5	0.83
Domain 4	—	—	+	+	+	+	4	0.67
Domain 5	+	+	+	+	+	—	5	0.83
Domain 6	+	+	+	+	—	+	5	0.83
							Mean CVI	0.80

### **Implications for Positive Social Change**

When developing a CPG for BMI screening in primary schools to promote the overall health and wellbeing of children, involving the child's village as stakeholders is critical. The stakeholders should include the child, the family, the school system, the healthcare team, and the community. The project was designed to include stakeholders by helping schools become partners with parents and healthcare providers to identify BMI concerns early. The primary stakeholders as a microsystem for change gives rise to the enabling forces to make macro level changes to the health care infrastructure (Bodolica et al., 2015).

Preventing obesity by age 10 is significant because without intervention, obese children become obese adults (Anderson et al., 2019). Interventions promoting healthy behaviors in childhood provide a strategy for preventing obesity in adulthood, since study findings show that treating obesity in adulthood poses more difficulties than changing lifestyle habits during childhood (Lambrinou et al., 2020). Schools, a community institution, are an essential setting for the promotion of overall health and wellbeing of children. The school setting has the potential to intervene by educating on good health habits, poor health behaviors, and obesity-related behavior for several reasons, including being able to reach many children in a short period of time (Lambrinou et al., 2020).

Through this program and in accordance with Walden University's Mission, the knowledge and skills were attained to analyze a target population and identify the need for social change through practice scholarship. Walden University (2020) defined positive social change as "a deliberate process of creating and applying ideas, strategies, and actions to promote the worth, dignity, and development of individuals, communities, organizations, institutions, cultures, and societies" (para 2). Since high BMI has been associated with poor health outcomes that include obesity, insulin resistance, cardiovascular disease, and early mortality, early identification through screening can lead to early diagnosis and purposeful treatment.

Through this project, positive social change can be achieved. First, early detection would mean these students are placed into appropriate remedial regimens to help them restore proper BMIs (Hartmann, 2013). Parent's health is often improved as their children

engage in healthy habits besides the community thriving because less economic resources are required for treating obese children and adults. Additionally, cultures are improved by having healthy individuals to work towards other improvements for society (Zaccagnini & Pechacek, 2019). If the partner organization chooses to implement this CPG, there is the potential to identify health risks early and children could be positively influenced for healthy behaviors that can extend to adulthood. Therefore, I can conclude with full certainty that this CPG for BMI screening in primary schools would be effective.

### **Strengths and Limitations of the Project**

#### **Strengths**

This project was strengthened by the availability of relevant literature on the topic of childhood obesity, the support of the partner organization stakeholders in the development of the CPG, the number of school staff and community members who agreed to be a part of the expert panel, the mix of panel members which included both school staff, parents, and community members. This project was also cost effective and there would be no significant cost in terms of finances or staff time for its implementation. Furthermore, the other strength of this project lies in its potential to screen a large number of children in a short time besides the CPG offering generalizability, reliability, and versatility.

#### **Limitations**

There were some unexpected limitations during this DNP project. The first limitation was time constraints and lack of specific literature in the targeted age group.

The amount of time available to gather expert panelist feedback was limited by the school year ending at the beginning of June hence the reason for the small number of expert panelists used in this DNP project. The initial objective for the project was to target school age children through age 10; however, there was limited primary research data on overweight and obesity in the targeted age range between two and 10 years.

Other limitations included the lack of formal education provided to the expert panelist on childhood obesity and BMI screening prior to completing the questionnaire. Lastly, due to the limited research on school-based BMI screening it is not currently supported by the CDC, AHA, and the USPSTF do not recommend school screening for BMI (Ratajczak & Petriczko, 2020). Currently there is no standard BMI screening guideline to ensure that school age children are diagnosed early for obesity or being overweight (Anderson et al., 2019). This could be both a strength and a weakness for this project.

### **Future Recommendations**

Future recommendations are for this CPG to be introduced to other schools in the district and then throughout the state. Ultimately, BMI screening should be incorporated into the routine medical/physical policies and protocols such as vision, dental, and hearing screening. I would like to see the school systems further become partners in primary prevention through early education on healthy dietary and lifestyle choices. This project further recommends the use of school systems, as a screening platform, to collect data due to the benefits of obtaining large amounts of student data in a short period of

time. Other conditions that can be screened for in the school systems include allergy screening, scoliosis screening, and diabetic screening similar to the Texas Risk Assessment for Type 2 Diabetes in Children (TRAT2DC,2017)

### **Summary**

This literature review entailed examining sources that can guide the development a CPG for implementing a school BMI screening tool to enhance detection of obesity in the school. This helps to ensure occupational health and safety as well as reduce chances of underdiagnoses, overtreatment, or overdiagnoses. This guideline would also help to limit waiting times during care and organize adapted care management in the school setting effectively through the application of the most efficient mobilizing techniques for students, parents, and teachers. Overall, I conclude that early detection would mean these students can be placed into appropriate remedial regimens to help them restore proper BMI.

In keeping with the structure of Bloom's Taxonomy, objectives were met by evaluating the practice problem, analyzing the current system that is in place, applying knowledge into practice, and creating a new system. The AGREE II tool was used to guide the expert panelists survey, and all domains were met. Bloom's Taxonomy objectives will be used in explaining the new system when the school is ready for implementation. Section 5 includes the proposed plan for the project's dissemination.

## Section 5: Dissemination Plan

Dissemination is the final phase of evidence translation, and three main methods are posters, presentations, and publication (White et al., 2016). All three methods of dissemination of evidence are beneficial for scholarship involving nursing practice. Through presentation of evidence, new clinical practices can be adopted. When presenting evidence of a project, it is important to know the audience and tailor ways that will be most effective to learners. This project was presented to the identified partner organization staff and community members through live and Zoom PowerPoint presentations. This included emailed slides audiences were able to keep and use for future reference.

### **Audiences and Venues**

The initial setting for this project was one partner organization as a part of a school system. However, if this study is successful in terms of addressing early detection of childhood obesity, I would like to see this guideline expand to be adopted by the ISBE. I would also be interested in assisting with staff education, implementation of the CPG, and programming that will include early interventions and purposeful treatment plans. When looking into professional journals to publish results of this BMI screening project which is geared toward health and welfare of children, one of the SAGE journals such as *the Journal of Child Health Care* would be optimal. The *Journal of Child Health Care* is a broad-ranging, international, professionally oriented, interdisciplinary, and peer-reviewed journal. The *Journal of Child Health Care* focuses on illness, disability,

complex needs, wellbeing, quality of life and mental health care related to the health and healthcare of neonates, children, young people, and their families.

### **Analysis of Self**

Practicing to be a professional nurse includes all aspects of delivering nursing care to patients besides seeking to solve challenging medical programs as well as improving the delivery of healthcare to patients (AACN, 2020). My journey through this DNP program has promoted my professional growth as a clinical leader. I have developed the knowledge and skills to use EBP and facilitate changes in healthcare by applying current research to practice problems. I learned through this program that DNP prepared nurses, unlike PhD prepared nurses, do not usually develop research, and instead study ways that existing evidence can be used to answer clinical questions and develop CPGs.

Identifying obese children early is aligned with the DNP's role as described by Essential VII. As the project leader, I became a clinical change agent as the key person to educate school staff, analyze data, and disseminate evidence to institutional leaders. Continuing to increase knowledge through evidence from research and education that can be applied to current practice is essential to continuous practice improvement (Riner, 2015). I would like to assist the partner organization in implementing the practice guideline in the future. As a clinician, I plan to stay up to date on new knowledge and education in order to keep up with rapidly changing healthcare systems. This DNP program has afforded me the knowledge, skills, and education to be successful. I am sure



that my goals, objectives and plans for my future practice will go through many changes, but I am certain that I have gained skills through this program to support my professional growth.

Completing this project has been both challenging and rewarding. As mentioned previously, this is a topic that is close to my heart and an area of child health that needs more awareness. On this scholarly journey, I faced some hurdles but with the assistance of my committee, I was able to stay on track and successfully complete the project.

### **Summary**

The purpose of this DNP project was to develop a CPG that would use existing evidence to support the development of BMI screening in the primary school setting for the purpose of detecting childhood obesity early. Globally, 39 million children were obese or overweight in 2018 (CDC, 2021). Due to the high incidence rates, developing an effective strategy to address childhood obesity is critical. Through this project, a CPG was developed for school staff to screen for abnormal BMI and when to alert parents when a child is either identified as overweight or at risk for obesity, then follow up with their healthcare provider.

Childhood obesity is a global epidemic, and this project involved identifying the gap in practice between child and adult obesity. Through the implementation of this CPG, early detection of abnormal BMIs would mean these students are placed into appropriate remedial regimens to restore their normal BMIs. Although there is sensitivity involved with this topic in relation to children, I believe benefits of this CPG for BMI screening in

primary schools far outweigh associated risks. Adoption of a structured strategy for exercising BMI screening for early detection of obesity and overweight and adapted care management in a school setting should be implemented.

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## Appendix A: Site Approval Form

**APPENDIX A: SITE APPROVAL FORM FOR CLINICAL PRACTICE GUIDELINES DEVELOPMENT PROJECT**Name of Doctoral Student: Talia Thompson MSN, APRN, FNP-BG FPAName of Doctoral Student's Partner Organization: [REDACTED]Date: Mar 15, 2022

The doctoral student named above is involved in developing Clinical Practice Guidelines in partnership with the organization named above. This form is the student's formal request to support that effort by administering anonymous questionnaires to expert panelists (identified from among the organization's staff members) and analyzing internal, de-identified site records that this form's signor deems appropriate to release for the student's doctoral project. This permission to use the organization's data pertains only to this doctoral project and not to the student's future scholarly projects or research (which would need a separate request for approval).

As per DNP program requirements, the student will publish a scholarly report of this Clinical Practice Guidelines Development project in ProQuest as a doctoral capstone (with site and individual identifiers withheld), as per the following ethical standards:

- a. In all reports (including drafts shared with peers and faculty members), the student is required to maintain confidentiality by removing names and key pieces of evidence/data that might disclose the organization's identity or an individual's identity or inappropriately divulge proprietary details. If the organization itself wishes to publicize the findings of this project, that will be the organization's judgment call.
- b. The student will be responsible for complying with the above-named organization's policies and requirements regarding data collection (including the need for the organization's IRB review/approval, if applicable).
- c. Via a Disclosure to Expert Panelists Form, the student will describe to staff members how the data will be used in the doctoral project and how the stakeholders' autonomy and privacy will be protected.

Approval signature from site representative: Name of signer (print legibly): Dr. Msbia A. AlfredPosition of signer within organization (must be authorized by the organization to approve the questionnaires/data release described above): Superintendent of Schools, Elementary School District 159Signer's contact information: malfred@ [REDACTED]

## Appendix B: Disclosure to Expert Panelist Form for Anonymous Questionnaires

### Disclosure to Expert Panelist Form for Anonymous Questionnaires

*To be given to expert panelist prior to collecting questionnaire responses—note that obtaining a “consent signature” is not appropriate for this type of questionnaire and providing respondents with anonymity is required.*

#### **Disclosure to Expert Panelist:**

You are invited to take part in an expert panelist questionnaire for the doctoral project that I am conducting.

#### **Questionnaire Procedures:**

If you agree to take part, I will be asking you to provide your responses anonymously, to help reduce bias and any sort of pressure to respond a certain way. Panelists' questionnaire responses will be analyzed as part of my doctoral project, along with any archival data, reports, and documents that the organization's leadership deems fit to share. If the revisions from the panelists' feedback are extensive, I might repeat the anonymous questionnaire process with the panel of experts again.

#### **Voluntary Nature of the Project:**

This project is voluntary. If you decide to join the project now, you can still change your mind later.

#### **Risks and Benefits of Being in the Project:**

Being in this project would not pose any risks beyond those of typical daily professional activities. This project's aim is to provide data and insights to support the organization's success.

#### **Privacy:**

I might know that you completed a questionnaire but I will not know who provided which responses. Any reports, presentations, or publications related to this study will share general patterns from the data, without sharing the identities of individual respondents or partner organization(s). The questionnaire data will be kept for a period of at least 5 years, as required by my university.

#### **Contacts and Questions:**

If you want to talk privately about your rights in relation to this project, you can call my university's Advocate via the phone number 612-312-1210. Walden University's ethics approval number for this study is 06-07-22-0526580.

Before you start the questionnaire, please share any questions or concerns you might have.

## Appendix C: Review of Literature/References Data Sheet

**Reference Data Sheet**

Total Number of References: 32

References between 2018 and 2023: 27 (84%)

Older References: 5 (16%)

SN	References between 2018 and 2023
1	Adams, E. (2015).
2	Agustina, R., Susiloretni, A., Lestari, W., Pritasari, K., & Shankar, H. (2021).
3	Anderson, P., Butcher, K., & Schanzenbach, D. (2019).
4	Burrell, D., Wright, J., Taylor, C., Shockley, T., Reaves, A., & Mairs, J. (2020).
5	Centers for Disease Control and Prevention. (2021).
6	Coronado-Ferrer, S., Ferrer-Sapena, A., Aleixandre-Benavent, R., Valderrama Zurián, J., & Cogollos, L. (2022).
7	Gokosmanoglu, F., Cengiz, H., Varim, C., Yaylaci, S., Nalbant, A., & Karacaer, C. (2019).
8	Häkkinen, P., Ketola, E., & Laatikainen, T. (2018).
9	Hartmann, C., Snow, A., Allen, R., Parmelee, P., Palmer, J., & Berlowitz, D. (2013).
10	Hsu, P., Hwang, F., Chien, M., Mui, W., & Lai, J. (2022).
11	Karki, A., Shrestha, A., & Subedi, N. (2019).
12	Kaymak, S., Kassymbek, Z., & Shyndaulet, N. (2021).
13	Moschonis, G., Siopis, G., Anastasiou, C., Lotova, V., Stefanova, T., Dimova, R., Rurik, I., Radó, A., Cardon, G., De Craemer, M., Lindström, J., Moreno, L., De Miguel-Etayo, P., Makrilakis, K., Liatis, S., & Manios, Y. (2022).
14	Moussa, H., Salameh, P., Barakat, S., Farfour, I., Dana, R., Merhi, B., Al Hussein, H., Kanso, A., & Wehbe, H. (2021).
15	Nittari, G., Scuri, S., Petrelli, F., Pirillo, I., di Luca, N., & Grappasonni, I. (2019).
16	Nittari, G., Scuri, S., Sagaro, G., Petrelli, F., & Grappasonni, I. (2020).
17	Park, S., Park, C., Bahorski, J., & Cormier, E. (2019).
18	Ratajczak, J., & Petriczko, E. (2020).
19	Ruhl, C. (2021).
20	Sanyaolu, A., Okorie, C., Qi, X., Locke, J., & Rehman, S. (2019).
21	Schutz, D., Busetto, L., Dicker, D., Farpour-Lambert, N., Pryke, R., Toplak, H., Widmer, D., Yumuk, V., & Schutz, Y. (2019).
22	Smith, J. D., Fu, E., & Kobayashi, M. A. (2020).
23	Sserwanja, Q., Mutisya, L., Olal, E., Musaba, M., & Mukunya, D. (2021).
24	Stavridou, A., Kapsali, E., Panagouli, E., Thirios, A., Polychronis, K., Bacopoulou, F., Psaltopoulou, T., Tsolia, M., Sergeantanis, T., & Tsitsika, A. (2021).
25	Tuma, F., & Nassar, A. K. (2021).
26	Verenna, A., Noble, A., Pearson, E., & Miller, M. (2018).
27	Yong, D., Kim, S., Lee, J., Lee, E., Kim, J., Kim, Y., Kang, K., Hong, J., Shim, J., Lee, Y., Kang, B., Lee, Y., Kim, M., Moon, J., Koh, H., You, J., Kwak, Y., Lim, H., & Yang, H. (2019).

SN	Older References
1	Hruby, A., & Hu, F. B. (2015).
2	Hyder, I., & Bhamani, S. (2016).
3	Walter, O., & Ezra, R. (2015).
4	Williams, E., & Greene, L. (2017).
5	Wilson, L. (2016).



## Appendix D: CPG for BMI Screening in Elementary Schools

# Nursing Clinical Practice Guideline

## *BMI screening in primary schools for the early detection of childhood obesity*

### *Introduction*

Obesity is a public health epidemic and is as relevant in the pediatric population as it is in adults. Globally, more than 41 million children were obese or overweight by 2018. Due to the alarming incidence rates, developing an effective strategy to address childhood obesity is critical. Early detection of abnormal BMI's would mean these students can be placed into appropriate remedial regimens to help them restore proper BMIs.

### *Aim*

This CPG was designed to help schools become partners with parents and healthcare providers to identify BMI concerns early. Identifying children at risk for obesity could improve early diagnosis, purposeful treatment plans, and collaboration with parents. The school system is recommended as a screening platform to collect data due to the benefits of obtaining large amounts of student data in a short period of time.

### *Definition of Terms*

CPG: Clinical practice guidelines are statements that include recommendations intended to optimize patient care.

BMI: Body mass index is a calculation that uses height and weight to estimate how much body fat someone has.

### *Assessment*

- The targeted population are elementary school students through age 10
- Physical Assessment
  - Height and Weight of each student should be recorded annually by designated school staff
  - BMI calculations will be completed by the school nurse
- Investigations The school nurse will identify if the child is underweight, a healthy weight, overweight, or obese
- Notification- The school nurse will notify the parents of any abnormal BMI
- Education needs- The school nurse will educate the parents on the implications of the students BMI
- Follow up: The school nurse will give a recommendation for the parent to make a follow up appointment with the child's primary care provider

### *Management*

#### *Acute management*

- The BMI Screening tool will be used to collect students height and weight during gym class.
- The tool is to be used by classroom but the students will go into a private area to have the measurements collected
- Student data once collected for the classroom will be handed to the school nurse for calculations, notifications, and recommendations

#### *Ongoing management*

- The same process should be repeated annually by classroom for students through age 10
- The parent or child will have the option to opt out of the annual process

### *Follow-up / Review*

#### *Special Considerations*

- infection control
- patient safety alerts
- potential adverse events

#### *Companion Documents*

- Parent information package (Obesity fact sheet)
- BMI Screening Tool
- Staff training and learning packages

### *Links*

#### *Include web address*

- Childhood obesity facts <https://www.cdc.gov/obesity/data/childhood.html>
- Parent support groups <https://childandfamilyblog.com/childhood-obesity/>
- National / professional bodies [https://www.who.int/health-topics/obesity#tab=tab\\_1](https://www.who.int/health-topics/obesity#tab=tab_1)

## Appendix E: BMI Screening Tool

KEY:  
 Age in years and months  
 Sex M/F  
 Height in inches  
 Weight in pounds  
 BMI to be calculated using: <https://www.cdc.gov/healthyweight/bmi/calculator.html>

### BMI SCREENING TOOL

SCREENING SITE \_\_\_\_\_

SCHOOL DISTRICT/PROGRAM \_\_\_\_\_

SCREENING DATE \_\_\_\_\_ DATA COLLECTOR(S) \_\_\_\_\_

NURSES'S NAME \_\_\_\_\_ ROOM # \_\_\_\_\_

	NAME	AGE	SEX	HEIGHT	WEIGHT	BMI CALCULATION
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