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## Parents Told by a Doctor that Their Child Is Overweight: Do We Have More Work to Do?

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### Abstract

**Objective:** Childhood obesity is a major public health concern; however, diagnosis and counseling with parents on childhood overweight by health care professionals (HCP) remains low. Our objective is to examine the rate at which parents in North Carolina report that a HCP told them that their child is overweight.

**Methods:** From 2007–2009, 5,699 parents with a child aged 5–17 years participated in the North Carolina Child Health Assessment and Monitoring Program (CHAMP) and provided reports of children's height and weight. During the CHAMP survey, respondents were asked to report whether during the past year a HCP had told them that their child was overweight. Analyses using weighted data provided population-based estimates by child's weight status.

**Results:** Eleven percent (95% CI 8.63, 14.18) of parents with an overweight child, and 31 percent (95% CI 27.37, 34.90) of parents with an obese child reported having been told by a HCP that their child is overweight. Parents were more likely to report that a HCP had told them that their child was overweight if the child had a preventive health care visit within the past 12 months. Parents of teens (ages 12–17) were more likely to have been counseled by a physician than parents of younger children (ages 5–11).

**Conclusion:** Few parents report having been told that their overweight or even obese child was overweight by a health care provider, which helps to explain lack of parent awareness of children's overweight status. Policy changes (e.g., reimbursement) and interventions (e.g., screening tools and trainings to improve self-efficacy) to support Body Mass Index (BMI) screening by HCP's may increase HCP communication about weight status to overweight and obese pediatric patients and their parents.

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## Introduction

The rate of childhood obesity has risen substantially over the past generation.<sup>1</sup> A comparative analysis of the National Health and Nutrition Examination Survey (NHANES) 1976–1980 and 2007–2008 data sets indicates obesity rates have doubled among preschool children (age 2–5) from 5 percent to 10 percent, and have tripled among young children (age 6–11) from 6 percent to 20 percent.<sup>2</sup> Among adolescents aged 12–19, obesity increased nearly four-fold, from 5 percent to 18 percent. North Carolina has the 11<sup>th</sup> highest childhood obesity rate in the nation, with nearly one in five children between the ages of 10 and 17 classified as obese.<sup>3</sup>

Childhood overweight and obesity are associated with multiple chronic physical and psychological health problems,<sup>4–6</sup> persist over time,<sup>7</sup> and are highly likely to lead to adverse consequences on premature mortality and physical morbidity in adulthood.<sup>8,9</sup> Early and ongoing screening and tracking of BMI percentile by age are recommended by the American Academy of Pediatrics (AAP) and the U.S. Preventive Services Task Force (USPSTF) to improve early identification and serve as the starting point for classification of health risks and promote improvements in weight during childhood and adolescence.<sup>10–11</sup>

BMI (calculated as weight in kilograms divided by height in meters squared) percentile for age and sex has been identified as a viable and reliable measure for detection of childhood overweight.<sup>12</sup> Although almost all practicing pediatricians report measuring height and weight at well-child visits, only about half routinely calculate and assess BMI percentile for sex and age for children older than two years of age, with 17 percent reporting never or rarely calculating BMI.<sup>13</sup> Increasing the use of BMI among health care providers is one initiative highlighted in the White House Child Obesity Task Force action plan: *Solving the Problem of Childhood Obesity Within a Generation*.<sup>14</sup> Annual well-child visits can be a key opportunity for the prevention, diagnosis, examination, and treatment of childhood overweight. The Task Force recommends that all primary care physicians routinely calculate BMI at all well-child and adolescent visits and provide information to parents about how to help their children achieve a healthy weight.

The role of the health care provider to inform parents of child overweight is particularly imperative since parents frequently misperceive their own child's weight.<sup>15</sup> The majority of parents with overweight or obese children do not correctly classify the weight status of their child and tend

to overestimate healthy weight.<sup>16,17</sup> De La O and colleagues reported that 75 percent of overweight children were rated by their parent as “about right” or “underweight,” and that all parents of obese children misclassified their child into a lower weight category.<sup>18</sup> Only about 37 percent of overweight children report being told by a health care provider they were overweight,<sup>19</sup> which helps to explain the lack of parent awareness of children's overweight status. As recommended by the Surgeon General, primary care physicians need to explain to parents and children how healthy weight is defined as well as explain the connection between BMI and increased risk for disease and disability.<sup>20</sup> Studies based on national data have found that few parents of overweight and obese children report that their health care provider has told them their child is overweight.<sup>21</sup>

The purpose of the current study is to examine the rate of which parents report that a health care provider told them that their child is overweight. The sample includes children (ages 5 to 17 years) classified as overweight or obese currently residing in North Carolina. Results are stratified by sex, age, and race, in order to examine differences among demographic subgroups.

## Methods

### Data

Cross-sectional data from the North Carolina Child Health Assessment and Monitoring Program (CHAMP) 2007 to 2009 surveys were used to examine parental report of a health care provider informing parents that their child is overweight. NC CHAMP is an annual telephone survey that assesses health characteristics of children from 0 to 17 years residing in North Carolina. Eligible households are recruited through the North Carolina Behavioral Risk Factor Surveillance System (BRFSS), an annual state-wide telephone survey that uses a random-digit-dial computer-assisted telephone interview to assess health characteristics of non-institutionalized adults age 18 years and older ([www.schs.state.nc.us/SCHS/brfss](http://www.schs.state.nc.us/SCHS/brfss)). One child is randomly selected from the household, and the adult identified as most knowledgeable about the health of the selected child is called approximately one week later to complete the CHAMP survey ([www.schs.state.nc.us/SCHS/champ](http://www.schs.state.nc.us/SCHS/champ)).<sup>22</sup> From 2007–2009, 43,889 adults participated in the BRFSS. A total of 12,328 (28%) reported a child under age 18 living in the household, of which 8,071 (65%) participated in CHAMP. The current study was limited to CHAMP surveys with parental reports of current height and weight on children ages 5 to 17 years (N = 5,699).

## Measures

Child characteristics were measured in the 2007–2009 CHAMP surveys.<sup>23–25</sup> Race was categorized as white, black or “other” with “other” including American Indian or Alaskan Native, Asian, Native Hawaiian or Other Pacific Islander. All respondents were asked “During the past year, has your child’s physician or another health professional told you that your child was overweight?” Respondents were also asked to report whether the child had a preventive care visit (e.g., well-child check-up, routine physical exam, immunizations, health screening tests) within the past 12 months.

## Parental Report of Child’s Height and Weight

Measures of height and weight in the NC CHAMP survey are based on proxy reports and are not independently measured; however, several procedures are used to increase accuracy of proxy reported child’s height and weight. When recruited into NC CHAMP through the BRFSS, respondents are asked to weigh the child with their shoes off, and to measure height with the child’s shoes off and with his/her back against the wall prior to the NC CHAMP telephone interview. During the NC CHAMP interview, respondents are asked to report how they arrived at their child’s height and weight: 1) Your child told you (his/her) height and/or weight; 2) You estimated or guessed your child’s height and/or weight; 3) You used a tape measure/yardstick or a bathroom scale within the past six months; 4) The child was measured and/or weighed at the doctor’s office within the past six months; 5) The child was measured and/or weighed at school within the past six months; or 6) Some other way. Respondents that report that their child had told them their height and/or weight, that they had guessed, or that they had arrived at the height and weight “some other way” are asked if they would be willing to weigh and/or measure their child and provide the updated height and/or weight to NC CHAMP (i.e., height/weight call-back survey).

BMI is estimated from parental reports of child’s current height and weight, and calculated as weight (in kilograms) divided by height (in meters) squared. Weight status is based on BMI percentiles calculated from the 2000 CDC growth charts ([www.cdc.gov/growthcharts](http://www.cdc.gov/growthcharts)), by age and sex. Underweight is defined as BMI age and sex percentile less than the 5<sup>th</sup> percentile; healthy weight defined as between the 5<sup>th</sup> and 84<sup>th</sup> percentile; overweight defined as between the 85<sup>th</sup> and 94<sup>th</sup> percentile; and obese defined as greater than or equal to the 95<sup>th</sup> percentile.

## Statistical Analysis

CHAMP data are weighted to represent the child population

of North Carolina. SAS 9.2 and SUDAAN 10.0 software survey procedures were used to account for the complex survey design. Analyses incorporated the CHAMP sample weights and variance estimators derived from the survey design. Multiple logistic regression was used to compute the adjusted odds ratios for parental report of whether a doctor had told parents that their child is overweight, adjusted for child’s sex, age, race, preventive health visit within the past year, and whether parental reported measures of height and weight were obtained from the doctor’s office, for overweight and obese children separately.

## Results

### Sample Characteristics

In general, 64.75 percent (95% CI 63.14, 66.36) of children were healthy weight/underweight (i.e., BMI < 85<sup>th</sup> percentile for sex and age), 16.29 percent (95% CI 15.04, 17.55) were overweight, and 18.96 percent (95% CI 17.62, 20.29) were obese. The majority of children had had a preventive care visit within the past 12 months (80.00% [95% CI 78.65, 81.36]); rate of recent preventive health care visit did not vary by child’s weight status ( $p=.92$ ). About half of parents based child’s height and weight from measures obtained from the doctor’s office (54.71% [95% CI 53.02, 56.39]), with the other half of parent reports of height and weight were obtained through some other method of measurement (e.g., parent weighed/measured child at home, child was weighed/measured at school). Source of parent reported child’s height and weight did not vary by child’s weight status ( $p=.23$ ).

### Parents Told by a Doctor that Their Child is Overweight

Among overweight children, 11.4 percent (95% CI 8.63, 14.18) of parents reported having been told by a health care professional that their child is overweight. Among obese children, 31.1 percent (95% CI 27.40, 34.87) of parents reported having been told by a health care professional that their child is overweight. Only 1.2 percent (95% CI 0.74, 1.70) of children with a BMI < 85<sup>th</sup> percentile for sex and age (i.e., healthy weight/underweight) were ever told by a doctor that they were overweight and thus are not included in multivariate analyses. Among overweight/obese children, parental education was not significantly associated with parental reports that they had ever been told by a doctor or health professional that their child was overweight and thus is not included in multivariate analyses.

The percentage of children whose parent reported they had ever been told by a doctor or health professional that their child was overweight, by child's sex, age group, and race is presented in Table 1 separately for overweight and obese children. Among both overweight and obese children, parents were more likely to report that a doctor had told them that their child was overweight if the child had a preventive health care visit within the past 12 months (overweight adjusted Odds Ratio = 2.37 [95% CI 1.06, 5.32]; obese aOR = 1.70 [95% CI 1.02, 2.83]). Parents of older children (ages 12–17 years) were more likely than parents of younger

(5–11 years) overweight children to report that a doctor had told them that their child was overweight (aOR = 2.07 [95% CI 1.19, 3.59]), even after controlling for having had a preventive health care visit within the past year. Among obese children, parents were more likely to report that a doctor had told them that their child was overweight if the child was female compared to male (aOR = 2.03 [95% CI 1.40, 2.93]), as well as older (ages 12–17 years) compared to younger (5–11 years) children (aOR = 2.57 [95% CI 1.78, 3.71]), even after controlling for having had a preventive health care visit within the past year.

**Table 1.**  
**Percentage of Overweight and Obese Children (5–17 Years) Whose Parent Reported that They Had Ever Been Told by a Doctor or Health Professional that Their Child Was Overweight, by Child's Sex, Age Group, and Race, NC CHAMP 2007–2009 (N = 1,880).**

	Overweight		Obese	
	Weighted % (95% CI)	aOR <sup>1</sup> (95% CI)	Weighted % (95% CI)	aOR <sup>1</sup> (95% CI)
<b>Sex</b>				
Male	9.97 (6.48, 13.45)	1.0 (referent)	25.25 (20.88, 29.61)	1.0 (referent)
Female	12.91 (8.60, 17.22)	1.41 (0.83, 2.40)	39.46 (33.06, 45.87)	2.03** (1.40, 2.93)
<b>Age group</b>				
5–11	7.93 (4.78, 11.09)	1.0 (referent)	24.50 (20.00, 28.99)	1.0 (referent)
12–17	14.93 (10.48, 19.38)	2.07** (1.19, 3.59)	43.04 (36.76, 49.32)	2.57** (1.78, 3.71)
<b>Race</b>				
White	10.03 (6.86, 13.21)	1.0 (referent)	28.19 (23.46, 32.92)	1.0 (referent)
Black	14.45 (7.72, 21.19)	1.24 (0.66, 2.33)	35.53 (28.29, 42.76)	1.16 (0.77, 1.74)
Other	12.58 (5.23, 19.92)	1.27 (0.59, 2.73)	33.44 (23.02, 43.86)	1.33 (0.76, 2.33)
<b>Child has had a preventive health care visit within the past 12 months</b>				
No	6.02 (1.90, 10.15)	1.0 (referent)	23.57 (16.06, 31.09)	1.0 (referent)
Yes	13.07 (9.69, 16.44)	2.37* (1.06, 5.32)	33.31 (29.00, 37.62)	1.70* (1.02, 2.83)
<b>Parental report of child's height and weight obtained from doctor's office</b>				
No	8.94 (5.50, 12.38)	1.0 (referent)	27.03 (21.20, 32.85)	1.0 (referent)
Yes	13.24 (9.18, 17.29)	1.28 (0.73, 2.25)	33.86 (29.02, 38.71)	1.17 (0.79, 1.74)

Note: Weight status is estimated from parental report of child's height and weight and based on BMI sex- and age-specific percentiles from the 2000 CDC Growth Charts. Overweight is defined as between the 85th and 94th percentile; obese is defined as greater than or equal to the 95th percentile.

Abbreviation: CI, confidence interval

\* p < .05; \*\* p < .01

<sup>1</sup> aOR = Adjusted Odds Ratio; adjusted for child's sex, age group, race, preventive health care visit within the past 12 months, and parental reported height and weight obtained from doctor's office visit.

## Discussion

### Key Findings

Only 11 percent of North Carolina parents of overweight children and 31 percent of parents of obese children report having ever been told by a health care professional that their child was overweight. These rates are similar to national trends.<sup>21</sup> Also, as is true nationally, parents of older children (ages 12–17) were more likely to report being told that their child is overweight compared to parents of younger children (ages 5–11), among both overweight (15% vs. 8%) and obese (43% vs. 24%) children. In addition, parents with an obese girl were more likely to report being told that their child is overweight than parents of an obese boy (39% vs. 25%). Similar rates of physician counseling as well as the observed age trends support previous national data based on children's measured heights and weights.<sup>19, 26</sup>

Parents' reports of having ever been told by a health care professional that their child was overweight are significantly associated with whether the child had had a preventive health care visit within the past year. Although recall bias related to amount of time since the child had last visited a health care provider may play some role, having had a recent preventive health care visit also increases the opportunity for a health care professional to inform a parent of their child's weight status. Although almost all parents surveyed believe it is important for children to have an annual check up,<sup>27</sup> only 80 percent report that their child has had a preventive health care visit within the past 12 months. In the present study, overweight children were twice as likely and obese children were one and a half times as likely to report being told that they were overweight by a health care professional if they had had a preventive health care visit within the past year, similar to findings based on national data.<sup>26</sup> These results highlight the importance of children's annual check ups as an opportunity for the assessment of child overweight as well as other health risks and behaviors.

### Barriers to Screening Childhood Overweight

Despite being ranked by clinicians as one of the most important under-addressed health topics in pediatric health care,<sup>28</sup> childhood overweight is routinely under-diagnosed and inadequately addressed by health care professionals.<sup>29,30</sup> Annual BMI recording is recommended for the screening and tracking of childhood overweight and obesity,<sup>31</sup> yet remains underutilized.<sup>13,32</sup> Several barriers have been identified in the failure for health care professionals to screen for obesity among children,

including lack of sufficient time during a health care visit; lack of reimbursement for services; lack of resources to help recognize, explain, and manage obesity (e.g., patient educational materials); and low self-efficacy in treating childhood overweight.<sup>13,33–35</sup>

Results from the current study raise concerns that overweight children might receive little weight-related guidance from their physicians. Policy changes regarding reimbursement, and interventions focused on improving available tools and self-efficacy towards screening are possible methods of increasing the number of overweight children being told they are overweight by a health care professional. Previous studies have found that pediatricians who had attended continuing medical education on obesity and were more familiar with national expert guidelines were more likely to use BMI percentile in practice.<sup>13</sup> Interventions such as “Promoting Healthy Weight” tools have also been found to increase the frequency of obesity-related counseling,<sup>36</sup> however, recurrent training may be required so as to maintain BMI monitoring practices over time.<sup>37</sup>

### Importance of Screening for Childhood Overweight

The North Carolina Legislative Task Force on Childhood Obesity recognizes the need for improving screening for childhood overweight and recommends BMI screening for at-risk Medicaid and Health Choice children and encourages collaboration to decrease BMI levels in children and youth. Recent legislation in North Carolina focuses on annual BMI screening to monitor children's BMI levels as well as the development of a uniform protocol across the state to ensure the integrity and confidentiality of information collected through BMI screening.<sup>38</sup> These efforts highlight the necessity in collaboration between local health departments, county departments of social services, and local education agencies on ways to reduce BMI levels in all children.

Developing ways to improve primary care screening, and thus, early recognition and discussion of overweight status, is a necessary first step to developing healthier lifelong behaviors. Increasing parent awareness is clearly related to more accurate understanding and perceptions of child weight status. Data from CHAMP 2009 found that if the parent of an overweight or obese child was told by a doctor that their child is overweight that they were three times more likely to accurately rate their child's weight status as overweight compared to parents who had not been told by a doctor that their child is overweight.<sup>39</sup> In another recent

study, teens (ages 16 to 19 years) that had been told they were overweight by a physician were significantly more likely to recognize their overweight status and were also more likely to attempt weight loss or try to avoid weight gain during the past year.<sup>40</sup> Physician counsel on childhood overweight may provide the impetus for parents to make lifestyle changes to improve their child's weight and health status.<sup>34,41</sup>

In the current study, nearly three times as many parents had been told by a doctor that their child is overweight if their child was obese compared to overweight. However, addressing childhood overweight in its earliest phases may result in greater success in reaching and maintaining a healthy weight, rather than waiting to address weight-related issues when a child has already become obese. Additionally, addressing behaviors in younger children are likely far easier than waiting until adolescence since parents may have greater influence and control over feeding and activity patterns of younger children compared to adolescents,<sup>42</sup> when many of the behaviors are entrenched. Intervention in regards to weight status at an early age may play a key role in accomplishing healthy weight management over time.

### *Tools for Identification and Discussion of Childhood Overweight*

Recommendations for obesity prevention screening during a primary care health visit are outlined by Perrin, Finkle, and Benjamin.<sup>42</sup> Obesity prevention should be universal and not just focus on the overweight child, but should also include all children regardless of current weight status. During the visit, family nutrition, and physical activity habits ought to be assessed to identify both healthy and unhealthy behaviors. Readiness to change should be assessed as well to determine how best to address health and weight-related issues with the family. Annual BMI screening is recommended and should be routinely monitored. Color-coded BMI charts are now available that emphasize risk stratification rather than percentiles to aid in communication with parents about the risk of their child's weight status.<sup>43,44</sup> For healthy weight children, continuing participation in healthy behaviors should be encouraged. For children defined as overweight or obese, the health care visit provides an opportunity to assess for other health risks and comorbidities. The health care provider may discuss with the family one or two goals to improve unhealthy habits as well as explain the importance and relationships to health.

Eat Smart, Move More North Carolina is a statewide movement that promotes increased opportunities for healthy eating and physical activity in an effort to reduce the prevalence of obesity and chronic disease among North Carolinians. In partnership with the North Carolina Division of Public Health, a pediatric clinical and research team (including one of the authors here, Dr. Perrin) developed several tools for obesity counseling in the clinical health care setting that are available on the Eat Smart, Move More NC website ([www.eatsmartmovemorenc.com/HealthCare.html](http://www.eatsmartmovemorenc.com/HealthCare.html)), including The Pediatric Obesity Clinician Reference Guide (based on 2007 AAP guidelines and 2008 recommendations developed by a team of childhood experts at the state level) and color-coded BMI charts. Also included are easy-to-use blood pressure tables and prescription pads for promoting simple healthy messages (i.e., "5-3-2-1-almost none") for patients and their families. Other resources available on the Eat Smart, Move More NC website include information to assist providers in identifying services and procedures reimbursable by Medicaid, Pediatric Tertiary Care Centers that provide intensive, multi-disciplinary care and treatment for childhood obesity in the state of North Carolina, and patient education packets to encourage healthy behaviors.

### *Study Limitations*

The current study results are based on state-wide cross-sectional surveys of parental reports on children between 5 and 17 years of age. Because data are cross-sectional, duration of weight status is not assessed. Physicians may track a child's development over time before discussing possible health risks with parents; thus a longer duration of child's excess weight might increase the likelihood that a health care professional would inform a parent that the child is overweight. Secondly, measures of height and weight are based on proxy reports and are not independently measured; however, several procedures are used to increase accuracy of proxy reported child's height and weight as detailed in the methods section. Another limitation of the study is that CHAMP is a landline telephone survey; thus exclusion of households without telephone service or cell phone only households may lead to certain demographic subpopulations being under-represented. Use of demographic weighting adjustments has been found to greatly reduce possible biases to within the margin of sampling error (less than 2 percentage points) for the majority of health indicators.<sup>45</sup>

## Conclusion

Reversing the trend of childhood overweight is a public health priority. Assessment, utilization of preventive health messages, and early intervention should become routine at well-child visits and serve as an opportunity for identifying and raising awareness of other health risks and behaviors associated with childhood overweight. The current study found that only 11 percent of parents of overweight children and 31 percent of parents of obese children have ever been told by a health care professional that their child is overweight. Policy changes regarding reimbursement, and interventions focused on improving available tools and self-efficacy towards screening may aid in increasing physician counsel on childhood overweight with all parents and children.

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