



University of Kentucky  
**UKnowledge**

---

DNP Projects

College of Nursing

---

2016

## An Evaluation of Childhood Overweight and Obesity Screening and Management in the Primary Care Setting

Stephanie Horning

University of Kentucky, [stephanie.horning@uky.edu](mailto:stephanie.horning@uky.edu)

Follow this and additional works at: [https://uknowledge.uky.edu/dnp\\_etds](https://uknowledge.uky.edu/dnp_etds)



Part of the [Family Practice Nursing Commons](#)

[Right click to open a feedback form in a new tab to let us know how this document benefits you.](#)

---

### Recommended Citation

Horning, Stephanie, "An Evaluation of Childhood Overweight and Obesity Screening and Management in the Primary Care Setting" (2016). *DNP Projects*. 119.

[https://uknowledge.uky.edu/dnp\\_etds/119](https://uknowledge.uky.edu/dnp_etds/119)

This Practice Inquiry Project is brought to you for free and open access by the College of Nursing at UKnowledge. It has been accepted for inclusion in DNP Projects by an authorized administrator of UKnowledge. For more information, please contact [UKnowledge@lsv.uky.edu](mailto:UKnowledge@lsv.uky.edu).

## **STUDENT AGREEMENT:**

I represent that my DNP Project is my original work. Proper attribution has been given to all outside sources. I understand that I am solely responsible for obtaining any needed copyright permissions. I have obtained and attached hereto needed written permission statements(s) from the owner(s) of each third-party copyrighted matter to be included in my work, allowing electronic distribution (if such use is not permitted by the fair use doctrine).

I hereby grant to The University of Kentucky and its agents a royalty-free, non-exclusive and irrevocable license to archive and make accessible my work in whole or in part in all forms of media, now or hereafter known. I agree that the document mentioned above may be made available immediately for worldwide access unless a preapproved embargo applies. I also authorize that the bibliographic information of the document be accessible for harvesting and reuse by third-party discovery tools such as search engines and indexing services in order to maximize the online discoverability of the document. I retain all other ownership rights to the copyright of my work. I also retain the right to use in future works (such as articles or books) all or part of my work. I understand that I am free to register the copyright to my work.

## **REVIEW, APPROVAL AND ACCEPTANCE**

The document mentioned above has been reviewed and accepted by the student's advisor, on behalf of the advisory committee, and by the Assistant Dean for MSN and DNP Studies, on behalf of the program; we verify that this is the final, approved version of the student's DNP Project including all changes required by the advisory committee. The undersigned agree to abide by the statements above.

Stephanie Horning, Student

Dr. Judith Daniels, Advisor

Running head: AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

Final DNP Project Report

An Evaluation of Childhood Overweight and Obesity Screening and Management  
in the Primary Care Setting

Stephanie Horning

University of Kentucky

College of Nursing

Fall 2016

Judith Daniels, PhD, APRN-Committee Chair

Sharon Lock, PhD, APRN, FNAP, FAANP-Committee Member

Dawn Courtenay, MD-Clinical Mentor

# AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

## Dedication

I dedicate this project work to my children, Tyler and Morgan. Thank you for your patience during those times when mommy had to complete school work and couldn't play. I believe I role modeled for you what it looks like to work hard and now the time has paid off. I am done with school now babies so let's go play!

# AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

## Acknowledgements

I would like to thank my advisor Dr. Judi Daniels for her mentorship throughout this DNP journey. I would also like to thank Dr. Sharon Lock for her mentorship. Their support has positively impacted my success in this DNP program. I would like to express sincere gratitude to Dr. Kim Tharp-Barrie for her enthusiasm, compassion, encouragement, and mentorship. She has role modeled what a DNP nurse can accomplish and was instrumental in making this achievement a possibility for myself. I hope to exude the same enthusiasm in nursing and life's journey.

# AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

## Table of Contents

Acknowledgements.....	iii
List of Tables.....	v
Abstract.....	1
Final DNP Project Report-Introduction.....	2
Background.....	2
Purpose.....	3
Review of Literature.....	4
Methods.....	9
Results.....	12
Discussion.....	14
Limitations.....	18
Recommendations.....	18
Conclusion.....	19
References.....	20

AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

List of Tables

Table 1. Demographic Summary.....23

Table 2. Family History Evaluation.....24

Table 3. History Evaluation.....25

Table 4. Medical Assessment.....26

Table 5. Management Summary.....27

# AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

## Abstract

**Background-**In Kentucky, 19.7% of children ages 6-11 years old are obese ("Center for Disease Control and Prevention (CDC)," 2013). Approximately 50% of these children will become obese adults (Lazarou & Kouta, 2010). It is imperative that interventions are initiated to normalize weight in childhood to offset the long term physical and psychosocial risks associated with obesity.

**Purpose-**The purpose of this gap analysis was to evaluate the screening and management of childhood overweight and obesity in one of Norton's healthcare primary care setting.

**Methods-**The electronic medical records of 35 children aged 10 to 11, who had BMIs >85<sup>th</sup> percentile were reviewed to evaluate the screening, diagnosis, and management of their weight. Focused interviews with the primary care providers were conducted to evaluate perceived barriers in the screening and management of childhood overweight and obesity.

**Results-**All children had a BMI percentile recorded yet no diagnosis of overweight or obesity was listed. There was no consistency between weight management plans and no follow-up appointments were made. No association was found between those with a previous well child check where a management plan was documented and a subsequent BMI. The provider interviews revealed perceived barriers in diagnosing and managing childhood obesity.

**Conclusion-**The recorded BMI percentile is not utilized for a comprehensive management plan. The inconsistency in the assessment and history contributes to a lack of individualization and follow-up for weight management.



# AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

## An Evaluation of Childhood Overweight and Obesity Screening and Management in the Primary Care Setting

Overweight and obesity in children aged 6-11 years are growing at alarming rates which contributes to the development of chronic diseases at a younger age (Lazarou & Kouta, 2010). The development of these chronic diseases is tragic to the population health of America and its financial stability from increasing healthcare costs. Important in the process of addressing this epidemic is screening children for overweight and obesity as well as providing treatment to both the child and parent in the primary care setting. The purpose of this project was to assess the screening and management of childhood overweight and obesity in the primary care setting.

### **Background**

The CDC reports obesity rates among children 6-11 years of age are approximately 17.7% of in the United States, 19.7% in Kentucky, and 21% in Louisville, Kentucky (Center for Disease Control and Prevention [CDC], 2013). Approximately 50% of obese children will become obese adults (Lazarou & Kouta, 2010). The health risks associated with childhood overweight and obesity include immediate risks of digestive disorders, respiratory complications, sleeping disorders, social stigmatization, depression, hyperactivity disorders, and poor academic performance (Dority, McGarvey, & Kennedy, 2010). As many obese children become obese adults, the long term health risks include high blood pressure, diabetes, heart disease, cancer, and premature death (Dority et al., 2010). More than 50% of obese children present with at least one cardiovascular risk factor (Lazarou & Kouta).

Childhood overweight and obesity increases the risk for weight issues by 50% once in adulthood. Along with this increase are the medical costs associated with the consequences of obesity. Currently, estimates for these costs range from \$147 billion to nearly \$210 billion per

## AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

year. In addition, obesity is associated with job absenteeism, lower productivity at work which cost employers approximately an additional \$506 per obese worker per year (The Healthcare Costs of Obesity, 2016). The annual medical expenditure is 37% higher for adults with an elevated body mass index (BMI) than adults of normal weight (Dority et al., 2010). This growing health problem in children and adults contributes to the skyrocketing healthcare costs in America.

### **Purpose**

The primary care office of a large healthcare organization serves numerous pediatric patients in an urban setting. The providers are all specialized in family medicine and have an interest in preventative medicine. There was an expressed interest in identifying how childhood obesity is currently being approached and available resources for management.

The objective of this evaluation was to assess the screening and management of childhood overweight and obesity in the primary care setting. The evaluation consisted of an electronic medical record review and a focused interview with healthcare providers. In the electronic medical record review of all 10 to 11 year old well child checks (WCC) and a WCC within the past 3 years, the following questions were addressed:

- What percentage of children had their Body Mass Index (BMI) percentile calculated?
- If the BMI was calculated at >85<sup>th</sup> percentile, what percentage of children had a diagnosis of overweight assigned to the problem or if the BMI was calculated at >95<sup>th</sup> percentile, what percentage of children had a diagnosis of obesity assigned to the problem?
- If the BMI was >85<sup>th</sup> percentile, was weight addressed in a management plan? What resources were utilized to aid in the management? Was a plan for follow-up created?

## AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

- What assessments of overweight or obesity risk factors were reviewed to assist in developing an individualized plan, including consumption of sugar-sweetened beverages, fruit and vegetables, amount of sleep per night, amount of screen time per day, and amount of physical activity per day?
- Was the BMI percentile at the 10 to 11 year old well child exam impacted if a weight diagnosis was made at a previous WCC?
- What percentage of patients had blood pressure, glucose, or lipids assessed at the 10 to 11 year old WCC or previous visit?

In the focused interview with providers, the following questions were addressed:

- What are the perceived barriers of the providers in the diagnosis and management of childhood overweight or obesity in the primary care setting?
- What resources are utilized in the management of overweight or obesity in the child ages 6-11 years old?

### **Review of Literature**

Primary care practices play an important role in addressing childhood obesity. There are reported barriers in the screening and management of childhood obesity in this setting. Providers have reported being uncomfortable with raising the issue of weight, unclear about nutritional resources, and feelings of inadequacy in motivational interviewing (Silberberg et al., 2012). In addition, the providers have reported inadequate time during visits to counsel about weight issues as well as poor reimbursement for the counseling (Sesselberg, Klein, O'Conner, & Johnson, 2010).

Primary care providers need tools and support to address childhood obesity in the primary care environment. A recent national survey suggested the use of the 5-2-1-0 Let's Go!

## AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

program developed by the Maine Youth Overweight Collaborative as an effective and quick tool for assessment of overweight and obesity risk factors. It also assists the provider in discussing strategies on how to improve diet and exercise (Sesselberg, Klein, O'Conner, & Johnson, 2010). After initiating the 5-2-1-0 Let's Go program in 65 practices in Maine, the practice of documenting the patient's BMI percentile, weight classification, blood pressure, and assessing healthy habits increased from 30% to 60% during WCCs. In addition, the prevalence of overweight and obesity in children with a mean age of 11 decreased from 32.8% to 31.3% (Let's Go!, 2010).

In addition, participation in continuing medical education (CME) programs has been found to increase provider awareness of childhood obesity (Sesselberg et al., 2010). Providers are offered insights on other programs and strategies on how to incorporate weight management into the WCC. There are a number of guidelines available that address childhood obesity which providers would be exposed to in CME programs (Sesselberg et al.).

The healthcare guideline: Prevention and Management of Obesity for Children and Adolescents from the Institute of Clinical Systems Improvements (ICSI) offers evidence-based practice for providers. The focus of obesity prevention is through diet and exercise with family involvement. Prevention strategies involve annual WCCs which include the assessment of diet, physical activity, and sedentary behaviors. In addition, prevention includes limiting sugar-sweetened drinks, 60 minutes of exercise per day, limit screen time to 2 hours per day, and eating at least 5 fruits and vegetables per day ("Prevention and management of obesity," 2013).

The ICSI guideline recommends a number of strategies in the management of childhood obesity. The interventions include following the 5-2-1-0 Let's Go! program with the goal of one pound weight loss per month. The primary interventions for success are healthy dietary intake

## AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

and physical activity. The follow-up should occur monthly. If there is no change in weight in 6 months, the interventions should include a structured behavior modification plan involving the family and specialist involvement (Prevention and management of obesity, 2013).

Childhood overweight and obesity is a multifactorial problem. The first step is to thoroughly investigate the child's nutritional patterns. Children in the 10 to 11 year old age group consume calories from foods eaten at school, social outings, as well as from their family meals. Dority et al., (2010) states approximately 50% of a child's caloric intake comes from food consumed in school. Therefore, the school setting is an ideal forum to focus on improving children's dietary intake. The primary care provider may partner with community schools to provide education and programs to prevent childhood obesity.

The CDC reports children consume 17% of their daily caloric intake from added sugars and 40% of the total added sugars are from beverages (Ervin, Kit, Carol, & Ogden, 2012). These statistics demonstrate the need to provide education to children and families on eliminating sugary drinks. This is another avenue that schools could improve the nutritional intake as sugary juice is available in the school lunch program. The American Academy of Pediatrics (AAP) guidelines support this intervention as well (Perrin & Skinner, 2013).

The National Health and Nutrition survey demonstrates 77% of children ages 2-19 consume fruit daily and 92% consume vegetables daily (Nielson, Rossen, Harris, & Ogden, 2014). The AAP guidelines recommend children eat 5 or more servings of fruits and vegetables daily (Perrin & Skinner, 2013). Primary care providers should include in the patient's history the amount of fruits and vegetables consumed. This will allow for individualized goal setting to address an elevated BMI.

## AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

Knowing that there are multiple venues in which calories are consumed the provider needs an understanding of the child's eating patterns. Collaboration between providers, the school system, and the family is essential to reduce obesity in children (Tremblay & Goldfield, 2010). Parental modelling and parent food intake are positively associated with children's fruit and vegetable consumption. Studies show family rules, home availability of healthy foods, and parental encouragement impact the dietary habits of children (Pearson, Biddle, & Gorely, 2010).

One of the strongest predictors of childhood obesity is the BMI of the paternal parents. The inheritability of obesity is approximately 64-84% (Stunkard, Foch, & Hrubec, 1986). Studies have identified a strong association between the fat-mass and obesity-associated (FTO) gene and BMI (Vos & Welsh, 2010). The melanocortin 4 receptor gene is associated with obesity in children as its deficiency leads to hyperphagia, hyperinsulinemia, and increased body mass (Vos & Welsh, 2010). Therefore, it is important for providers to assess family history of obesity to provide early obesity prevention measures. Although genetic risk factors do not solely determine a child's weight, they do play a large role in determining how a child will respond to the environmental factors of diet and physical activity (Lyon & Hirschhorn, 2016). In addition, infants of diabetic mothers and infants with intrauterine growth retardation are at increased risk of childhood obesity (Prevention and management of obesity, 2013).

In the management of childhood obesity, physical activity must be considered. Among children ages 6-12, the prevention and treatment of childhood obesity is more successful when physical activity is incorporated in the treatment plan. In a recent national representative survey, 77% of children report participating in physical activity within the past 7 days (Healthy schools, 2015). The AAP recommends children engage in one hour of physical activity per day (AAP, 2015). Providers should assess the amount of physical activity per day when collecting the

## AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

patient's history to provide an individualized plan of care. In addition, assess the amount of screen time per day as it contributes to a more sedentary lifestyle. The American Academy of Pediatrics (AAP) states children should have less than 1 hour of screen time per day (2015).

Many families struggle to maintain or improve a lifestyle of healthy eating and physical activity. The fast foods available are convenient and cheap. Many children are not engaged in physical activity and social media lends to a more sedentary lifestyle. The lack of safe neighborhoods, lack of access to gyms, and limited time of parents to provide outside time and sports time also contributes to decreased physical activity in children.

Based on the recommendations from the AAP and the CDC, it is imperative that national growth charts including BMI for age and gender percentiles are used (Lazarou & Kouta, 2010). The AAP recommends the BMI percentile be used on children over 2 years of age and calculated at every WCC ("AAP," 2015). All children with a BMI greater than the 85<sup>th</sup> percentile should be assigned the appropriate weight diagnosis and have a management plan initiated. A BMI of >85<sup>th</sup> percentile defines overweight and a BMI of >95<sup>th</sup> percentile defines obesity (Hopkins, Elliot, & DeCristofaro, 2011). The alarming trends and risks associated with childhood obesity elevate the priority of preventing, screening, diagnosing, and treating childhood overweight and obesity for healthcare providers.

The recent studies on the use of an electronic medical record (EMR) confirm its enhancement on the calculation of BMI percentiles. The use of EMR systems increases the proportion of patients who have the BMI percentile calculated, but does not always result in more counseling time (Sesselberg et al., 2010). An EMR which prompts the provider to assess in more detail the health risk associated with weight issues should help to link the BMI percentile to a diagnosis and a management plan.

## AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

In addition to the assessment of the BMI percentile, personal and family health risks should also be evaluated. Using the 5-2-1-0 model as well as recommendations from the CDC and AAP, fruit and vegetable consumption, activity, screen time, and family risk factors need to be included in the evaluation. This will allow for an individualized plan to manage the child's weight.

The BMI percentile in particular is a useful tool in monitoring for an upward slope allowing providers to address potential weight issues (Ayash et al., 2013). This project will be the first step in identifying how primary care providers are managing overweight or obesity in the 6-11 year old age range. Parents are encouraged to have yearly physicals for their children and schools require a physical examination prior to entering the sixth grade (ages 10-11 years old). Therefore, this population of children will provide an evaluation of outcomes related to screening and management of overweight and obesity in NCMAH primary care office.

### **Methods**

#### **Study Design**

A gap analysis utilizing a retrospective chart review was used to assess the screening and management of pediatric overweight and obesity. All children who presented for a 10 to 11 year old WCC were the targeted population. The medical record review included: presence of a diagnosis for overweight if the BMI is >85<sup>th</sup> percentile or obesity if the BMI is >95<sup>th</sup> percentile and the assessment and initiation of a management plan. Where available a previous BMI percentile as noted on a WCC from the previous 3 years was evaluated. A qualitative method was utilized via a focus interview with providers in the primary care setting to determine barriers to diagnosis and management of childhood overweight and obesity.



## AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

The data obtained during the retrospective chart review of 10 to 11 year old WCC and, if available, a previous WCC included: demographics, family history, risk factor evaluation, management, and resources. The review of a WCC prior to the 10 to 11 year well child exam was limited to three years as the electronic medical record was not available beyond the previous three years. The data was used to assess the screening and management of an elevated BMI as well as the effect on BMI when a diagnosis is assigned and treatment is initiated. In addition, barriers to the diagnosis and management of childhood obesity was explored via a focused interview with the primary care providers in the practice setting.

### **Subject recruitment**

The population sample included all children between the ages of 10 to 11 who presented for a WCC from January 2012 to December 2015 and were patients at the primary care office. There were a total of 157 10 to 11 year old well child visits at the study site. A total of 35 had an elevated BMI percentile and were included in the sample. The EMR within the organization has been available since 2012. Therefore, for half of the sample previous records were unavailable. This allowed for only 16 retrospective analysis regarding BMI percentile and management when appropriate. The only exclusion criterion was any child diagnosed with a developmental disorder, and/or diagnosed with downs syndrome or autism as their weight problems are unique to their diagnosis.

The providers were sent a group email from the primary investigator (PI) to inform them of the upcoming focus interview on the screening and management of children with a BMI of >85<sup>th</sup> percentile. The email was sent one month prior to the interview. The names of the providers were obtained from the office manager. Each provider was asked to participate in a 10 minute interview regarding the management of children with an elevated BMI. Consent to participate

## AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

was obtained prior to the interview. Only those providers that see children were included in the interview.

### **Subject Protection**

The data collection began following IRB approval from the University of Kentucky review board and Norton Healthcare Office of Research Administration (NHORA). No identifying information was reported from the medical record review. The consent was obtained from the providers for the focused interview. Participation was voluntary and assurance was given that all results would be in aggregate form only. The providers were informed that they could skip any question they did not feel comfortable answering. The consent was presented to the providers by the PI at the primary care office 2 weeks prior to the interview.

### **Research Procedures**

Prospective charts were identified by a 10 to 11 year old WCC between January 2012 and December 2015. The medical records were screened to determine if they met inclusion criteria. The medical record review was conducted in a private room within a Norton facility without others in the room. Data collected from the medical record review was analyzed in the aggregate.

There were three providers (one nurse practitioner and two physicians) from the primary care office who met study criteria and consented to participate in the focused interview. The interview, which took approximately 10 minutes, was scheduled at their convenience. It was conducted at the primary care office during business hours after the consent was obtained. Participation was voluntary and all interview answers remained confidential. The results were presented to the providers upon conclusion of the project.

# AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

## **Data Analysis**

Data analysis was completed using IBM SPSS Statistical program (Version 24.0). Descriptive statistics were used to analyze the demographic variables, the recorded assessment and management plan documented by the provider. The paired T-test was utilized to assess for a significant association between the most recent BMI percentile and the one from a previous WCC. A T-test was also calculated to assess for any change in the patient's BMI percentile when a medical management plan was initiated from a previous elevated BMI percentile. The T-test were considered significant if the alpha level of .05.

## **Results**

### **Sample Characteristics**

Of the 35 patients, 51.4% were overweight and 48.6% were obese. Gender distribution was nearly equal (male 49%; female 51%). There was minimal diversity in ethnicity with only 28% of patients being a race other than white. English was the primary language for all patients. The primary caregiver listed for all were parents. The source of insurance for the sample was Medicaid at 57.1% and private insurance at 42.9%. Complete sample demographics are presented in Table 1.

### **Evaluation of Weight**

None of the children with an elevated BMI percentile received a diagnosis consistent with overweight or obesity. The family history evaluation demonstrated no recorded family history of obesity. The only significant documented family history was of hypertension and diabetes (See Table 2).

The sample was evaluated for obesity risk factors assessed by the provider including diet, sleep, screen time, and activity. The providers evaluated fruit and vegetable consumption,

## AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

amount of sleep, and activity in approximately 60% of the sample. Sugar drink consumption was evaluated in less than 40% of the sample and the amount of screen time in 5% (See Table 3). Every child had a documented blood pressure. Less than 20% had a documented measure of their cholesterol and blood glucose (See Table 4).

### **Management**

The management plan addressed sugary drinks, fruit and vegetable consumption, and physical activity for approximately 60% of the sample. Providers documented advice on the amount of screen time and sleep for approximately 50% of the sample. Providers gave a printed handout about overweight or obesity risk factors to 40% of the sample population (See Table 5).

Only 16 participants had a previous BMI percentile for comparison purposes. An increase in the BMI percentile mean was found from 92.7 to 95.1 ( $p= 0.13$ ) over the previous three years. An annual WCC in one year was recommended for 34 of the 35 patients. There was not an immediate follow-up appointment made to address their weight.

### **Interviews**

The focused interviews were conducted with three providers at the primary care office. Two of the providers were family practice physicians and one family practice nurse practitioner. All three conducted wellness visits for the project population.

The barriers identified in diagnosing and managing childhood overweight and obesity were consistent among the providers. The identified barriers in diagnosing was the sensitive nature of labeling a child obese. Each provider stated having the My Chart electronic patient access system that allowed the patient and families to view every attached diagnosis created hesitation. Their fear was of hurting a patients feelings or placing a stigma on the child and lead

## AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

to body image disturbances and eating disorders. In addition, the providers hesitated to place a diagnosis due to the lack of a management plan available to address the diagnosis.

One provider expressed concerns in the school lunch program. The concern was surrounding the high sugar foods and drinks available to children in school. This availability further confuses children and parents about healthy dietary habits as well as hindering the healthy weight of children attending the school.

The providers expressed concern in the absolute lack of any available resources to manage childhood obesity. They discussed previous childhood obesity clinics that no longer are available due to a lack of funding. The only management plan utilized by each of the providers was dietary and activity counseling provided by themselves. They all expressed the importance of parental involvement for a successful management plan.

An additional expressed barrier existed in the EMR. The templates utilized for WCCs are inconsistent and lack appropriate obesity screening tools. Though the EMR automatically calculates the BMI percentile and plots it on a growth chart, there is no consistent format for the WCC. Each provider is left to their own practice on what information to collect.

### **Discussion**

This project was aimed at evaluating the current state of practice in assessing and managing childhood overweight and obesity. This very complex problem is reflected in this gap analysis. These results continue to verify that childhood overweight and obesity has not been fully embraced by healthcare.

Based on the recommendations from the AAP and the CDC, it is imperative that national growth charts including BMI for age and gender percentiles are used (Lazarou & Kouta, 2010). The AAP recommends the BMI percentile be used on children over 2 years of age and

## AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

calculated at every WCC (2015). All children with a BMI greater than the 85<sup>th</sup> percentile should be assigned the appropriate weight diagnosis and have a management plan initiated. A BMI of >85<sup>th</sup> percentile defines overweight and a BMI of >95<sup>th</sup> percentile defines obesity (Hopkins, Elliot, & DeCristofaro, 2011). The alarming trends and risks associated with childhood obesity elevate the priority of preventing, screening, diagnosing, and treating childhood overweight and obesity for healthcare providers.

The recent studies on the use of an electronic medical record (EMR) confirm its enhancement on the calculation of BMI percentiles. The use of EMR systems increases the proportion of patients who have the BMI percentile calculated, but does not always result in more counseling time (Sesselberg et al., 2010). An EMR which prompts the provider to assess in more detail the health risk associated with weight issues should help to link the BMI percentile to a diagnosis and a management plan.

In addition to the assessment of the BMI percentile, personal and family health risks should also be evaluated. Using the 5-2-1-0 model as well as recommendations from the CDC and AAP, fruit and vegetable consumption, activity, screen time, and family risk factors need to be included in the evaluation. This will allow for an individualized plan to manage the child's weight.

The study site was in compliance for calculating a BMI percentile. All of the patients had their BMI percentile calculated and plotted on a growth chart. Despite the recorded elevated BMI percentile, no child had a weight diagnosis assigned. It is the diagnosis which reflects the acknowledgment of a weight issue and signals the need of a management plan.

The providers interviewed expressed their discomfort in assigning a diagnosis. The reasons cited of possibly offending the patient and family and lack of a management plan are

## AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

commonly cited in the literature. These results are similar to those found by Reyes (2015) and Silberberg (2012). They both assessed the importance of assigning a diagnosis to affect a BMI trajectory. Unfortunately, the many competing demands that providers face while completing a WCC may steer them away from addressing weight. Again this is mirrored in the literature as stated by Reyes (2015) and Silberberg (2012).

There are recognized risk factors that potentiate the likelihood of childhood overweight or obesity. The inheritability of obesity is approximately 64-84% which would make understanding family history imperative (O'Rahilly & Farooqi, 2015). Unfortunately, in this study there was no familial history evaluation of obesity recorded. Recorded for some of the patients was a positive family history of diabetes, hypertension, and hyperlipidemia. The absence of these diseases may reflect the age of the parents or the lack of documentation. It's unclear how to interpret this finding using the current EMR. This would point to the need of a standardized format for all those with an elevated BMI percentile.

Along with the family history, the AAP recommends always evaluating the patient's nutrition, physical activity, and sleep (2015). From that evaluation, the management plan would center on individualizing patient goals to mirror that recommended in the 5-2-1-0 program. The Center for Disease Control and Prevention and American Medical Association recommends the use of the 5-2-1-0 Lets Go plan for obesity prevention and treatment ("CDC," 2014).

In this gap analysis, there was inconsistency in the evaluation of these factors. Although, physical activity and fruits and vegetables were the most commonly evaluated factors followed by sugar consumption the lack of detail hindered the ability to make conclusions. This same problem carried over into the management plan where these same factors were discussed but no detail was available. One might assume that the lack of a consistent EMR template

## AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

hinders the process. A benefit of the current EMR was the availability of a standardized educational reference about childhood overweight and obesity. This tool is optional and appeared to be underutilized.

The AAP recommends the physical examination of children include blood pressure screening and those with a BMI greater than the 85<sup>th</sup> percentile have laboratory measurements including fasting glucose and lipid profile (Rao, 2011). The 35 children in the project population all had their blood pressure measured. Less than 20% of the 35 children with a BMI of greater than the 85<sup>th</sup> percentile had an assessment of their fasting glucose or lipid profile. Again this reflects the current practice as noted in the literature (Rao, 2011). This may be associated with the lack of a management plan to initiate if the lipids are abnormal. The results of blood pressure and labs for all of the children in the sample were normal.

In the BMI comparison of 16 patients from the current 10 to 11 year old WCC and a previous WCC, the mean BMI increased from 92.7 to 95.1 over three years. The increase was not statistically significant with a p value of .13 yet it reflects the tenacity of the problem. The inclusion or exclusion of a management plan in the previous WCC did not demonstrate an impact on the patient's overall weight status at the following WCC. These findings are not unusual and speaks to the importance of embracing the weight epidemic in children.

The provider interviews offered insight into the multitude of barriers that exist in diagnosing and managing childhood obesity. The sensitivity of a child's weight status to the parent and the child themselves creates a challenge for providers in conveying the diagnosis effectively. In addition, the lack of resources available to manage overweight and obesity further challenges the provider's motivation to diagnosis and manage this growing problem in children.



## AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

Overcoming these barriers will require time and learning new skills. The use of motivational interviewing may assist in offering the providers sensitive avenues to effectively address a child's weight status. Incorporating the Lets Go 5-2-1-0 provides a simple, standardized, evidence-based approach for family and providers ("Let's Go!," 2010). Information to the providers on appropriate billing codes and reimbursement may promote the diagnosis and management of childhood obesity.

The current electronic medical record limits the provider's ability to efficiently and effectively screen, diagnosis, and manage childhood overweight and obesity. A standardized template for a WCC including risk factor screening tools may provide a consistent assessment of a child's risk factors for obesity and individualize the management plan for the patient's needs. It may be beneficial to add a template that includes the Lets Go 5-2-1-0 program. Providers would have to agree that this is the approach that they will all take.

### **Limitations**

Limitations should be considered when interpreting this project. It involved a retrospective review, thus the data was limited to what was documented during the WCC during the project timeframe. There is a lack of generalizability as the sample size is small and focused at one primary care office site. The comparison of BMI percentiles from the current visit to a previous wellness visit was limited as the electronic medical record was only available up to the last three years. There is a lack of patient perspective. Although, the above limitations do exist for this project results may be utilized for quality improvement at the study site.

### **Recommendations**

Specific measures to improve practices at this project site are to add point-of-care alerts in the electronic medical record when an elevated BMI percentile is calculated. This would

## AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

ensure that a diagnosis would be assigned. In addition, the utilization of patient sensitive diagnoses such as “BMI >85<sup>th</sup> percentile” may offer greater provider adherence to diagnosing.

The analysis does demonstrate that BMIs increased between WCCs visits in the sample where records were available. This reemphasizes the need to develop a standardized approach for weight management. Providers must be supported to practice in an evidence-based manner. An EMR equipped with standardized educational resources available for providers to give to the patient after each visit would assist in reinforcing education provided during the visit. This project further elevates the priority to move the research focus to effective management strategies to combat childhood obesity.

### **Conclusion**

This retrospective analysis examined associations between demographics, history evaluation, patient assessment, and the screening, diagnosing, and management of childhood overweight and obesity. The analysis did not reveal a strong statistical association between demographics and management plan to the BMI percentile. However, the project did reveal the absence of diagnosis in a child with an elevated BMI percentile as well as a lack of available resources for the management of childhood overweight and obesity. The provider interviews offered a qualitative assessment of barriers to diagnosing and managing childhood obesity. With the findings in this project, future research can be focused on developing effective management plans. The research should be larger-scale to provide a more generalizable result.

## AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

### References

- AAP updates recommendations on obesity prevention: It's never too early to begin living a healthy lifestyle. (2015). Retrieved from [www.aap.org](http://www.aap.org)
- Ayash, C., Simon, S., Marshall, R., Kasper, J., Chomitz, V., Hacker, K., ... Taveras, E. (2013). Evaluating the impact of point-of-care decision support tools in improving diagnosis of obese children in primary care. *Obesity, 21*, 576-582.  
<http://dx.doi.org/10.1002/oby.20161>
- Community Profile: Louisville, KY. (2013). Retrieved from [www.cdc.gov/obesity/data/childhood.html](http://www.cdc.gov/obesity/data/childhood.html)
- Dority, B. L., McGarvey, M. G., & Kennedy, P. F. (2010). Marketing foods and beverages in schools: The effect of school food policy on students' overweight measures. *Journal of Public Policy & Marketing, 29*, 204-218.
- Ervin, B., Kit, B., Carol, M., & Ogden, C. (2012). Consumption of added sugar among U.S. children and adolescents, 2005-2008. *National Center for Health Statistics*. Retrieved from [www.cdc.gov/data/databriefs](http://www.cdc.gov/data/databriefs)
- Health equity resource toolkit for state practitioners. (2014). Retrieved from [www.cdc.gov/obesity/downloads/cdchealthequityobesitytoolkit508.pdf](http://www.cdc.gov/obesity/downloads/cdchealthequityobesitytoolkit508.pdf)
- Hopkins, K., Elliot, L., & DeCristofaro, C. (2011). How can primary care providers manage pediatric obesity in the real world? *Journal of the American Academy of Nurse Practitioners, 23*, 278-288. <http://dx.doi.org/10.1111/j.1745.7599.2011.00614.x>
- Lazarou, C., & Kouta, C. (2010). The role of nurses in the prevention and management of obesity. *British Journal of Nursing, 19*, 641-646.

## AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

Let's go annual report year four, 2009-2010. (2010). Retrieved from [www.letsgo.org/wp-content/uploads/LGAnnualReportYear4.pdf](http://www.letsgo.org/wp-content/uploads/LGAnnualReportYear4.pdf)

Lyon, H., & Hirschhorn, J. (2016). Genetics of common forms of obesity. *The American Journal of Clinical Nutrition*, 82, 215-217.

National guideline clearinghouse: Prevention and management of obesity in children and adolescents. (2013). Retrieved from <https://www.guideline.gov/summaries/summary/47102/prevention-and-management-of-obesity-for-children-and-adolescents>

Nielson, S., Rossen, L., Harris, D., & Ogden, C. (2014). Fruit and vegetable consumption of U.S. youth, 2009-2010. *National Center for Health Statistics*. Retrieved from [www.cdc.gov/nchs/data](http://www.cdc.gov/nchs/data)

O'Rahilly, S., & Farooqi, S. (2015). Genetics of obesity. *National Center for Biotechnology Information*, 361, 1095-1105. <http://dx.doi.org/10.1098/rstb.2006.1850>

Pearson, N., Biddle, S., & Gorely, T. (2010). Family correlates of fruit and vegetable consumption in children and adolescents: A systemic review. *Public Health Nutrition*, 12, 267-283.

Perrin, E., & Skinner, A. (2013, February 8). The importance of screening for healthy weight and recommending healthy lifestyles in pediatric patients. *North Carolina Medical Journal*, 74, 34-38.

Physical activity facts. (2015). Retrieved from [www.cdc.gov/healthyschools/physicalactivity](http://www.cdc.gov/healthyschools/physicalactivity)

Rao, G. (2011). Childhood obesity: Highlights of AMA expert committee recommendations. *American Family Physician*, 78, 56-63.

## AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

- Reyes, I. (2015). Evaluation of the identification and evaluation of overweight and obesity in the pediatric clinic. *Medscape*, 29, 9-14.
- Sesselberg, T., Klein, J., O'Conner, K., & Johnson, M. (2010). Screening and counseling for childhood obesity: Results from a national survey. *Journal of the American Board of Family Medicine*, 23, 334-340.
- Silberberg, M., Carter-Edwards, L., Murphy, G., Mayhew, M., Kolasa, K., Perrin, E., ... Graham, C. (2012). Treating pediatric obesity in the primary care setting to prevent chronic disease: Perceptions and knowledge of providers and staff. *Pediatrics*, 73, 1-13.
- Stunkard, A., Foch, T., & Hrubec, Z. (1986). A twin study of human obesity. *Journal of American Medical Association*, 256, 51-54. <http://dx.doi.org/10.1001/jama.256.1.51>
- The healthcare costs of obesity. (2016). Retrieved from [www.stateofobesity.org/healthcare-costs-obesity](http://www.stateofobesity.org/healthcare-costs-obesity)
- Tremblay, M., & Goldfield, G. (2010). Primary care screening and brief counseling for overweight or mildly obese children does not improve BMI, nutrition or physical activity. *Evidenced-Based Medicine*, 15.
- Vos, M., & Welsh, J. (2010). Childhood obesity: Update on predisposing factors and prevention strategies. *National Center for Biotechnology Information*, 12, 280-287.

## AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

Table 1.

*Descriptive summary of study sample (N = 35)*

<b>Variable</b>	<b>N (%)</b>
Age	
10	9 (26%)
11	26 (74%)
Sex	
Male	17 (49%)
Female	18 (51%)
Ethnicity	
White	25 (72%)
Black	4 (11%)
Hispanic	0 (0%)
Other	6 (17%)
Primary Language	
English	35 (100%)
Primary Caregiver	
Parent	35 (100%)
Type of Medical Insurance	
Private	15 (43%)
Medicaid	20 (57%)

## AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

Table 2.

*Documentation of family history of study sample (N=35)*

<b>Variable</b>	<b>N (%)</b>
Family history of obesity None	35 (100%)
Family history of hypertension None One Parent	27 (77%) 8 (23%)
Family history of hyperlipidemia None One Parent	33 (94%) 2 (6%)
Family history of diabetes None One Parent Two Parents	29 (83%) 5 (14%) 1 (3%)

## AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

Table 3.

*History evaluation of study sample (N=35)*

<b>Variable</b>	<b>N (%)</b>
Evaluation of sugar drink consumption	
Greater than or equal to 1 per day	2 (6%)
Amount not specified	10 (28%)
Not evaluated	23 (66%)
Evaluation of fruit and vegetable consumption	
Less than 5 per day	1 (3%)
Amount not specified	21 (60%)
Not evaluated	13 (37%)
Evaluation of the amount of sleep per night	
Less than 8 hours per night	1 (3%)
8 hours or more per night	14 (40%)
Amount not specified	6 (17%)
Not evaluated	14 (40%)
Evaluation of the amount of screen time per day	
2 hours or less per day	2 (6%)
Not evaluated	33 (94%)
Evaluation of the amount of activity per day	
Less than 1 hour per day	1 (3%)
1 or more hours per day	1 (3%)
Amount not specified	19 (54%)
Not evaluated	14 (40%)



## AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

Table 4.

*Medical assessment of study sample (N=35)*

<b>Variable</b>	<b>N (%)</b>
Assessment of blood pressure Yes	35 (100%)
Assessment of lipid profile No Yes	28 (80%) 7 (20%)
Assessment of blood glucose No Yes	29 (83%) 6 (17%)

## AN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

Table 5.

*Management summary of study sample (N=35)*

<b>Variable</b>	<b>N (%)</b>
Management: Sugar drink consumption	
No	13 (37%)
Yes	22 (63%)
Management: Fruit and vegetable consumption	
No	11 (32%)
Yes	24 (68%)
Management: Amount of sleep	
No	18 (52%)
Yes	17 (48%)
Management: Amount of screen time	
No	17 (48%)
Yes	18 (52%)
Management: Amount of activity	
No	12 (34%)
Yes	23 (66%)
Provider discussion: Dietary	
No	12 (34%)
Yes	23 (66%)
Provider discussion: Activity	
No	14 (40%)
Yes	21 (60%)
Printed handout provided	
No	20 (57%)
Yes	15 (43%)