



Pediatric Nutrition Surveillance



2003 Report



2004
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

This report summarizes selected data on child health and nutritional indicators received from state, territorial, and tribal governments that contributed to the Centers for Disease Control and Prevention (CDC) *Pediatric Nutrition Surveillance 2003 Report*.

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Suggested Citation

Polhamus B, Dalenius K, Thompson D, Scanlon K, Borland E, Smith B, Grummer-Strawn L. *Pediatric Nutrition Surveillance 2003 Report*. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention; 2004.

Acknowledgments

We gratefully acknowledge and thank all contributors to the Pediatric Nutrition Surveillance System (PedNSS). The efforts of state surveillance coordinators, data processing staff, and local clinic staff in collecting data and using nutrition surveillance systems make the national PedNSS possible.

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Table 1. State-specific prevalence of selected nutritional indicators of children aged < 5 years, 2003 Pediatric Nutrition Surveillance System

Contributor	LBW*	HBW†	Ever Breastfed	Breastfed 6 Months	Anemia‡	Short Stature§	Overweight
Alabama	na	na	na	na	22.7	6.9	14.7
Arkansas	9.5	6.7	43.2	10.1	11.3	7.3	12.2
California	7.1	8.6	na	na	13.7	4.9	17.6
Cheyenne River Sioux (SD)	9.4	8.7	43.1	na	11.3	4.0	17.5
Chickasaw Nation (OK)	8.7	9.1	56.1	13.3	17.9	6.9	12.0
Colorado	10.2	4.9	70.1	26.9	7.8	7.9	9.4
District of Columbia	11.9	5.8	48.5	26.4	21.0	7.2	13.3
Florida	9.6	6.6	62.1	25.2	14.8	4.6	13.4
Georgia	10.0	6.4	49.3	16.3	13.4	7.2	12.4
Hawaii	10.1	7.4	53.8	11.7	10.4	7.1	10.1
Idaho	6.9	7.5	na	na	12.8	6.7	11.1
Illinois	9.1	7.2	55.4	19.4	10.9	7.1	14.0
Indiana	9.0	7.3	52.5	21.5	15.3	6.5	13.7
Inter Tribal Council (AZ)	6.3	9.0	na	na	12.3	6.8	20.9
Iowa	7.1	9.0	55.7	27.5	10.1	5.9	13.6
Kansas	8.4	7.0	61.7	19.6	10.9	6.9	12.6
Kentucky	9.6	7.4	na	na	11.5	7.4	17.2
Louisiana	11.9	5.5	25.4	2.4	14.9	9.3	13.3
Maine	7.8	11.4	52.0	24.6	12.9	7.6	16.0
Michigan	9.4	8.3	48.0	14.7	13.1	6.9	12.9
Minnesota	7.4	10.0	na	na	9.8	4.2	13.2
Missouri	9.1	6.9	47.7	32.4	16.2	6.9	13.3
Montana	7.9	8.4	74.7	30.8	8.8	4.9	11.0
Navajo Nation (AZ)	6.7	7.0	75.2	32.9	8.3	5.3	14.4
Nebraska	8.0	7.7	63.1	22.4	13.6	6.1	13.4
Nevada	8.4	7.2	52.4	20.8	10.4	8.1	13.6
New Hampshire	7.8	10.8	59.2	18.7	13.8	6.8	15.6
New Jersey	9.1	7.2	56.3	36.1	16.9	6.4	17.9
New York	7.6	8.0	64.1	32.9	14.1	4.4	16.8
North Dakota	7.0	10.7	56.9	21.0	7.7	4.2	11.4
Ohio	10.2	6.7	38.9	16.1	14.2	6.1	11.6
Oregon	5.6	19.7	na	na	11.3	6.0	14.7
Pennsylvania	10.3	7.2	35.6	14.2	15.3	6.1	12.4
Puerto Rico	11.6	2.9	50.3	14.0	8.3	9.0	24.0
Rosebud Sioux (SD)	7.4	9.5	57.2	29.3	17.8	3.2	17.3
South Carolina	12.5	6.1	na	na	10.9	13.2	12.4
South Dakota	8.0	9.4	55.9	22.0	7.6	6.1	13.6
Standing Rock Sioux (ND)	7.3	6.2	38.2	na	8.0	1.9	20.1
Tennessee	10.4	6.1	na	na	7.1	5.2	12.0
Utah	8.0	6.3	76.0	41.9	9.9	7.5	8.6
Vermont	8.2	9.9	63.7	34.7	9.0	5.1	13.1
West Virginia	9.7	6.6	42.1	12.0	6.6	4.8	13.2
Wisconsin	8.3	8.5	58.2	23.8	12.2	5.2	13.0
Wyoming	10.7	4.2	60.0	22.8	10.3	8.7	9.5
National PedNSS	9.1	7.3	53.2	21.5	12.8	6.2	14.7

* Low birthweight: < 2,500 grams.

† High birthweight: > 4,000 grams.

‡ Anemia: Based on CDC. Recommendations to prevent and control iron deficiency in the United States. MMWR Recomm Rep 1998;47(RR-3). Children aged 1 to 2 years: Hb < 11.0 g/dL or Hct < 32.9%; children aged 2 to 5 years: Hb < 11.1 g/dL or Hct < 33.0%. Altitude adjusted, children aged 6 months or older included in the analysis.

§ Short stature: Based on the 2000 CDC growth reference, < 5 percentile length-for-age for children younger than 2 years of age or height-for-age for children aged 2 years or older.

|| Overweight: Based on the 2000 CDC growth reference for children aged 2 years or older, BMI-for-age ≥ 95th percentile.

Pediatric Health Indicators

Low Birthweight

Low birthweight (< 2,500 grams) is an important factor affecting neonatal mortality, and it is a determinant of postneonatal mortality. Low-birthweight infants who survive are at increased risk for health problems ranging from neurodevelopmental disabilities to respiratory disorders. In the 2003 PedNSS, 9.1% of infants were low birthweight, compared with 7.8% of U.S. infants.¹ In PedNSS, the prevalence of low birthweight was higher for black infants (12.9%) than for white (8.5%), Asian or Pacific Islander (8.3%), Hispanic (7.3%), and American Indian or Alaska Native (7.1%) infants. *Healthy People 2010* Objective 16-10a proposes reducing low birthweight to no more than 5% of all live births.²

The overall prevalence of low birthweight has remained stable from 1994 (9.2%) through 2003 (9.1%); however, variations were observed among racial and ethnic groups (Figure 2). During the past 10 years, low-birthweight rates improved slightly for Hispanic infants; remained similar for black, American Indian or Alaska Native, and Asian or Pacific Islander infants; and worsened somewhat for white infants.

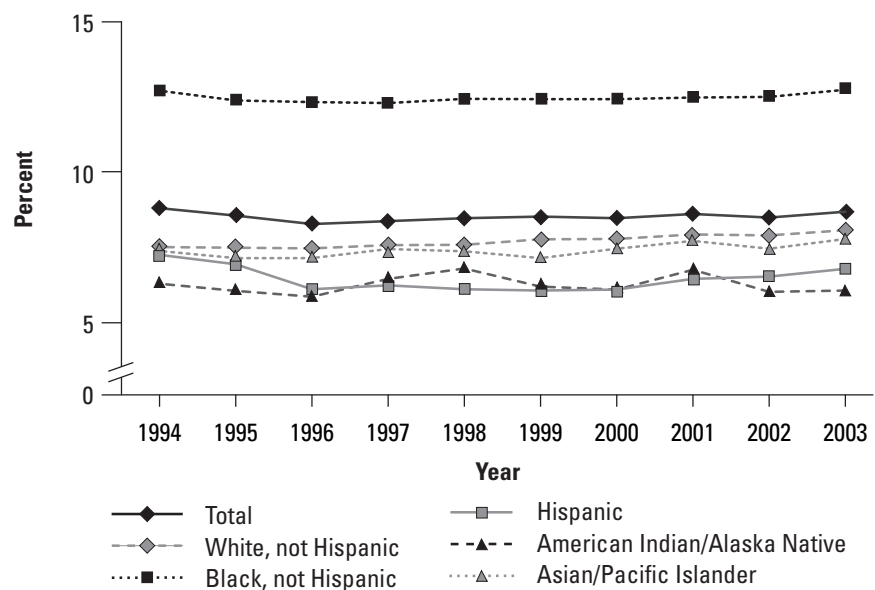
Low Birthweight: Less than 2,500 grams at birth.

High Birthweight

High birthweight (> 4,000 grams) puts infants at increased risk for death and birth injuries such as shoulder dystocia. In the 2003 PedNSS, 7.3% of infants were high birthweight, compared with 9.2% of U.S. infants.¹ Twenty-one PedNSS contributors had an overall prevalence higher than the national PedNSS rate (Table 1). The prevalence of high birthweight was higher for American Indian or Alaska Native (10.5%) infants than for white (8.3%), Hispanic (7.6%), Asian or Pacific Islander (6.1%), and black (4.8%) infants. The overall prevalence of high birthweight decreased from 1994 (8.5%) through 2003 (7.3%), with the largest decreases occurring among white (2.0%) and Asian or Pacific Islander (1.7%) infants.

High Birthweight: More than 4,000 grams at birth.

Figure 2. Trends in prevalence of low birthweight,* by race and ethnicity



* < 2,500 grams, among infants born during the reporting period. Year 2010 target: reduce low birthweight to 5% of live births.

2003 National PedNSS Table 18D

Breastfeeding

The nutritional, immunologic, and economic advantages of breastfeeding are well recognized. In the 2003 PedNSS, 53.2% of infants were ever breastfed, 21.5% were breastfed for at least 6 months, and 13.6% were breastfed for at least 12 months. The *Healthy People 2010* objective (16-19a-c)—to increase the proportion of children ever breastfed to 75%, breastfed at 6 months to 50%, and breastfed at 1 year to 25%²—is far from being achieved in the PedNSS population. However, Utah and the Navajo Nation met the *Healthy People 2010* objectives for ever breastfeeding (Table 1), and Missouri, New Jersey, and the Navajo Nation met the *Healthy People 2010* objectives for breastfeeding at 12 months. Nationally representative data from the 2003 National Immunization Survey indicate that 70.9% of mothers ever breastfed, 36.2% breastfed at 6 months, and 17.2% breastfed at 12 months.³

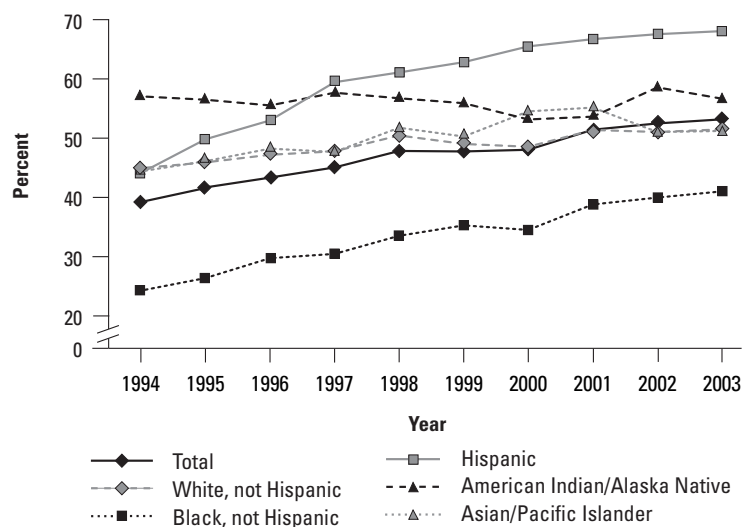
The relative increase in the prevalence of breastfeeding initiation for children in PedNSS was 36% from the 1994 rate of 39.2%, and these improved breastfeeding rates are evident among all racial and ethnic groups (Figure 3). Although black infants had the lowest prevalence of breastfeeding (41.0%), the relative increase in this prevalence since 1994 (24.3%) was almost 69%. National data from other sources indicate that the ever breastfed rate in the United States increased from 55.9% in 1993 to 70.1% in 2002.⁴

Breastfeeding: Child ever breastfed, breastfed until 6 months of age, or breastfed until 12 months of age.

Anemia

Anemia (low hemoglobin/hematocrit) is an indicator of iron deficiency, which is associated with developmental delays and behavioral disturbances in children. In the 2003 PedNSS, the prevalence of anemia was 12.8%. The highest prevalence of anemia in PedNSS and U.S. children is in children younger than age 2; the prevalence decreases as children get older. In PedNSS, the highest prevalence of anemia was in infants aged 6–11 months (16.2%), followed by children aged 12–17 months (15.0%); the lowest prevalence was in children aged 3 to 5 years (9.5%). The prevalence of anemia also varied among racial and ethnic groups in PedNSS. The highest prevalence of anemia was among black children (19.0%). The overall prevalence of anemia in PedNSS children declined from 15.8% in 1994 to 12.8% in 2003. While a decline was observed among all racial and ethnic groups, the smallest declines during this period were seen among white and Asian or Pacific Islander children (Figure 4).

Figure 3. Trends in percentage of infants ever breastfed,* by race and ethnicity



* Among infants born during the reporting period. Year 2010 target: increase the proportion of mothers who breastfeed their babies in the early postpartum period to 75%.

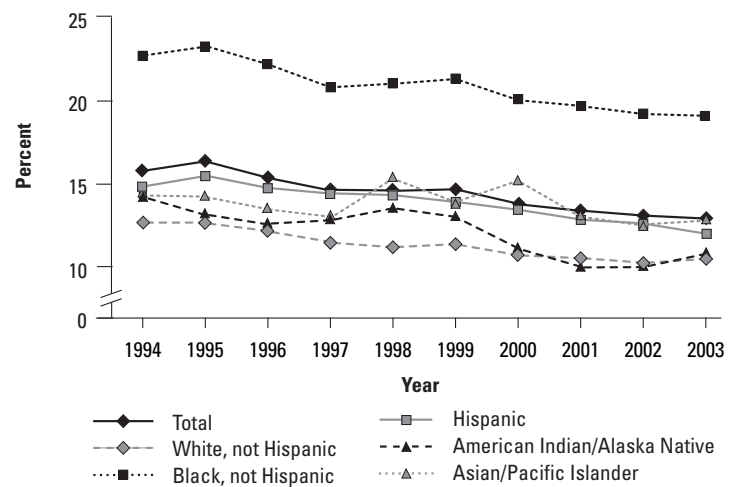
2003 National PedNSS Table 19D

Anemia: Children aged 1 to 2 years are considered anemic if their hemoglobin (Hb) concentration is less than 11.0 g/dL or hematocrit (Hct) level is less than 32.9%; children aged 2 to 5 years are considered anemic if their Hb concentration is less than 11.1 g/dL or their Hct level is less than 33.0%. Values are adjusted for altitude.⁵

Short Stature

Short stature (low length/height-for-age) may reflect the long-term health and nutritional status of a child or a population. Although short stature can be associated with short parental stature or low birthweight, it can also result from growth retardation due to chronic malnutrition, recurrent illness, or both. In the 2003 PedNSS, 6.2% of children from birth to age 5 were of short stature, compared with 2.4% of U.S. children (Dr. Zugu Mei, CDC, unpublished data analysis, NHANES 1999–2002). Short stature is considerably higher in the PedNSS population than in the general population, which may reflect the nutritional risk of children participating in the WIC program. The prevalence of short stature in PedNSS is somewhat above the expected level (5%) and the *Healthy People 2010* objective (19-4) of 5% among low-income children under 5 years of age.² Ten contributors achieved this *Healthy People 2010* objective in 2003 (Table 1). The prevalence of short stature declined slightly from 6.8% in 1994 to 6.2% in 2003. A slight decrease in short stature was evident among all racial and ethnic groups with the exception of Hispanic children, for whom the prevalence of short stature remained stable; the largest decrease was among Asian or Pacific Islander children (Figure 5). The highest prevalence of short stature was among black infants younger than 1 year

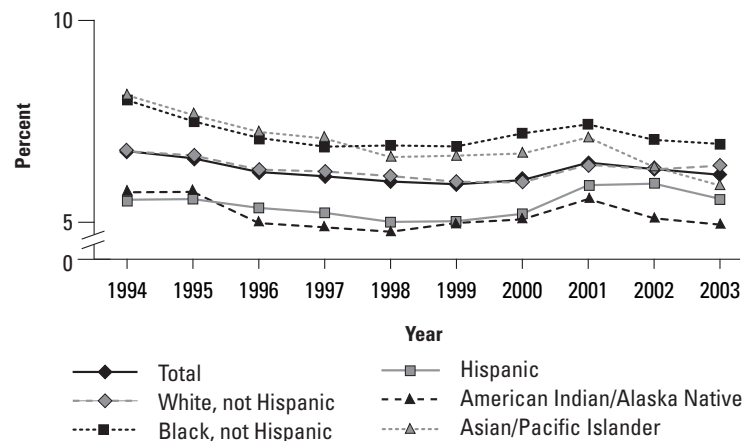
Figure 4. Trends in prevalence of anemia* among children aged < 5 years, by race and ethnicity



* Hb or Hct < 5th percentile. CDC. Recommendations to prevent and control iron deficiency in the United States. MMWR Recomm Rep 1998;47(RR-3).

2003 National PedNSS Table 18D

Figure 5. Trends in prevalence of short stature* among children aged < 5 years, by race and ethnicity



* ≤ 5th percentile length or height-for-age, CDC Growth Charts, 2000. Year 2010 target: reduce short stature among low-income children aged < 5 years to 5%.

2003 National PedNSS Table 18D

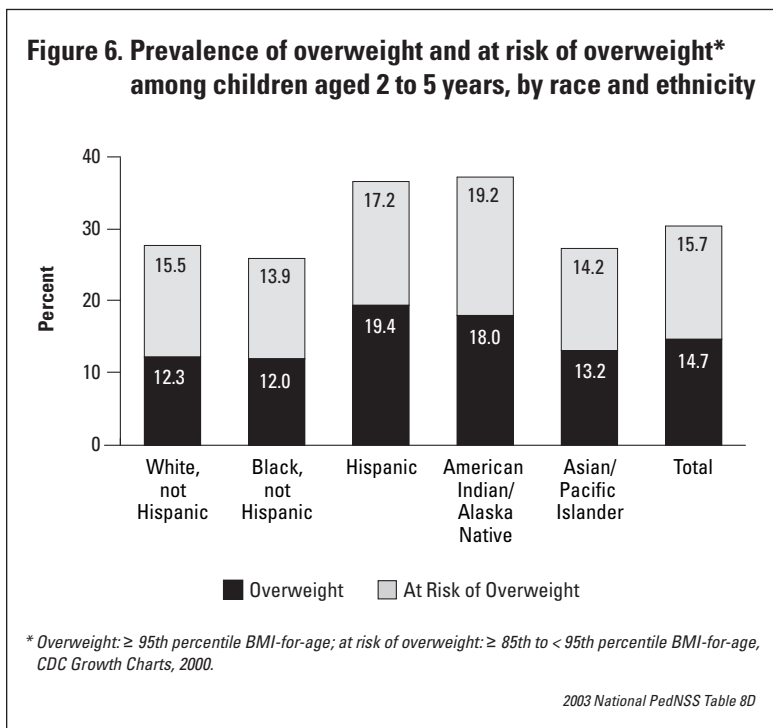
of age (10.4%), which may reflect the high rate of low birthweight in this group.

Short Stature: Based on the 2000 CDC gender-specific growth chart percentiles of less than the 5th percentile length-for-age for children younger than 2 years of age or less than the 5th percentile height-for-age for children aged 2 years or older.

Underweight

Data on underweight (low weight-for-length/[†]BMI-for-age) in children from birth to age 5 years indicate that acute malnutrition is not a public health problem in the PedNSS population. In 2003, the prevalence of 5.2% was similar to the expected level (5%). The prevalence of underweight for U.S. children in this age group was 3.8% (Dr. Zuguo Mei, CDC, unpublished data analysis, NHANES 1999–2002). The highest prevalence of underweight in PedNSS occurred among black children (6.5%). Black infants aged 0–11 months had an underweight rate of 8.6%, which may reflect the high rate of low birthweight in this group. The overall prevalence of underweight decreased from 6.2% in 1994 to 5.2% in 2003.

Underweight: Based on the 2000 CDC gender-specific growth chart percentiles of less than the 5th percentile weight-for-length for children younger than 2 years of age and less than the 5th percentile BMI-for-age for children aged 2 years or older.



Overweight and At Risk of Overweight

Overweight (high BMI-for-age) in children has increased in recent years, and the associated health consequences warrant preventive efforts. The American Academy of Pediatrics recommends two categories to screen for overweight in children aged 2 years or older. Children whose BMI-for-age is at or above the 95th percentile are considered overweight, and those whose BMI-for-age falls between the 85th and 95th percentiles are considered at risk of overweight.⁶

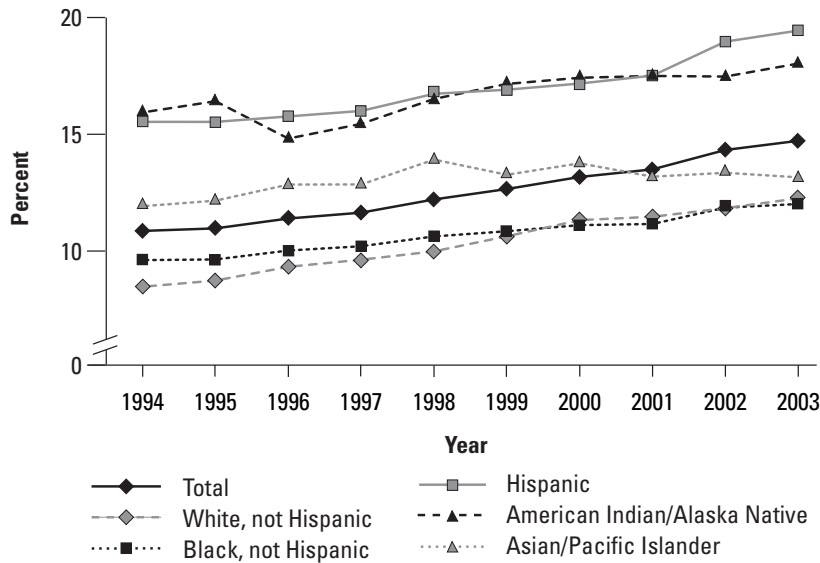
In the 2003 PedNSS, the prevalence of overweight in children aged 2 to 5 years was 14.7%, compared with 10.4% for U.S. children.⁷ The highest rates were among Hispanic (19.4%) and American Indian or Alaska Native (18.0%) children; the lowest rates were among both black (12.0%) and white (12.3%) children (Figure 6). Of particular concern is that the prevalence of overweight in children aged 2 to 5 years has steadily increased from 10.9% in 1994 to 14.7% in 2003 (Figure 7). This is a relative increase in overweight of 35% in the past 10 years. Overweight has increased among all racial and ethnic groups, with the greatest absolute increase occurring among white (3.8%) and Hispanic (3.9%) children.

Overweight: Based on the 2000 CDC gender-specific growth chart percentiles of equal to or greater than the 95th percentile BMI-for-age for children 2 years of age or older.

At Risk of Overweight: Based on the 2000 CDC growth chart percentiles of the 85th to the 95th percentile BMI-for-age for children 2 years of age or older.

[†]To calculate BMI (body mass index): $\text{Weight (kg)} \div \text{Stature (cm)} \div \text{Stature (cm)} \times 10,000$ or $\text{Weight (lb)} \div \text{Stature (in)} \div \text{Stature (in)} \times 703$.

Figure 7. Trends in prevalence of overweight* among children aged 2 to 5 years, by race and ethnicity

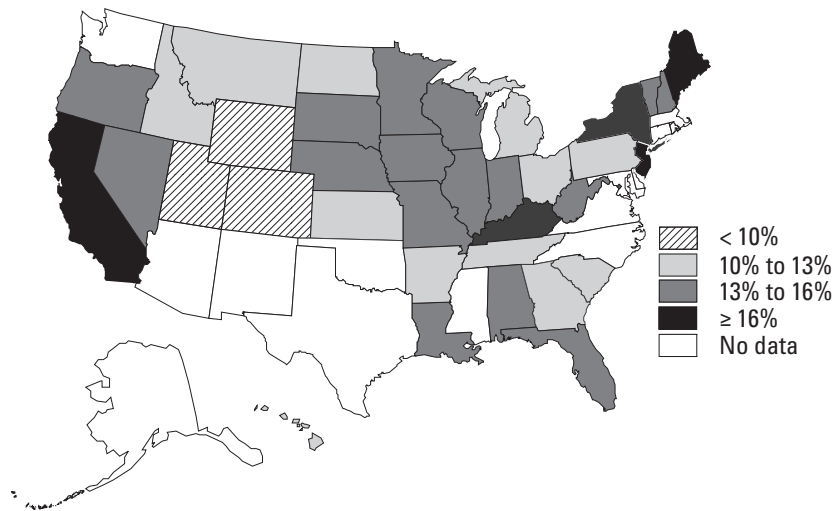


* \geq 95th percentile BMI-for-age, CDC Growth Charts, 2000.

2003 National PedNSS Table 18D

The data in the 2003 prevalence map illustrating overweight in children in PedNSS by contributor (Figure 8) show that only 3 contributors (Colorado, Utah, and Wyoming) had a prevalence of overweight less than 10%, while 10 contributors had a prevalence of overweight greater than 16%. Although the map shows no clear geographic pattern of overweight prevalence, it is noteworthy that four of the six tribal governments participating in PedNSS were in the category with the highest rate. No contributor had a prevalence of overweight at or less than the expected level of 5% (Table 1).

Figure 8. Prevalence of overweight* among children aged 2 to 5 years, by contributor



* \geq 95th percentile BMI-for-age, CDC Growth Charts, 2000. Includes the District of Columbia (13% to 16%), Puerto Rico (\geq 16%), and the following tribes: Cheyenne River Sioux (\geq 16%), Chickasaw Nation (10% to 13%), Inter Tribal Council (\geq 16%), Navajo Nation (13% to 16%), Rosebud Sioux (\geq 16%), and Standing Rock Sioux (\geq 16%).

2003 National PedNSS Table 6D

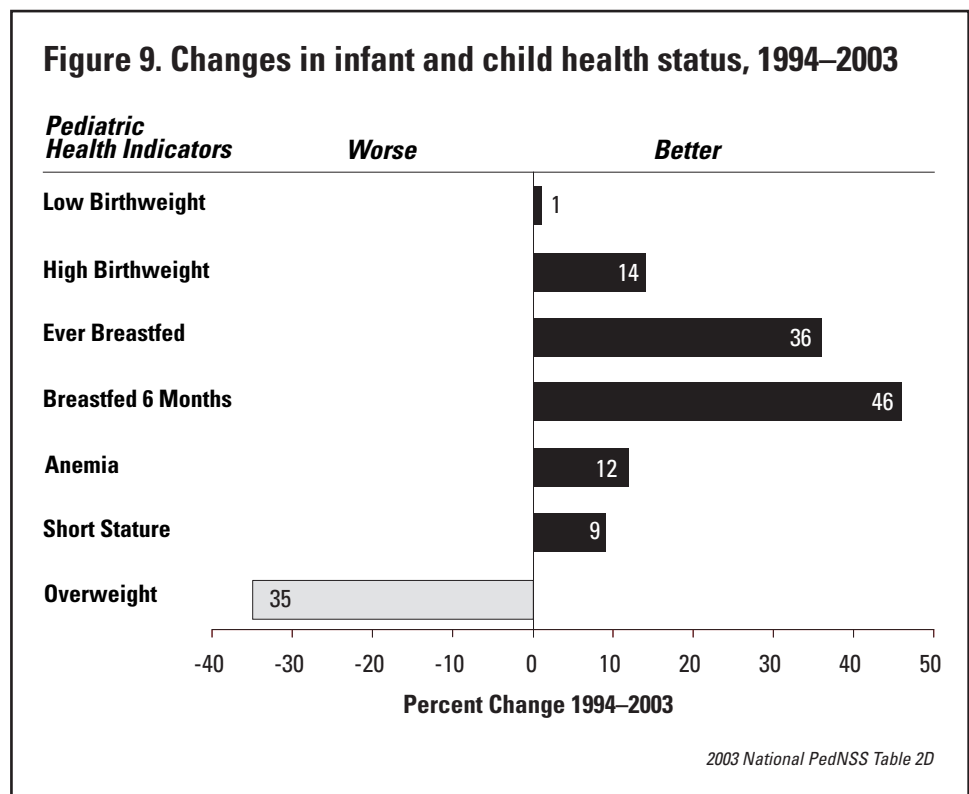
The prevalence of at risk of overweight in children aged 2 to 5 years increased from 13.9% in 1994 to 15.7% in 2003. This increase was seen among all racial and ethnic groups, with the exception of American Indian or Alaska Native children. However, this group has a prevalence of at risk of overweight (19.2%) that is higher than all other groups (Figure 6). Findings from PedNSS are consistent with trends of increasing overweight in children aged 2 to 5 years in the U.S. population; however, the prevalence of overweight (10.4%) and at risk of overweight (10.2%) were considerably lower for U.S. children aged 2 to 5 years.⁷

Pediatric Health Progress Review

Several advances in nutrition and health indicators were observed in the PedNSS population from 1994 through 2003 (Figure 9). While improvements in low birthweight have been minimal, the prevalence of high birthweight decreased, with the greatest improvement seen among white children. Short stature decreased, with the greatest improvement seen among Asian or Pacific Islander children. Reductions occurred in the prevalence of anemia; a decrease occurred among all racial and ethnic groups, with the greatest change taking place among American Indian or Alaska Native and Hispanic children. Major improvements have occurred in both the prevalence of infants ever breastfed and those breastfed for at least 6 months. While the prevalence of breastfeeding remained lowest for black infants, this group has shown the largest relative improvement in prevalence of ever being breastfed. The largest relative improvement in the prevalence of breastfeeding for at least 6 months occurred among Hispanic children.

Areas of concern remain. No racial or ethnic group achieved the *Healthy People 2000*⁸ objective to reduce low-birthweight prevalence to 5%, and reduction in low-birthweight prevalence has been minimal (1%) during the past decade. Although there has been a decrease in the prevalence

of anemia, it is still high among all racial and ethnic groups. Advances have been made in breastfeeding initiation and breastfeeding for at least 6 months, although few contributors are achieving the *Healthy People 2010*² objective that 75% of infants are ever breastfed, and no contributors achieved the *Healthy People 2010*² objective that 50% of infants breastfeed for at least 6 months. Overweight is a major public health problem that has steadily increased; 35% more children aged 2 to 5 years are overweight than in 1994. Although Hispanic and American Indian or Alaska Native children have the highest prevalence of overweight, increases occurred among all racial and ethnic groups, with the largest relative increase taking place among white children aged 2 to 5 years.



Pediatric Nutrition Recommendations

PedNSS data indicate that public health programs need to support the following actions:

- Implement the promising approaches to prevent obesity and chronic diseases recommended by CDC's Division of Nutrition and Physical Activity, including promoting breastfeeding and advocating regular physical activity and less television viewing time.
- Promote and support breastfeeding through effective programs, medical care systems, work sites, and communities.
- Promote adequate dietary iron intake and screening of children at risk for iron deficiency.
- Prevent low birthweight by promoting preconception nutrition care and outreach activities to identify pregnancy in its early stages and foster early entry into comprehensive prenatal care, including the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) and the Title V Maternal and Child Health Program.
- Promote routine screening for overweight and at risk of overweight using BMI-for-age as recommended by the American Academy of Pediatrics Policy Statement.⁶



From Recommendations to Action

State PedNSS data are used in various ways—for example, to identify high-risk groups, to determine state and local priorities, and to advocate for nutrition interventions. Below are examples of how state and local programs use PedNSS data.

Georgia

In Georgia, the WIC program and the state chapter of the American Academy of Pediatrics collaborated on the WIC Physician Outreach Campaign. They used PedNSS data to identify districts in the state that had low breastfeeding rates and high rates of overweight to pilot test the campaign. The campaign aims to increase physician referrals to WIC, facilitate communication between physicians' offices and local WIC clinics, and improve and support breastfeeding initiation and duration rates to meet *Healthy People 2010* objectives. The nutritionist who works with this program visits physician practices to describe how the WIC program supports breastfeeding and to present PedNSS data on breastfeeding rates in specific counties or regions. She says, "Physicians like to see the breastfeeding data and the comparisons that can be made with other counties, states, and regions."

Orange County, California

In Orange County (OC), California, PedNSS data showed that overweight rates were much higher than the expected 5%. The data helped provide the impetus for launching the OC Children and Weight Task Force in 2000. This task force has

increased awareness of childhood overweight in the community and coordinated local efforts around the issue. In January 2004, the task force evolved into the OC Nutrition and Physical Activity Collaborative. Childhood overweight remains the focus of the group, and the number of partners has increased. Various partners have used PedNSS data for program planning and in grant applications to describe the problem of overweight in the community. The nutritionist at the county health care agency says, "I appreciate being able to share PedNSS data with my colleagues. While there are limitations to the data, PedNSS statistics have been instrumental in informing our community about the increasing number of children who are overweight."

Memphis, Tennessee

The Tennessee Department of Health used PedNSS data to identify high rates of anemia in the WIC population in Memphis in Shelby County. In addition, Shelby County Health Department staff members are using PedNSS data to persuade management and health care staff that the problem of anemia needs to be addressed to meet the *Healthy People 2010* objective. The Shelby County Health Department receives clinic-level data that include hemoglobin levels for individual children. The data liaison at the Tennessee Department of Health says, "We depend on having access to PedNSS analyses. It is our core source of data to identify nutrition-related problems in the WIC population and to show the need to address problems in the counties."

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