



NIH PUBLIC ACCESS

Author Manuscript

Arch Pediatr Adolesc Med. Author manuscript; available in PMC 2012 June 06.

Published in final edited form as:

Arch Pediatr Adolesc Med. 2012 April ; 166(4): 317–322. doi:10.1001/archpediatrics.2011.1135.**Parental Recall of Doctor Communication of Weight Status:****National Trends From 1999 Through 2008****Eliana M. Perrin, MD, MPH, Asheley Cockrell Skinner, PhD, and Michael J. Steiner, MD**

Division of General Pediatrics and Adolescent Medicine, Department of Pediatrics, University of North Carolina at Chapel Hill School of Medicine

Abstract

Objective—To examine time trends in parental reports of health professional notification of childhood overweight over the last decade and to determine the characteristics most associated with such notification.

Design—Secondary data analysis using χ^2 tests to examine the relationships between multiple factors on the reports of parents and/or caregivers (hereinafter “parents”) and logistic regression for multivariate analysis.

Setting—National Health and Nutrition Examination Survey, 1999 through 2008.

Participants—Parents of 4985 children aged 2 to 15 years with body mass index (BMI) in the 85th percentile or higher based on measured height and weight.

Main Outcome Measures—Affirmative answer to the following question: “Has a doctor or health professional ever told you that your child is overweight?”

Results—During 1999 through 2008, 22% of parents of children with BMIs in the 85th percentile or higher reported having been told by a doctor or health professional that their child was overweight; recall of notification was actually more likely among nonwhite and poor children. This percentage increased from 19.4% to 23.2% from the 1999–2004 period and further accelerated in the 2007–2008 period to 29.1%. The time trend persisted in multivariate analyses, with significantly more parents reporting having been told in 2007 through 2008 than in 1999 through 2000.

Conclusion—Fewer than one-quarter of parents of overweight children report having been told that their child was overweight. While reports of notification have increased over the last decade (perhaps because of [1] revised definitions of overweight and obesity, [2] increased concern about children with BMIs in the 85th to 95th sex- and age-specific percentiles, or [3] improved recall by parents), further research is necessary to determine where and why communication of weight status breaks down.

Correspondence: Eliana M. Perrin, MD, MPH, Division of General Pediatrics and Adolescent Medicine, Department of Pediatrics, University of North Carolina at Chapel Hill School of Medicine, 231 MacNider Hall, CB#7225, Chapel Hill, NC 27599-7225 (eliana_perrin@med.unc.edu).

Financial Disclosure: None reported.

Author Contributions: *Study concept and design:* Perrin, Skinner, and Steiner. *Acquisition of data:* Perrin and Skinner. *Analysis and interpretation of data:* Perrin, Skinner, and Steiner. *Drafting of the manuscript:* Perrin and Skinner. *Critical revision of the manuscript for important intellectual content:* Perrin, Skinner, and Steiner. *Statistical analysis:* Skinner. *Administrative, technical, and material support:* Perrin, Skinner, and Steiner. *Supervision:* Perrin.

Additional Contribution: Joanne P. Finkle, RN, JD, and Stephanie Hasty, BA, contributed to this project, as did the Scientific Collaborative for Overweight and Obesity Prevention and Treatment (SCOOPT) at University of North Carolina School of Medicine, Chapel Hill.

The White House Task Force on Childhood Obesity¹ recently issued a series of recommendations as part of First Lady Michelle Obama's "Let's Move!" campaign to curb the epidemic of childhood obesity. As a result of those and multiple other recommendations and expert reports since the 1990s, pediatricians have been encouraged to routinely weigh and measure children, calculate their body mass index (BMI), and provide information to parents about how to help their children achieve a healthy weight.²⁻⁵ The United States Preventive Services Task Force⁶ also recently endorsed BMI screening for overweight and obesity in children aged 6 years or older.

One reason for these recommendations to assess BMI rests in the body of research showing that pediatric primary care providers who screen for and document overweight and obesity are more likely to counsel about healthy weight status^{7,8} and screen for and refer for comorbidities.⁹ The other reason rests on an abundant body of research showing that parents of overweight children frequently inaccurately perceive their children's weight status.¹⁰⁻¹⁴ The intent is that by screening for overweight and obesity and communicating those screening results to parents with clear follow-up recommendations, pediatricians may take the first steps toward improving their own counseling and motivating families to establish healthy lifestyle habits as early as possible. Toolkits that encourage screening and communication with appropriate follow-up are associated with change in parental perception of overweight and positive dietary and physical activity changes.¹⁵

After all, we know that parents with an accurate perception of weight status are more likely to be ready to make weight-related behavioral changes,¹⁶ and the communication of weight status to families with overweight young children has been shown to make that behavioral change more effective.¹⁷ Also, adolescents who were told by doctors that they were overweight were more likely to consider themselves overweight, report attempting weight loss, and report consuming fewer calories per kilogram of body weight.¹⁸

Despite the recommendations and evidence in favor of screening, providers caring for children continue to underscreen for obesity.^{8,19,20} Most of this research, however, is based on provider documentation of screening in the medical record, which may not accurately reflect actual screening performed. In addition, even in situations where appropriate screening is documented, communication to parents about the results of screening may be inadequate for parents to understand and internalize. Thus, the doctor or health professional role in helping parents accurately recognize the weight status of their children relies both on systematic screening and effective communication strategies.

Little is known about parental recall of BMI screening for parents of overweight children. Since effective screening is dependent on both performance of the screen and communicating the results to families in a way that is heard and remembered, we used nationally representative data to examine trends in parental report of doctor notification over the past 10 years. There is a need to understand whether changes in clinical recommendations or other factors have affected parental reports of doctor communication of weight status. Two reasons that communication in this area may have improved over the last decade are (1) an increasing awareness and concern about childhood obesity over the past several years, and (2) recently improved definitions, education, and resources for pediatric primary care providers. We hypothesized that the percentage of parents of overweight and obese children reporting that their doctors or health professionals had informed them of their children's weight status has increased over the past 10 years.

METHODS

DATA SOURCES

We used the National Health and Nutrition Examination Survey (NHANES)²¹ from years 1999 through 2008. The NHANES is a stratified, multistage probability sample of the civilian, non-institutionalized population of the United States. It includes an in-home questionnaire on a variety of demographic and health-related topics, a computer-assisted interview, and an examination component composed of a thorough physical examination including measured height and weight.

Of 14 787 children aged 2 to 15 years in NHANES, we included only the 4990 (33%) who had a BMI at or above the 85th percentile for age and sex based on the 2000 Centers for Disease Control and Prevention BMI-for-Age Charts.²² The BMI percentile was categorized based on Centers for Disease Control and Prevention and expert committee current recommendations as severely obese (>99th percentile), obese (<99th but >95th percentile), or overweight (<95th but >85th percentile).³ Of the 14 787 children aged 2 to 15 years included in NHANES, 312 (2.1%) had missing data for BMI percentile and were excluded because their weight category could not be determined. We also excluded 5 girls with BMI above the 85th percentile but who were also pregnant.

Questionnaires for children aged 2 to 15 years were completed by a proxy most knowledgeable about the child, most often a mother or other caregiver (hereinafter “parent”), and were responded to as part of the in-home interview. There were slight changes to the question from the 1999–2004 period to the 2005–2008 period. In the earlier surveys, for children aged 2 to 11 years, health care provider notification of overweight was based on the question “Has a doctor or health professional ever told you that [child] was overweight?” and for children aged 12 to 15 years health care provider notification of overweight was based on the question “Has a doctor or health professional ever told [child] that s/he was overweight?” In the 2005–2008 period, all parents of children aged 2 to 15 years were asked the same question: “Has a doctor or health professional ever told you that [child] was overweight?” We excluded 37 observations for which a response to these questions was missing or otherwise not reported by the parent. Adolescents aged 16 to 19 years were not included in the analysis because they reported for themselves and not by proxy, which we believed might systematically bias comparisons.

We examined multiple demographic variables possibly related to obesity or the likelihood of doctor or health professional screening or documentation for overweight based on prior literature.^{7,9,18,20,23–25} These included sex; age at the time of the examination; race/ethnicity (categorized as non-Hispanic white, non-Hispanic black, Mexican American, other Hispanic, and all others); number of health care visits in the last 12 months, as reported by the parent; and insurance status, categorized as ever uninsured in the previous 12 months, Medicaid or SCHIP coverage, or only private insurance. Income was used in bivariate analyses and represented household income categorized as a percentage of the federal poverty level such that 500% of the federal poverty level indicated greater income.

STATISTICAL ANALYSIS

Bivariate analyses examined the effects of each of multiple sociodemographic and other characteristics on the parental report of a doctor or health professional notification of overweight status, as well as differences across time within each of these categories. We tested for differences using Pearson χ^2 tests with a second-order Rao and Scott correction to account for survey design.

Logistic regressions for multivariate analysis examined the odds of parents reporting having been told the child was overweight. We included multiple demographic variables, including sex, age, race/ethnicity, number of health care visits in the last 12 months, and insurance status. We chose to exclude income in the multivariate analyses because of colinearity between insurance status and income.

We used logistic regression with categorical variables representing each of the 2-year NHANES cycles to test for overall differences in doctor or health professional notification across years. We used an adjusted Wald test as a joint test for differences in all of the NHANES cycles.

All analyses were adjusted for the complex survey design of NHANES to be nationally representative and were performed using the survey estimation routines in Stata 11.0 (Stata-Corp LP). We calculated sample weights appropriate for use with the 5 combined cycles as specified in the NHANES Analytic and Reporting Guidelines.²⁶ This study was deemed exempt from institutional review board review under federal regulation 45 CFR §46.101(b) because it used only deidentified secondary data.

RESULTS

There were a total of 4948 nonpregnant children aged 2 to 15 years with BMIs at the 85th percentile or higher in the NHANES 1999–2008 database whose parents reported whether a doctor or health care provider had said that the child was overweight (demographic characteristics listed in Table 1). Overall, 22.4% of parents of these children or adolescents with a BMI at the 85th percentile or higher reported having been told by a doctor or health professional that his or her child was overweight. This was greater among minorities, poorer children, those with public insurance and more health care visits, and older children (Figure 1).

The percentage of parents who reported that a doctor or health professional told them that their child was overweight was relatively unchanged during the 1999–2006 period (between 19.4% and 23.2%) but increased in the 2007–2008 period (to 29.1%). This time trend (Table 1 and Figure 2) was most prominent among children with BMIs in the 85th to 95th sex-specific BMI-forage percentiles (6.4% in 1999–2000 vs 16% in 2007–2008) ($P<.01$); boys (17.2% vs 31.0%) ($P<.01$); white children (14.5% vs 26.9%) ($P<.01$); and children aged 9 to 11 years (18.5% vs 34.2%) ($P<.01$).

In multivariate analyses, the time trend of significantly more reports of a diagnosis of overweight in the 2007–2008 period persisted (Table 2). The coefficients for the 1999–2006 period were not significantly different from each other ($P=.26$), while the findings of a joint test of all years, including 2007 to 2008, were significant ($P=.006$). There were no overall differences between boys and girls. Increasing severity of obesity was strongly associated with greater odds of parental reporting of notification of overweight. Also notable were that increasing age, Mexican-American or other Hispanic ethnicity, and increasing numbers of health care visits all increased the likelihood of parents reporting that their doctor or health professional had told them that their children were overweight.

COMMENT

In an era when the epidemic of childhood obesity is at the center of the public health stage, a minority (22.4%) of parents of overweight children report ever having been told by a doctor or health professional that their child was overweight. Even among the parents of very obese children, only 58% report having been told by a doctor or health professional that their child was overweight. However, reports of notification of overweight were greater in the 2007–

2008 period than they were in prior years. This recent improvement in recall of notification is in contrast to a similar analysis in adults suggesting that notification to adults about their own weight may actually be worsening over time.²⁷ Finally, who recalled notification varied in interesting ways that may inform further research.

In prior pediatric reports, a variety of characteristics have been associated with greater screening for (or documentation of) obesity in the medical record, including older age,^{7-9,18,23} more severe obesity,^{8,9,20,24} and greater number of health care visits.²⁰ Our results on parental reports of notification suggest similar patterns, with parents of older children, more affected children, and children with a greater number of health encounters being more likely to report that they have been told that their child is overweight.

As is true in other reports of BMI documentation,^{8,20} our analysis found that doctor or health professional notification of overweight was more likely among Mexican American and other Hispanic children, with a trend toward increased notification to parents of non-Hispanic black and publicly insured children, which is the reverse direction of most other health care inequities. This is in contrast to findings in adult patients, where Davis et al²⁷ showed more traditional health inequalities: non-Hispanic black and Mexican American overweight adults were less likely than their white peers to report that providers had told them that they were overweight. However, the increased diagnoses in 2007 and 2008 in our study were often seen in those previously thought to be at perhaps “less risk”—whites, those with private insurance, and those who were in the lowest overweight category—suggesting that the gaps may be closing.

The fact that parents of older children recall notification more reveals that pediatric providers need to communicate these results more effectively to parents of younger children. Health care providers can be encouraged to do this, and policy statements can be more explicit in their recommendations to follow up screening with communication of these results to parents as a result of 2 reports: (1) one using qualitative data with parents of preschoolers revealing that parents think that pediatricians should speak clearly and directly about weight status²⁸; and (2) the other showing that parents take health care providers’ nonchalance about overweight at young ages as a barrier to improving lifestyle habits.²⁹

Our analysis has some limitations. First, NHANES data are cross-sectional, so while we are able to note population trends over time, we are not able to say if the same patients or the same practices were more likely to be notified in later years than in earlier years or with the same trends by sociodemographic characteristics. Second, there is no way to determine the reason for such low rates of reporting obesity notification by parents or reasons for improvement over time. Further work is needed to determine where this recommended process of universal screening and communication for motivational behavioral change breaks down for the majority of overweight children, and this analysis cannot speak to these issues.

Though our cross-sectional data cannot elucidate reasons for generally low rates of reports of doctor or health professional notification, possible reasons would include the following: (1) Appropriate obesity screening by health care providers has been lacking. There have been multiple barriers to adoption of practice guidelines,³⁰ and it was not until 2007 that new terminology for the old BMI cut points was recommended³ and not until 2010 that the National Center for Health Statistics and the Centers for Disease Control concurred on the definitions.³¹ (2) Health care providers have been either unwilling or unable to effectively communicate screening results to families. And (3) families have been unwilling or unable to hear and remember such information. Obesity remains a stigmatizing condition,³² and while doctors think that screening makes a difference, fewer doctors believe that families

want weight discussed.³³ This perception of what families desire may hinder doctor or health professional communication of BMI status to families.

We also cannot know reasons for the recent increase in parents' reports of notification, but this may be owing to changed and clearer definitions of overweight and obesity, since the 2007–2008 data are the only data available after dissemination of these recommendations. Specifically, the changed recommendation to categorize children with BMI higher than the 85th percentile as “overweight” instead of “at risk for overweight” and to categorize children with BMI higher than the 95th percentile as “obese” uses clearer language that may be better understood by, and remembered by, parents. The change in terminology may actually have affected the percentage of parents reporting that they were told by a doctor or health professional that their children were overweight. While parents who have heard their children categorized as “obese” may be more likely to remember the conversation, how such parents would answer a simple question asking only about “overweight” is unclear. Our assumption was that such parents would answer affirmatively, but further research on parents' memory and interpretation of terminology is warranted.

Another reason for improvement over time may be the adoption of electronic medical records, which have been shown to improve BMI screening practices.^{33,34} Finally, parents or pediatricians may have developed increased concern about children with BMIs in the 85th to 95th sex- and age-specific percentiles, and there may be improved communication and/or recall.

A recent publication by Klein et al³³ reveals that 52% of pediatricians compute and/or plot BMI for children aged 2 years or older at most or every well child visit, indicating that health care provider screening is likely an important part of this improvement story. Though the samples are different, in these large surveys, the percentage of parents reporting health care provider notification is smaller than the percentage of health care providers who report regular screening, which reveals that health care providers overreport, parents underreport, and/or there is more work to be done in the communication of these results to families in a way that makes sense.

Some prior literature helps inform how we may better screen and communicate results to parents. Klein et al³³ report that pediatricians who knew the guidelines were more likely to use BMI and feel comfortable and efficacious in their counseling, indicating the importance of provider education. Simple toolkits or enhancements can help primary health care providers improve screening, confidence, or communication of weight status,^{25,35–37} and use of such toolkits has been associated with greater accuracy in parental perception of weight status and more healthful behaviors including fewer sweetened beverages, fewer unhealthy snacks, less screen time and eating out, and use of lower-fat milk.¹⁵ Whether screening and communication alone serve as an intervention deserves further research.

Overall, as a result of the analyses presented herein, there appear to be some improvements in identification of obesity over time, but many parents who could potentially benefit from a doctor or health professional's recognition of obesity are not being told in a way that they recall. Further research is necessary to determine where and why communication of weight status breaks down and how effective appropriate communication of weight status is in motivating families toward healthier living.

Acknowledgments

Funding/Support: Dr Perrin is supported by National Institutes of Health (NIH) career development grant K23-HD051817. Dr Skinner is supported by NIH Building Interdisciplinary Careers In Women's Health grant K12-HD01441.

References

1. White House Task Force on Childhood Obesity. [Accessed October 24, 2011] White House Task Force on Childhood Obesity. <http://www.letsmove.gov/white-house-task-force-childhood-obesity-report-president>
2. Davis MM, Gance-Cleveland B, Hassink S, Johnson R, Paradis G, Resnicow K. Recommendations for prevention of childhood obesity. *Pediatrics*. 2007; 120 (Suppl 4):S229–S253. [PubMed: 18055653]
3. Barlow SE. Expert Committee. Expert committee recommendations regarding the prevention, assessment, and treatment of child and adolescent overweight and obesity: summary report. *Pediatrics*. 2007; 120(Suppl 4):S164–S192. [PubMed: 18055651]
4. Barlow SE, Dietz WH. Maternal and Child Health Bureau, Health Resources and Services Administration; Department of Health and Human Services. Obesity evaluation and treatment: expert committee recommendations. *Pediatrics*. 1998; 102 (3):E29. [PubMed: 9724677]
5. Krebs NF, Jacobson MS. American Academy of Pediatrics Committee on Nutrition. Prevention of pediatric overweight and obesity. *Pediatrics*. 2003; 112(2):424–430. [PubMed: 12897303]
6. Barton M; US Preventive Services Task Force. Screening for obesity in children and adolescents. *Pediatrics*. 2010; 125(2):361–367. [PubMed: 20083515]
7. Barlow SE, Bobra SR, Elliott MB, Brownson RC, Haire-Joshu D. Recognition of childhood overweight during health supervision visits: Does BMI help pediatricians? *Obesity (Silver Spring)*. 2007; 15(1):225–232. [PubMed: 17228051]
8. Patel AI, Madsen KA, Maselli JH, Cabana MD, Stafford RS, Hersh AL. Underdiagnosis of pediatric obesity during outpatient preventive care visits. *Acad Pediatr*. 2010; 10(6):405–409. [PubMed: 21075322]
9. Dilley KJ, Martin LA, Sullivan C, Seshadri R, Binns HJ. Pediatric Practice Research Group. Identification of overweight status is associated with higher rates of screening for comorbidities of overweight in pediatric primary care practice. *Pediatrics*. 2007; 119(1):e148–e155. [PubMed: 17200242]
10. Huang JS, Becerra K, Oda T, et al. Parental ability to discriminate the weight status of children: results of a survey. *Pediatrics*. 2007; 120(1):e112–e119. [PubMed: 17606538]
11. Baughcum AE, Chamberlin LA, Deeks CM, Powers SW, Whitaker RC. Maternal perceptions of overweight preschool children. *Pediatrics*. 2000; 106(6):1380–1386. [PubMed: 11099592]
12. Jain A, Sherman SN, Chamberlin LA, Carter Y, Powers SW, Whitaker RC. Why don't low-income mothers worry about their preschoolers being overweight? *Pediatrics*. 2001; 107(5):1138–1146. [PubMed: 11331699]
13. Maynard LM, Galuska DA, Blanck HM, Serdula MK. Maternal perceptions of weight status of children. *Pediatrics*. 2003; 111(5 part 2):1226–1231. [PubMed: 12728143]
14. Jeffery AN, Voss LD, Metcalf BS, Alba S, Wilkin TJ. Parents' awareness of overweight in themselves and their children: cross sectional study within a cohort (EarlyBird 21). *BMJ*. 2005; 330(7481):23–24. [PubMed: 15567804]
15. Perrin EM, Jacobson Vann JC, Benjamin JT, Skinner AC, Wegner S, Ammerman AS. Use of a pediatrician toolkit to address parental perception of children's weight status, nutrition, and activity behaviors. *Acad Pediatr*. 2010; 10(4):274–281. [PubMed: 20554259]
16. Rhee KE, De Lago CW, Arscott-Mills T, Mehta SD, Davis RK. Factors associated with parental readiness to make changes for overweight children. *Pediatrics*. 2005; 116(1):e94–e101. [PubMed: 15995022]
17. Grimmett C, Croker H, Carnell S, Wardle J. Telling parents their child's weight status: psychological impact of a weight-screening program. *Pediatrics*. 2008; 122 (3):e682–e688. [PubMed: 18762503]
18. Kant AK, Miner P. Physician advice about being overweight. *Pediatrics*. 2007; 119 (1):e142–e147. [PubMed: 17200241]
19. Dorsey KB, Wells C, Krumholz HM, Concato JC. Diagnosis, evaluation, and treatment of childhood obesity in pediatric practice. *Arch Pediatr Adolesc Med*. 2005; 159(7):632–638. [PubMed: 15996996]

20. Benson L, Baer HJ, Kaelber DC. Trends in the diagnosis of overweight and obesity in children and adolescents: 1999–2007. *Pediatrics*. 2009; 123(1):e153–e158. [PubMed: 19117837]
21. Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS). National Health and Nutrition Examination Survey Data, 1999–2008. Hyattsville, MD: US Dept of Health and Human Services; 2008.
22. Kuczmarski RJ, Ogden CL, Guo SS, et al. 2000 CDC Growth Charts for the United States: methods and development. *Vital Health Stat*. 2002; 11(246):1–190.
23. Centers for Disease Control and Prevention (CDC). Children and teens told by doctors that they were overweight—United States, 1999–2002. *MMWR Morb Mortal Wkly Rep*. 2005; 54(34): 848–849. [PubMed: 16138076]
24. Hillman JB, Corathers SD, Wilson SE. Pediatricians and screening for obesity with body mass index. *Public Health Rep*. 2009; 124(4):561–567. [PubMed: 19618793]
25. Perrin EM, Vann JC, Lazorick S, et al. Bolstering confidence in obesity prevention and treatment counseling for resident and community pediatricians. *Patient Educ Couns*. 2008; 73(2):179–185. [PubMed: 18755567]
26. National Center for Health Statistics. Analytic and Reporting Guidelines: The National Health and Nutrition Examination Survey. Hyattsville, MD: Centers for Disease Control and Prevention; 2006.
27. Davis NJ, Wildman RP, Forbes BF, Schechter CB. Trends and disparities in provider diagnosis of overweight analysis of NHANES 1999–2004. *Obesity (Silver Spring)*. 2009; 17(11):2110–2113. [PubMed: 19390515]
28. Bolling C, Crosby L, Boles R, Stark L. How pediatricians can improve diet and activity for overweight preschoolers: a qualitative study of parental attitudes. *Acad Pediatr*. 2009; 9(3):172–178. [PubMed: 19450777]
29. Borra ST, Kelly L, Shirreffs MB, Neville K, Geiger CJ. Developing health messages: qualitative studies with children, parents, and teachers help identify communications opportunities for healthful lifestyles and the prevention of obesity. *J Am Diet Assoc*. 2003; 103(6):721–728. [PubMed: 12778044]
30. Cabana MD, Rand CS, Powe NR, et al. Why don't physicians follow clinical practice guidelines? A framework for improvement. *JAMA*. 1999; 282(15):1458–1465. [PubMed: 10535437]
31. Ogden CL, Flegal KM. Changes in terminology for childhood overweight and obesity. *Natl Health Stat Report*. 2010; (25):1–5. [PubMed: 20939253]
32. Latner JD, Stunkard AJ. Getting worse: the stigmatization of obese children. *Obes Res*. 2003; 11(3):452–456. [PubMed: 12634444]
33. Klein JD, Sesselberg TS, Johnson MS, et al. Adoption of body mass index guidelines for screening and counseling in pediatric practice. *Pediatrics*. 2010; 125 (2):265–272. [PubMed: 20083518]
34. Bordowitz R, Morland K, Reich D. The use of an electronic medical record to improve documentation and treatment of obesity. *Fam Med*. 2007; 39(4):274–279. [PubMed: 17401772]
35. Gilbert MJ, Fleming MF. Use of enhanced body mass index charts during the pediatric health supervision visit increases physician recognition of overweight patients. *Clin Pediatr (Phila)*. 2007; 46(8):689–697. [PubMed: 17579096]
36. Oettinger MD, Finkle JP, Esserman D, et al. Color-coding improves parental understanding of body mass index charting. *Acad Pediatr*. 2009; 9(5):330–338. [PubMed: 19679524]
37. Dennison BA, Nicholas J, de Long R, Prokorym M, Brissette I. Randomized controlled trial of a mailed toolkit to increase use of body mass index percentiles to screen for childhood obesity. *Prev Chronic Dis*. 2009; 6(4):A122. [PubMed: 19754998]

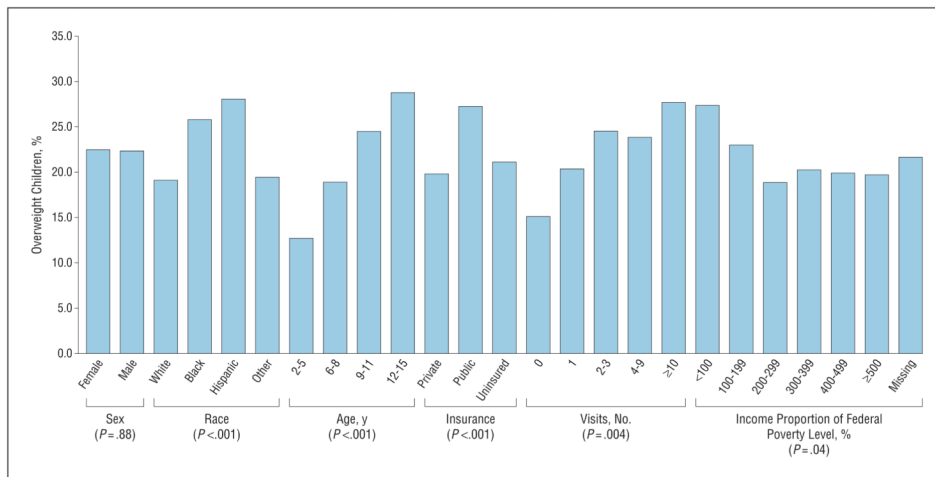


Figure 1. Percentages of overweight children whose parents reported that a health care provider told them that their child was overweight, by demographic characteristics. *P* values from Wald tests were adjusted for survey design and differences in reporting.

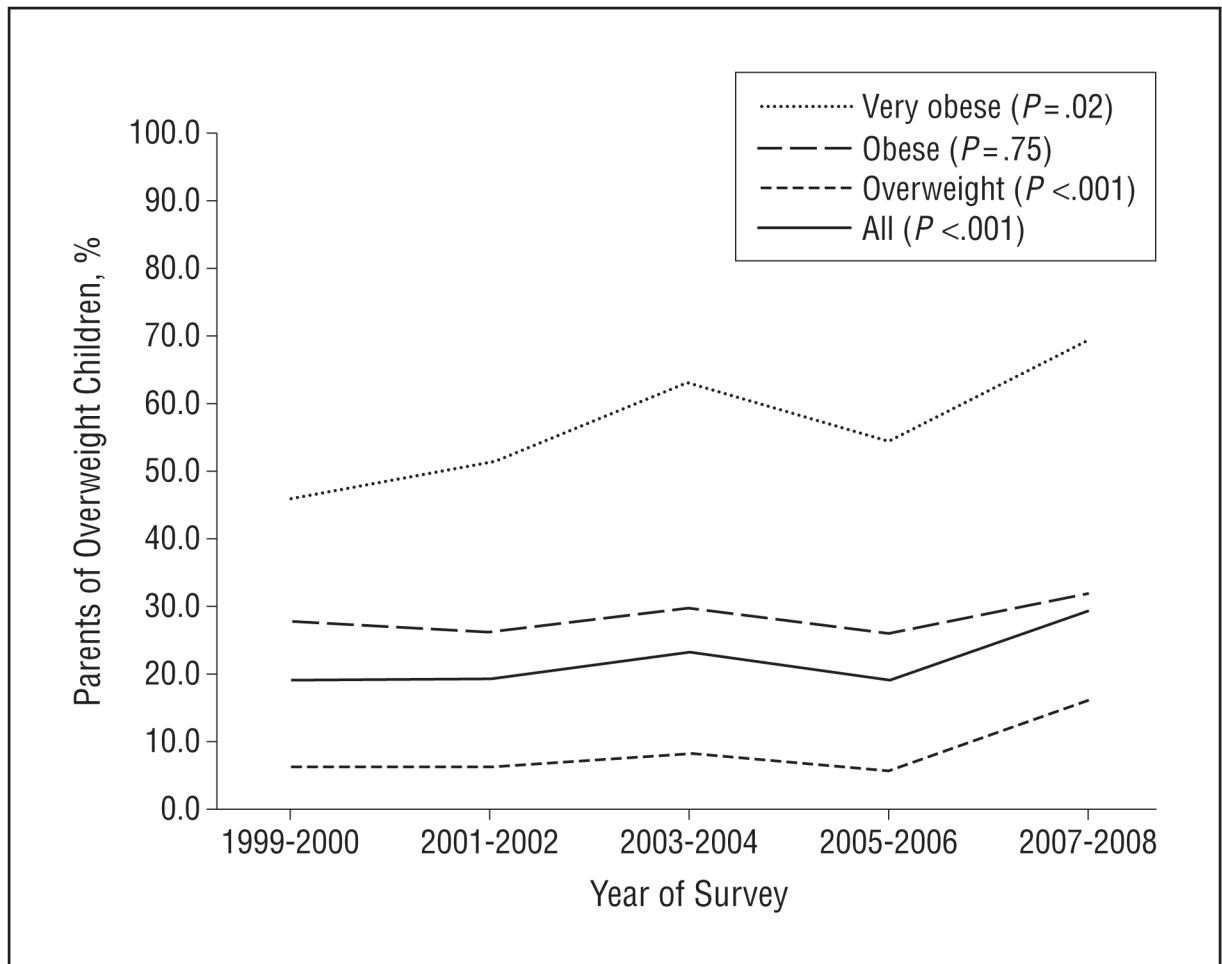


Figure 2.

Percentage of parents who reported that a health care provider told them that their child was overweight, by year and weight category. Weight categories are defined as follows: *very obese*, higher than 99th body mass index (BMI) percentile; *obese*, from the 95th to the 99th BMI percentile; and *overweight*, from the 85th to the 94th BMI percentile. P values from Wald tests were adjusted for survey design and differences across time within each weight category.

Table 1
 Demographic Characteristics Across Time of Parents of Children in the 85th BMI Percentile Who Reported Having Ever Been Told by a Doctor or Health Professional That Their Child Was Overweight^a

Characteristic	Total	Year of Survey					P Value
		1999–2000	2001–2002	2003–2004	2005–2006	2007–2008	
Sex							
Male	51.8 (1.1)	17.2 (2.4)	21.2 (2.7)	22.9 (2.6)	17.8 (2.3)	31.0 (2.6)	.001
Female	48.2 (1.1)	21.9 (2.4)	18.1 (2.3)	23.5 (2.3)	21.3 (2.8)	27.1 (2.6)	.13
Race/ethnicity							
Non-Hispanic white	54.8 (2.7)	14.5 (2.3)	17.9 (3.0)	21.1 (2.0)	13.2 (3.1)	26.9 (2.6)	.01
Non-Hispanic black	16.4 (1.5)	23.2 (3.1)	22.9 (3.1)	25.4 (2.8)	28.7 (2.7)	28.6 (2.4)	.43
Mexican American and other Hispanic	23.7 (2.1)	24.8 (3.3)	23.3 (3.7)	29.7 (4.1)	27.4 (2.3)	34.3 (2.6)	.13
All others	5.1 (0.6)	23.9 (11.7)	13.9 (7.2)	13.1 (5.9)	19.2 (9.1)	27.6 (10.1)	.71
Age, y							
2–5	19.9 (0.7)	7.5 (2.1)	13.5 (2.9)	13.9 (3.1)	12.5 (2.7)	15.4 (2.5)	.34
6–8	21.3 (0.8)	18.7 (3.7)	15.3 (3.9)	21.1 (4.1)	15.4 (4.7)	24.0 (3.6)	.50
9–11	25.5 (0.7)	18.5 (2.9)	21.7 (2.4)	25.6 (3.0)	19.6 (3.4)	34.2 (2.8)	.002
12–15	33.3 (0.9)	28.2 (2.7)	24.7 (4.2)	28.4 (3.6)	25.6 (3.1)	35.7 (3.5)	.17
Insurance							
Uninsured	20.0 (1.2)	19.2 (3.7)	17.5 (3.5)	23.4 (4.8)	17.3 (3.0)	27.4 (4.2)	.26
Private	49.9 (1.7)	19.0 (2.6)	17.8 (2.5)	19.4 (2.5)	16.0 (3.0)	27.9 (2.9)	.03
Public	30.1 (1.3)	19.9 (3.2)	26.4 (3.7)	28.0 (3.0)	28.1 (3.3)	31.9 (3.1)	.16
Health care visits, No.							
0	12.0 (0.7)	11.5 (3.0)	12.2 (3.9)	13.4 (3.3)	14.8 (4.2)	23.5 (4.5)	.16
1	24.7 (0.9)	17.2 (2.7)	13.2 (2.4)	25.1 (3.8)	18.9 (2.9)	26.5 (3.6)	.01
2–3	36.4 (1.0)	22.9 (2.9)	24.3 (3.1)	23.6 (2.8)	19.9 (2.9)	31.4 (2.8)	.08
4–9	21.7 (0.9)	20.7 (5.6)	25.3 (5.2)	23.4 (3.2)	18.9 (4.2)	29.7 (4.2)	.52
>10	5.3 (0.5)	23.1 (8.1)	15.2 (8.6)	27.1 (7.5)	32.1 (8.9)	35.4 (11.2)	.59
Income (percentage of federal poverty level)							
<100	23.8 (1.1)	25.5 (3.3)	28.4 (4.9)	24.1 (2.9)	25.7 (3.0)	32.7 (4.1)	.45
100–199	24.3 (1.2)	14.7 (3.2)	19.4 (3.7)	28.9 (3.4)	21.0 (3.5)	29.9 (4.1)	.02
200–299	17.5 (1.0)	23.0 (7.3)	17.4 (4.0)	15.6 (3.3)	13.6 (2.9)	26.4 (5.4)	.22

Characteristic	Total	Year of Survey								P Value
		1999–2000	2001–2002	2003–2004	2005–2006	2007–2008				
300–399	10.8 (0.8)	12.6 (5.3)	18.3 (3.5)	14.7 (3.8)	19.8 (4.8)	37.0 (5.7)			.006	
400–499	7.7 (0.7)	17.1 (5.5)	15.5 (8.2)	29.3 (9.9)	14.6 (6.4)	22.4 (6.6)			.61	
500	9.9 (0.9)	22.7 (5.6)	11.9 (3.8)	30.8 (7.9)	15.7 (4.3)	20.3 (5.3)			.12	
Missing	6.0 (0.7)	17.7 (5.7)	13.1 (5.7)	27.3 (10.3)	23.0 (6.4)	28.4 (7.1)			.45	

Abbreviation: BMI, body mass index (calculated as weight in kilograms divided by height in meters squared).

^a All children had BMI in the 85th percentile or higher (n=4948), weighted to reflect the US population. Unless otherwise indicated, data are reported as percentage (SE) of parents.

Table 2

Multivariate Logistic Regression of the Effect of Time, Weight Category, and Demographics on the Likelihood of Reporting Having Ever Been Told Child Was Overweight (n=4868)

Characteristic	OR (95% CI)
NHANES Year [Reference, 1999–2000]	
2001–2002	1.01 (0.69–1.48)
2003–2004	1.25 (0.91–1.70)
2005–2006	0.95 (0.68–1.34)
2007–2008	1.70 (1.23–2.36)
Weight [Reference, overweight]	
Very obese	18.67 (14.21–24.53)
Obese	4.05 (3.23–5.08)
Sex [Reference, male]	
Female	0.88 (0.73–1.06)
Race/ethnicity [Reference, non-Hispanic white]	
Non-Hispanic black	1.25 (0.99–1.56)
Mexican American and other Hispanic	1.77 (1.39–2.24)
All others	0.98 (0.57–1.68)
Age, y [Reference, 2–5 y]	
6–8	2.09 (1.50–2.92)
9–11	3.75 (2.82–4.99)
12–14	4.96 (3.70–6.63)
Insurance [Reference, private]	
Uninsured	0.95 (0.74–1.22)
Public	1.22 (0.97–1.54)
Health care visits, No. [Reference, 0]	
1	1.58 (1.12–2.25)
2–3	2.21 (1.54–3.16)
4–9	2.70 (1.79–4.08)
>10	2.78 (1.54–5.01)

Abbreviations: BMI, body mass index; NHANES, National Health and Nutrition Examination Survey²¹; OR, odds ratio.