
National Health Statistics Reports

Number 25 ■ June 25, 2010

Changes in Terminology for Childhood Overweight and Obesity

by Cynthia L. Ogden, Ph.D., Division of Health and Nutrition Examination Surveys and
Katherine M. Flegal, Ph.D., Office of the Center Director

Abstract

A variety of different terms, metrics, and cut-off values have been used to describe and assess overweight and obesity in children. Body mass index (BMI) calculated as weight in kilograms divided by height in meters squared can be used to express weight adjusted for height. In order to account for variability by sex and age, BMI in children is compared to sex- and age-specific reference values. In the United States, the Centers for Disease Control and Prevention (CDC) 2000 growth charts serve as reference values. The terminology used for high BMI-for-age in children in the United States to date has been based on the recommendation of an expert committee convened by federal agencies. This committee recommended the use of BMI and defined overweight as a BMI-for-age at or above the 95th percentile of a specified reference population and the designation of “at risk for overweight” for BMI values between the 85th and the 95th percentiles of BMI for age. More recently, although the cut-off values and the interpretation have not changed, changes in terminology were proposed. An American Medical Association expert committee report retained the two cut-off values of the 85th and 95th percentiles of BMI-for-age but used different terminology, referring to BMI-for-age from the 85th up to the 95th percentile as “overweight” and to BMI-for-age at or above the 95th percentile as “obesity.” The National Center for Health Statistics (NCHS) and other CDC publications will continue to include prevalence estimates at the 85th and 95th percentiles as before but will change the terminology to use the term “overweight” for a BMI-for-age between the 85th and 95th percentile (formerly called “at risk for overweight”) and the term “obesity” for a BMI-for-age at or above the 95th percentile (formerly called “overweight”).

Keywords: children • obesity • overweight • definitions

Introduction

A variety of different terms, metrics, and cut-off values have been used to describe and assess overweight and obesity in children (1–3). Strictly speaking, overweight refers to weight in excess of a weight standard, and obesity refers to excess body fatness. However, because body fat is difficult to measure, body weight is often used as a surrogate measure or indicator of obesity.

In children, weight varies with sex and age, not only with height (4,5). BMI calculated as weight in kilograms divided by height in meters squared can be used to express weight adjusted for height. To account for variability by sex and age, BMI in children is compared with sex- and age-specific reference values. In the United States, the 2000 CDC 2000 charts (6) serve as reference values. The CDC growth charts, issued in 2000, include smoothed percentiles of BMI-for-age in the United States population based on data from the 1960s and 1970s, with additional data from 1988–1994 for children under 6 years of age.

The BMI-for-age growth chart for boys is displayed in the [Figure](#). The variation in BMI with age can be seen in the figure. For example, the median BMI is 15.8 for an 8-year-old boy and



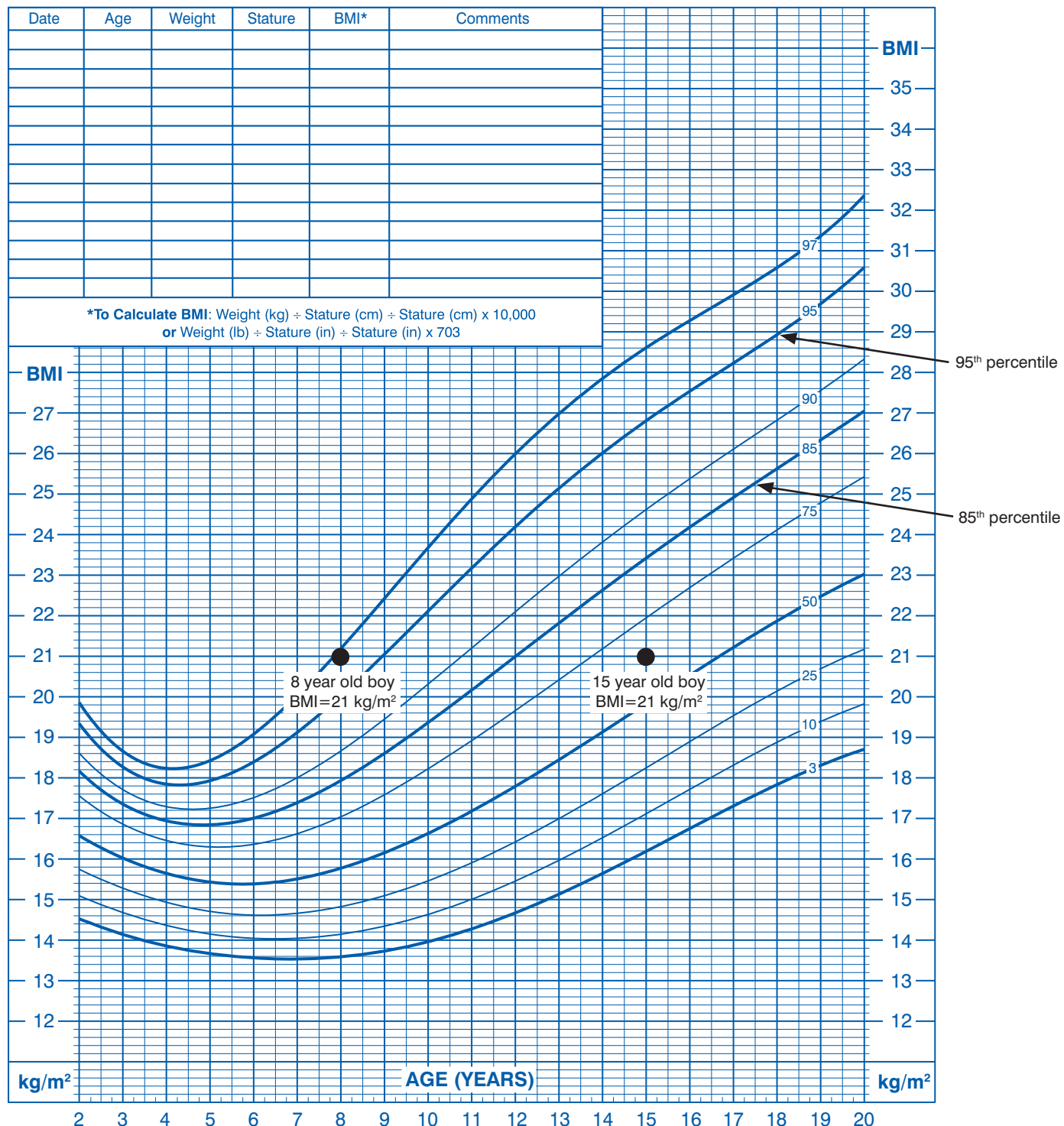
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Center for Health Statistics



2 to 20 years: Boys
Body mass index-for-age percentiles

NAME _____

RECORD # _____



Published May 30, 2000 (modified 10/16/00).
SOURCE: Developed by the National Center for Health Statistics in collaboration with the
National Center for Chronic Disease Prevention and Health Promotion (2000).
Available from: <http://www.cdc.gov/growthcharts>



Figure. 2000 CDC growth chart, boys BMI-for-age, 2–19 years of age

19.8 for a 15-year-old boy. A BMI value of 21 is above the 95th percentile for an 8-year-old boy but between the 50th and 75th percentiles for a 15-year-old boy.

The terminology used for high BMI-for-age in children in the United States to date has been based on the recommendation of an expert committee convened by federal agencies (7). The Expert Committee report (7) published in 1994 distinguished excess weight from excessive body fat, stating:

The committee reserved the use of the term “obesity” for a condition characterized by excessive body fat. Body fat is a specific concern, and a valid measure should identify the fattest adolescents. Nevertheless, fatness cannot be measured directly by using stature and weight. Because the indexes used were based on body size rather than fatness, the committee elected to define excess body mass as overweight, and to rely on additional measures to distinguish those who are obese from those who are overweight but who may not be obese.

This committee recommended the use of BMI and defined overweight as a BMI-for-age at or above the 95th percentile of a specified reference population and felt that children who were overweight by this definition should be screened for possible obesity-related conditions. The committee also noted that these values were not designed to provide clinical cut points, but rather to serve as screening values. The committee recommendations were that children and adolescents with BMI values at or above the 95th percentile of a suitable reference population undergo an in-depth assessment, stating that “in-depth assessments are required to distinguish positively screened adolescents who are truly obese, to identify underlying diagnoses and to provide a basis for prescribing treatment.”

The same expert committee considered that children with BMI values between the 85th and 95th percentiles might also be overweight, although with a lower probability. Thus

for these children, it was recommended that they be referred to a second-level screen, including consideration of family history, blood pressure, total cholesterol, large prior increment in BMI, and concern about weight. These children would be referred for the in-depth evaluation only if they were positive for any of the items on the second-level screen. The committee used the designation of “at risk for overweight” for BMI values between the 85th and the 95th percentiles of BMI for age. Although this is sometimes interpreted as a designation for a child who is at risk for becoming overweight in the future, that was not the original intention of the term. The category as defined by the expert committee was intended to identify children who might be overweight, but who should undergo a second-level screen (as described previously) to evaluate whether they should be referred for an in-depth assessment.

Following these expert committee recommendations, in the United States, “overweight” was defined as a BMI at or above the 95th percentile of the 2000 CDC growth charts, and “at risk for overweight” was defined as a BMI between the 85th and the 95th percentiles. The term “obesity,” indicating excess body fatness, was not used for BMI-for-age categories.

A World Health Organization (WHO) Expert Committee report (8) published in 1995 distinguished between the use of the terms “overweight” and “obesity,” based on weight and height, in individuals versus in populations. According to this committee:

“Overweight” is the preferred term for describing high weight-for-height. Even though there is a strong correlation between high weight-for-height and obesity as measured by adiposity, greater lean body mass can also contribute to high weight-for-height. On an individual basis, therefore, “fatness” or “obesity” should not be used to describe high weight-for-height. However, on a population-wide basis, high weight-for-height can be considered as an adequate

indicator of obesity, because the majority of individuals with high weight-for-height are obese. Strictly speaking, the term “obesity” should be used only in the context of adiposity measurements, for example skinfold thickness.

Changes in Terminology

More recently, although the cut-off values and the interpretation have not changed, changes in terminology have been proposed. The Institute of Medicine report on “Preventing Childhood Obesity” (9) retained the 95th percentile of BMI-for-age as a cut-off value, but changed the terminology, stating that,

The committee recognizes that it has been customary to use the term “overweight” instead of “obese” to refer to children with BMI values above the age- and gender-specific 95th percentiles. . . . However, the term “obese” more effectively conveys the seriousness, urgency, and medical nature of this concern than does the term “overweight,” thereby reinforcing the importance of taking immediate action.

Following along these lines, a subsequent American Medical Association expert committee report (10) retained the two cut-off values of the 85th and 95th percentiles of BMI-for-age but used different terminology, referring to BMI-for-age from the 85th up to the 95th percentile as “overweight” and to BMI-for-age at or above the 95th percentile as “obesity,” stating that

The compelling reasons for this revision are clinical. The term “obesity” denotes excess body fat more accurately and reflects the associated serious health risks more clearly than does the term “overweight,” which is not recognized as a clinical term for high adiposity.

As shown in [Table A](#), the definition of overweight as a BMI-for-age at or above the 95th percentile recommended by the 1994 report and the definition of overweight recommended by the 2007

Table A. Changes in terminology

Body mass index category	1994 recommended terminology	2007 recommended terminology
BMI 85th-<95th percentile	At risk of overweight	Overweight
BMI =>95th percentile	Overweight	Obese

NOTE: BMI is body mass index.

report as a BMI-for-age between the 85th and 95th percentiles have no overlap.

In recognition of the importance of language, the 2007 report also recommended the use of more “neutral” terms when discussing weight issues with families, stating that “Therefore, the expert committee recommends the use of the clinical terms ‘overweight’ and ‘obesity’ for documentation and risk assessment but the use of different terms in the clinician’s office, to avoid an inference of judgment or repugnance.”

NCHS Publications

Publications from NCHS have included prevalence estimates based on the 85th and 95th percentiles of BMI-for-age in children (for example (11,12)). The terminology employed in these publications followed the Expert Committee recommendation from 1994. The prevalence of BMI-for-age at or above the 95th percentile was considered “overweight” and those between the 85th and 95th percentiles were labeled “at risk for overweight.”

NCHS and other CDC publications will continue to include prevalence estimates at the 85th and 95th percentiles as before but will change the terminology to use the term

“overweight” for a BMI-for-age between the 85th and 95th percentiles (formerly called “at risk for overweight”) and the term “obesity” for a BMI-for-age at or above the 95th percentile (formerly called “overweight”). The change in terminology reflects the labels used by the American Academy of Pediatrics and other organizations. Table B contains the estimates from the same National Health and Nutrition Examination Survey (NHANES) years comparing the two sets of terms.

The term “obesity” will be used for the prevalence of BMI-for-age at or above the 95th percentile. However, as noted by the expert committee, obesity strictly speaking refers to excess body fat and not to high BMI-for-age. Not all children at the BMI-for-age level labeled “obesity” necessarily have excess body fat and some children below that level may have excess body fat. For children, there is no precise widely accepted definition of obesity in terms of body fatness. Research using NHANES data on BMI and body fatness show that according to a plausible range of possible cut-off values for high adiposity, the majority of children with BMI at or above the 95th percentile have high adiposity and less than one-half of children in the

intermediate range of the 85th to 95th percentiles of BMI-for-age have high adiposity. These data also show that the relation between these BMI categories and body fatness varies by racial-ethnic group (13). Comparisons by racial-ethnic groups show that at a given BMI level, non-Hispanic black children have lower percentage body fat than either non-Hispanic white or Mexican-American children and are less likely to have high adiposity. For example although non-Hispanic black girls have considerably higher prevalence of obesity than non-Hispanic white girls, the prevalence of high adiposity does not differ between the two groups. Thus, caution should be exercised in interpreting comparisons of obesity levels between racial-ethnic groups in terms of adiposity. Caution should also be exercised in interpreting intermediate BMI levels between the 85th and 95th percentiles in terms of excess body fat, particularly for non-Hispanic black children.

Recognizing the imperfections of BMI in classifying adiposity, the Surgeon General’s recent “Vision for a Healthy and Fit Nation” (14) states that:

Assessing if a child is at a healthy weight is complex. While BMI is often utilized, clinical assessment and other markers should be considered when determining a child’s overall health and development. . . . Children and adolescents with a BMI at or above the sex- and age-specific 95th percentile of this reference population are often considered obese, and those with a BMI between the 85th and 94th percentiles are often considered overweight. Although these cut-off points are not diagnostic criteria, elevated BMI among children most often indicates increased risk for future adverse health outcomes and/or development of disease.

BMI-for-age categories continue to be valuable tools for population surveillance. It is important to note what definitions of BMI categories are being used in a given report to avoid

Table B. Prevalence (standard error) of high body mass index (BMI): United States, children 2-19 years

Definition	2005–2006	2007–2008
BMI-for-age >= 95th percentile ¹		
Old terminology: Overweight	15.5 (1.3)	16.9 (1.3)
New terminology: Obese	15.5 (1.3)	16.9 (1.3)
BMI-for-age >= 85th percentile ¹		
Old terminology: At risk for overweight or overweight	30.1 (1.6)	31.7 (1.2)
New terminology: Overweight or obese	30.1 (1.6)	31.7 (1.2)

¹On the sex-specific CDC growth charts.

SOURCE: CDC/NCHS, National Health and Nutrition Examination Survey.

confusion, particularly in the meaning of the term “overweight,” which has a different meaning in the new terminology than in the old terminology. When reporting trends over time, the new terminology will be applied to data from past surveys as well as to current surveys, so that the definitions within a given report will be consistent across all surveys and not vary by survey. It is important when comparing estimates from different reports to assure that the definitions used are the same across reports.

References

1. Flegal KM, Tabak CJ, Ogden CL. Overweight in children: definitions and interpretation. *Health Educ Res* 21:755–760. 2006.
2. Guillaume M. Defining obesity in childhood: Current practice 2. *Am J Clin Nutr* 70:126S–30S. 1999.
3. Neovius M, Linne Y, Barkeling B, Rossner S. Discrepancies between classification systems of childhood obesity. *Obes Rev* 5:105–14. 2004.
4. Dietz WH, Robinson TN. Use of the body mass index (BMI) as a measure of overweight in children and adolescents. *J Pediatr* 132:191–3. 1998.
5. Dietz WH, Bellizzi MC. Introduction: The use of body mass index to assess obesity in children. *Am J Clin Nutr* 70:123S–5S. 1999.
6. Kuczmarski RJ, Ogden CL, Guo SS, et al. 2000 CDC growth charts for the United States: Methods and development. *National Center for Health Statistics, Vital Health Stat* 11(246). 2002.
7. Himes JH, Dietz WH. Guidelines for overweight in adolescent preventive services: Recommendations from an expert committee. The Expert Committee on Clinical Guidelines for Overweight in Adolescent Preventive Services. *Am J Clin Nutr* 59:307–16. 1994.
8. World Health Organization. Physical status: The use and interpretation of anthropometry. Geneva, Switzerland, WHO. WHO Technical Report Series 854. 1995.
9. Koplan JP, Liverman CT, Kraak VI. Preventing childhood obesity: Health in the balance: executive summary. *J Am Diet Assoc* 105:131–8. 2005.
10. Krebs NF, Himes JH, Jacobson D, Nicklas TA, Guilday P, Styne D: Assessment of child and adolescent overweight and obesity. *Pediatr* 120 Suppl 4:S193–S228. 2007.
11. National Center for Health Statistics. Health, United States, 2008 With Chartbook. Hyattsville, Maryland. 2009.
12. Ogden CL, Flegal KM, Carroll MD, Johnson CL. Prevalence and trends in overweight among United States children and adolescents, 1999–2000. *JAMA* 288:1728–32. 2002.
13. Flegal KM, Ogden CL, Yanovski JA, Freedman DS. High adiposity and high body mass index-for-age in U.S. children and adolescents overall and by race-ethnic group. *Am J Clin Nutr* 91:1020–6. 2010.
14. U.S. Department of Health and Human Services. The Surgeon General’s Vision for a Healthy and Fit Nation. Rockville, Maryland, U.S. Department of Health and Human Services, Office of the Surgeon General. 2010.

Suggested citation

Ogden CL, Flegal KM. Changes in terminology for childhood overweight and obesity. National health statistics reports; no 25. Hyattsville, MD: National Center for Health Statistics. 2010.

Copyright information

All material appearing in this report is in the public domain and may be reproduced or copied without permission; citation as to source, however, is appreciated.

National Center for Health Statistics

Edward J. Sondik, Ph.D., *Director*
Jennifer H. Madans, Ph.D., *Associate Director for Science*

Division of Health and Nutrition Examination Surveys

Clifford L. Johnson, M.S.P.H., *Director*

U.S. DEPARTMENT OF
HEALTH & HUMAN SERVICES

Centers for Disease Control and Prevention
National Center for Health Statistics
3311 Toledo Road
Hyattsville, MD 20782

FIRST CLASS POSTAGE & FEES PAID CDC/NCHS PERMIT NO. G-284
--

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, \$300

To receive this publication regularly, contact the National Center for Health Statistics by calling 1-800-232-4636
E-mail: cdcinfo@cdc.gov
Internet: <http://www.cdc.gov/nchs>

DHHS Publication No. (PHS) 2010-1250
CS213222
T36859 (06/2010)