CDC
Nutrition

Pediatric Nutrition Surveillance

2004 Report

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This report summarizes selected data on child health and nutrition indicators received from state, territorial, and tribal governments that contributed to the Centers for Disease Control and Prevention (CDC) *Pediatric Nutrition Surveillance 2004 Report*.

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This report is available at http://www.cdc.gov/nccdphp/dnpa/pednss.htm

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Pediatric Nutrition Surveillance

The Pediatric Nutrition Surveillance System (PedNSS) is a child-based public health surveillance system that monitors the nutritional status of low-income children in federally funded maternal and child health programs. Data on birthweight, breastfeeding, anemia, short stature, underweight, and overweight are collected for children who attend public health clinics for routine care, nutrition education, and supplemental food. Data are collected at the clinic level then aggregated at the state level and submitted to the Centers for Disease Control and Prevention (CDC) for analysis. A national nutrition surveillance report is produced using PedNSS data. Surveillance reports are also produced for each contributor (defined as a state, U.S. territory, or tribal government). In 2004, a total of 48 contributors, including 40 states, the District of Columbia, Puerto Rico, and 6 tribal governments, participated in PedNSS (Figure 1).

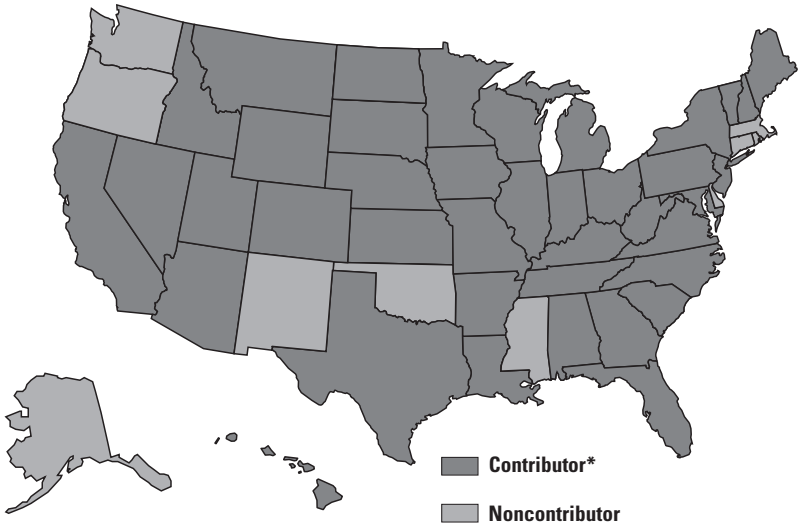
In 2004, PedNSS contributors submitted records for approximately 7 million children from birth to 5 years of age. Note that 7 million records is a significant increase from about 5 million records in 2003. This increase was due to the addition of several contributors to PedNSS. Changes in record volume can affect trends, so interpret the trends in demographic characteristics and health status in light of this change.

Data for the 2004 PedNSS were collected from children enrolled in federally funded programs that serve low-income children, including the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) (86%) and non-WIC programs (14%) that include the Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) Program and the Title V Maternal and Child Health Program. The goal of PedNSS is to collect, analyze, and disseminate surveillance data to guide public health policy and action. PedNSS information is used to set priorities and to plan, implement, and evaluate nutrition programs. This report summarizes 2004 data and highlights trends from 1995 through 2004.

Demographic Characteristics

In the 2004 PedNSS, 37% of the records were from Hispanic children, 36% were from non-Hispanic white children, 21% were from non-Hispanic black children, 3% were from Asian or Pacific Islander children, 1% were from American Indian or Alaska Native children, and 2% were from children of all other or unspecified races and ethnicities. Most PedNSS records (65%) were from children aged 1 to 5 years; 35% were from infants aged less than 1 year.

Figure 1. Contributors* to the 2004 Pediatric Nutrition Surveillance Report



** Includes the District of Columbia, Puerto Rico, and the following tribes: Cheyenne River Sioux (SD), Chickasaw Nation (OK), Inter Tribal Council (AZ), Navajo Nation (AZ), Rosebud Sioux (SD), and Standing Rock Sioux (ND).*

Table 1. State-specific prevalence of selected nutrition indicators for children aged < 5 years, 2004 Pediatric Nutrition Surveillance System

Contributor	LBW*	HBW†	Ever Breastfed	Breastfed 6 Months	Anemia‡	Short Stature§	Overweight‖
Alabama	11.0	5.9	31.3	1.8	19.0	8.9	14.7
Arizona	8.1	7.1	59.5	27.9	16.0	6.9	12.4
Arkansas	10.1	6.6	44.6	9.81	14.2	7.8	12.7
California	7.4	8.3	na	na	14.0	5.1	17.5
Cheyenne River Sioux (SD)	13.0	9.0	na	na	10.1	1.2	18.5
Chickasaw Nation (OK)	7.9	8.3	58.8	14.2	18.3	6.9	10.9
Colorado	10.0	4.7	72.6	27.2	7.5	7.9	9.6
District of Columbia	11.8	6.3	47.5	30.1	20.9	7.5	15.0
Florida	9.7	6.4	62.7	24.6	14.7	4.6	13.8
Georgia	10.1	6.0	50.5	16.4	12.8	7.2	13.0
Hawaii	9.1	7.3	64.9	na	11.1	7.0	10.0
Idaho	7.5	7.1	80.5	30.0	12.5	6.9	11.4
Illinois	9.4	6.9	57.8	19.8	11.3	6.6	14.3
Indiana	9.2	6.8	54.1	22.0	15.4	6.4	14.1
Inter Tribal Council (AZ)	7.7	9.2	na	na	11.4	6.4	22.8
Iowa	7.8	8.1	56.7	24.1	10.2	5.8	14.6
Kansas	8.9	7.2	63.9	24.4	9.4	6.5	13.6
Kentucky	9.7	6.8	na	na	11.8	7.7	17.6
Louisiana	12.1	4.9	27.5	2.2	16.6	9.3	14.0
Maine	7.4	11.2	53.8	23.8	13.0	7.5	15.5
Maryland	10.8	6.3	na	na	20.9	6.5	14.5
Michigan	9.6	8.0	48.7	14.6	13.1	6.8	13.2
Minnesota	7.6	9.8	na	na	10.0	5.1	13.8
Missouri	9.4	6.9	49.0	27.4	17.1	6.9	13.8
Montana	8.4	7.9	na	na	10.3	5.5	12.0
Navajo Nation (AZ)	7.0	9.9	76.6	31.2	7.9	5.2	17.4
Nebraska	8.2	7.5	64.6	24.0	15.1	5.8	13.6
Nevada	8.3	6.8	58.7	22.7	11.4	7.7	14.3
New Hampshire	7.3	9.8	60.3	21.5	11.5	7.4	16.3
New Jersey	9.1	6.8	57.0	35.8	16.5	6.2	17.7
New York	7.6	7.8	66.5	38.3	13.3	4.2	16.6
North Carolina	9.8	7.1	53.0	18.7	11.7	5.5	14.9
North Dakota	7.1	10.7	55.6	20.5	8.2	4.3	12.7
Ohio	10.4	6.3	41.2	16.1	13.8	6.3	12.0
Pennsylvania	10.2	6.8	39.8	12.6	15.6	6.1	11.8
Puerto Rico	14.4	2.6	50.2	13.2	7.1	9.5	21.4
Rosebud Sioux (SD	8.7	7.9	59.2	na	20.2	1.5	18.9
South Carolina	12.8	5.6	na	na	12.8	11.0	13.1
South Dakota	7.9	8.8	56.8	19.4	8.4	6.4	13.9
Standing Rock Sioux (ND)	5.8	9.7	na	na	11.5	2.6	25.6
Tennessee	10.6	6.1	51.3	15.3	7.1	5.4	12.6
Texas	8.5	6.5	63.7	36.3	21.4	7.6	15.2
Utah	8.2	6.2	80.8	41.8	11.7	7.6	8.5
Vermont	8.2	10.8	65.9	32.9	7.9	5.4	13.7
Virginia	10.2	6.6	55.6	23.9	13.0	8.8	17.3
West Virginia	10.2	6.7	42.1	13.1	5.0	5.6	12.6
Wisconsin	8.7	8.3	59.3	25.0	13.2	5.4	13.3
Wyoming	10.3	3.9	58.2	23.5	10.5	9.3	10.1
National PedNSS	**9.3**	**6.8**	**56.0**	**23.3**	**13.8**	**6.5**	**14.8**

* *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 2004 PedNSS, 9.3% of infants were low birthweight, compared with 8.1% of U.S. infants.[1] In PedNSS, the prevalence of low birthweight was higher for black infants (13.1%) than for white (8.8%), Asian or Pacific Islander (8.3%), Hispanic (7.6%), and American Indian or Alaska Native (7.9%) infants. *Healthy People 2010*[2] Objective 16-10a proposes reducing low birthweight to no more than 5% of all live births.

The overall prevalence of low birthweight remained about the same from 1995 (9.0%) through 2004 (9.3%), while some variations were observed among racial and ethnic groups (Figure 2). Compared with the 1995 low-birthweight rates, the 2004 rates remained stable for Hispanic infants and increased slightly for all other racial and ethnic groups, with American Indian or Alaska Native children having the highest increase (1.2%).

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

High Birthweight

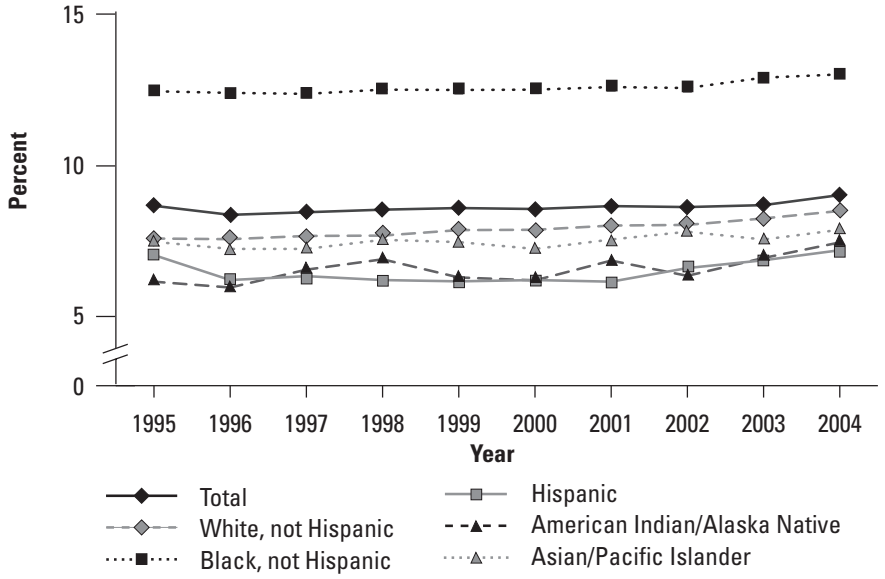
High birthweight (> 4,000 grams) puts infants at increased risk for death and birth injuries such as shoulder dystocia. In the 2004 PedNSS, 6.8% of infants were high birthweight compared with 8.6% in 1995. The high-birthweight rate for PedNSS (6.8%) is lower than the U.S. rate (8.9%).[3] Twenty-six PedNSS contributors had a prevalence higher than the national PedNSS rate (Table 1). The prevalence of high birthweight was higher for American Indian or Alaska Native (9.8%) infants than for white (7.8%), Hispanic (7.2%), Asian or Pacific Islander (5.7%), and black (4.5%) infants. The overall prevalence of high birthweight decreased from 1995 (8.6%) through 2004 (6.8%), with the largest decreases occurring among white (2.4%) and American Indian or Alaska Native (2.4%) infants.

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

Breastfeeding

The nutritional, immunologic, and economic advantages of breastfeeding are well recognized. In the 2004 PedNSS, 56.0% of infants were ever breastfed, 23.3% were breastfed for at least 6 months, and 17.5% were breastfed for at least 12 months. The *Healthy People 2010*[2] 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%—is far from being achieved in the PedNSS population. However, Idaho, Utah, and the Navajo Nation met the *Healthy*

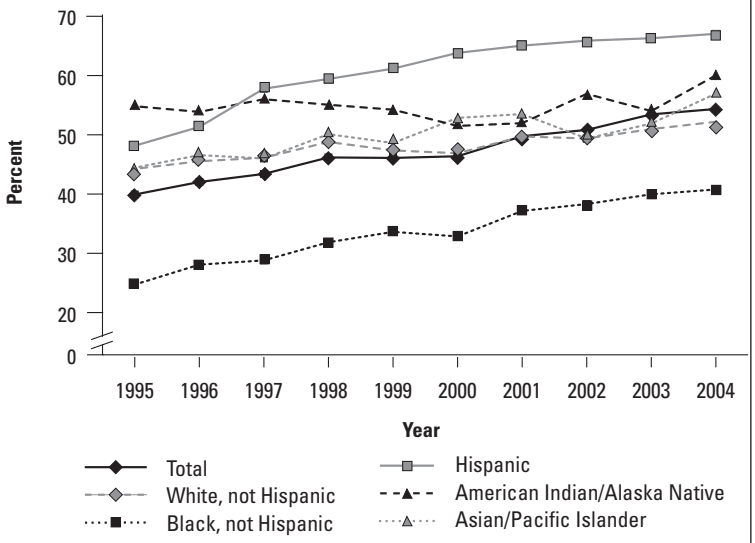
Figure 2. Trends in prevalence of low birthweight,* by race and ethnicity



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

2004 National PedNSS Table 18D

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%.*

2004 National PedNSS Table 19D

People 2010 objectives for ever breastfeeding (Table 1). Nationally representative data from the 2004 National Immunization Survey indicate that 70.3% of infants were ever breastfed, 36.2% breastfed at 6 months, and 17.8% breastfed at 12 months.[4]

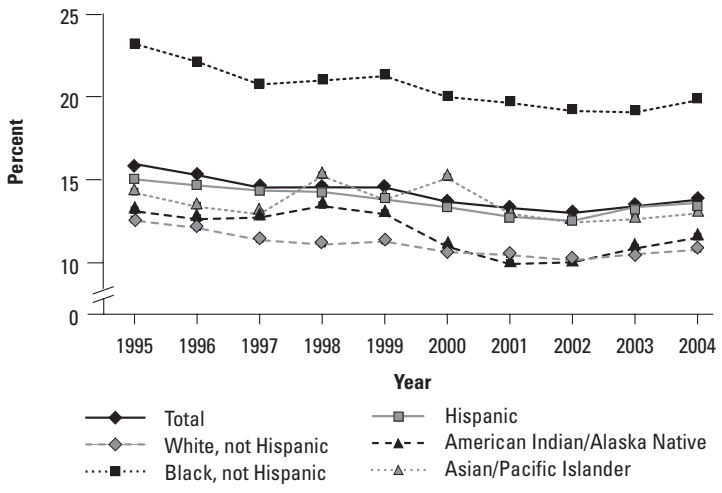
In 2004, the absolute increase in the prevalence of breastfeeding initiation for infants in PedNSS was 14.4%, compared with the 1995 rate of 41.6%, and these improved breastfeeding rates are evident among all racial and ethnic groups (Figure 3). Hispanic infants had the highest rates of breastfeeding initiation (68.7%), while black infants had the lowest prevalence of breastfeeding initiation (42.4%). National data from other sources indicate that the ever-breastfed rate in the United States increased from 57.4% in 1994 to 66.0% in 2003.[5]

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 2004 PedNSS, the prevalence of anemia was 13.8%. The highest prevalence of anemia was in infants aged 6–11 months (17.0%), followed by children aged 12–17 months (16.5%); the lowest prevalence was in children aged 3 to 5 years (10.1%). The prevalence of anemia also varied among racial and ethnic groups in PedNSS. The highest prevalence of anemia was among black children (19.8%). The overall prevalence of anemia in PedNSS children declined from 15.9% in 1995 to 13.8% in 2004. While a decline was observed among all racial and ethnic groups, the smallest declines during this period were seen among Asian or Pacific Islander children (Figure 4).

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).*

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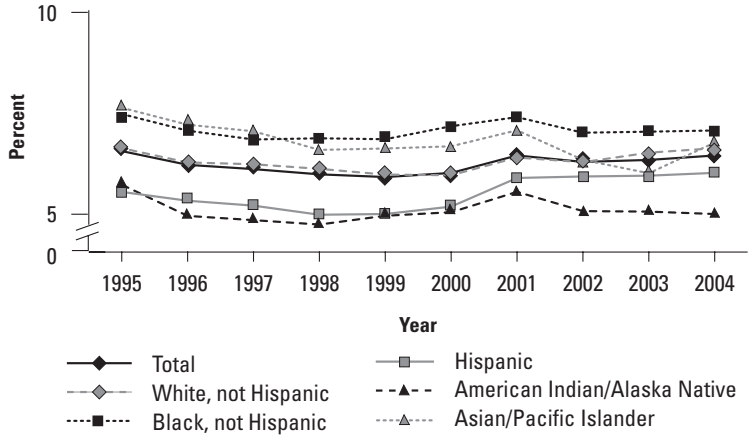
Anemia: Children aged 6 months to 2 years are considered anemic if their hemoglobin (Hb) concentration is less than 11.0 g/dL or hematocrit (Hct) level is less than 32.9%; children aged 2 to 5 years are considered anemic if their Hb concentration is less than 11.1 g/dL or Hct level is less than 33.0%. Values are adjusted for altitude. Hb concentration and Hct level are not reported for children younger than 6 months.[6]

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 2004 PedNSS, 6.5% of children from birth to age 5 were of short stature, compared with 2.4% of U.S. children (Dr. Zuguo 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*[2] objective (19-4) of 5% among low-income children under 5 years of age. Six contributors achieved this *Healthy People 2010* objective in 2004 (Table 1). The prevalence of short stature remained stable from 1995 (6.6%) to 2004 (6.5%). Some variation in short stature was evident among all racial and ethnic groups. Short stature remained stable among white, black, and Hispanic children, while a decrease was seen among American Indian or Alaska Native and Asian and Pacific Islander children (Figure 5). The highest prevalence of short stature was among black infants younger than 1 year of age (11.4%), 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 and less than the 5th percentile height-for-age for children aged 2 years or older.

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%.

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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 2004, the prevalence of 4.7% 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 (6.0%). Black infants aged 0–11 months had an underweight rate of 8.1%, which may reflect the high rate of low birthweight in this group. The overall prevalence of underweight decreased from 6.0% in 1995 to 4.7% in 2004.

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.[7]

In the 2004 PedNSS, the prevalence of overweight in children aged 2 to 5 years was 14.8%, compared

[†]*To calculate BMI (body mass index): Weight (kg) ÷ Stature (cm) ÷ Stature (cm) x 10,000* **or** *Weight (lb) ÷ Stature (in) ÷ Stature (in) x 703.*

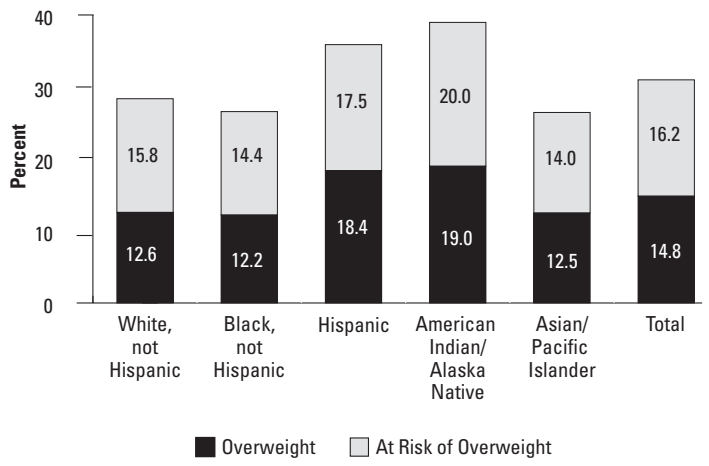
with 10.4% for U.S. children in a similar age group.[8] The highest rates were among American Indian or Alaska Native (19.0%) and Hispanic (18.4%) children; the lowest rates were among white (12.6%), Asian or Pacific Islander (12.5%), and black (12.2%) children (Figure 6). Of particular concern is that the prevalence of overweight in children aged 2 to 5 years has steadily increased from 11.0% in 1995 to 14.8% in 2004 (Figure 7). Overweight has increased among all racial and ethnic groups with the exception of Asian or Pacific Islander children.

The data in the 2004 prevalence map illustrating overweight in children in PedNSS by contributor (Figure 8) show that only 5 contributors (the Chickasaw Nation, Colorado, Hawaii, Utah, and Wyoming) had a prevalence of overweight less than 11%, while 10 contributors had a prevalence of overweight greater than or equal to 17%. Although the map shows no clear geographic pattern of overweight prevalence, it is noteworthy that five 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).

The prevalence of at risk of overweight in children aged 2 to 5 years increased from 14.1% in 1995 to 16.2% in 2004. This increase was seen among all racial and ethnic groups (Figure 6).

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.

Figure 6. Prevalence of overweight and at risk of overweight* among children aged 2 to 5 years, by race and ethnicity



** Overweight: ≥ 95th percentile BMI-for-age; at risk of overweight: ≥ 85th to < 95th percentile BMI-for-age, CDC Growth Charts, 2000.*

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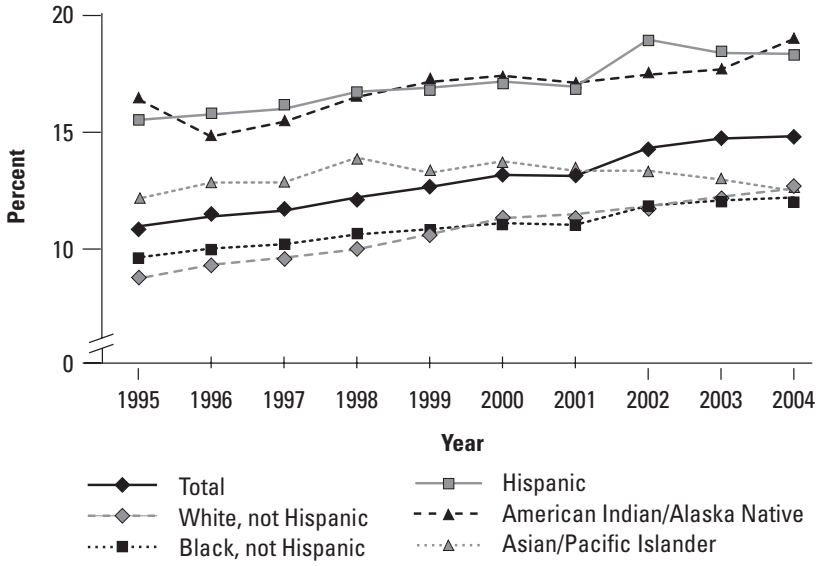
At Risk of Overweight: Based on the 2000 CDC growth chart percentiles of the 85th to the 95th percentile BMI-for-age for children 2 years of age or older.

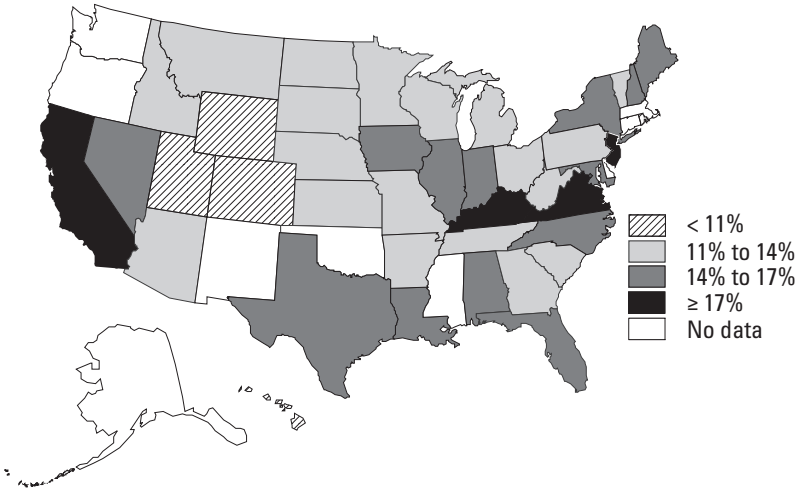
Figure 7. Trends in prevalence of overweight* among children aged 2 to 5 years, by race and ethnicity



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

2004 National PedNSS Table 18D

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



** ≥ 95th percentile BMI-for-age, CDC Growth Charts, 2000. Includes the District of Columbia (14% to17%), Puerto Rico (≥ 17%), and the following tribes: Cheyenne River Sioux (≥ 17%), Chickasaw Nation (< 11%), Inter Tribal Council (≥ 17%), Navajo Nation (≥ 17%), Rosebud Sioux (≥ 17%), and Standing Rock Sioux (≥ 17%).*

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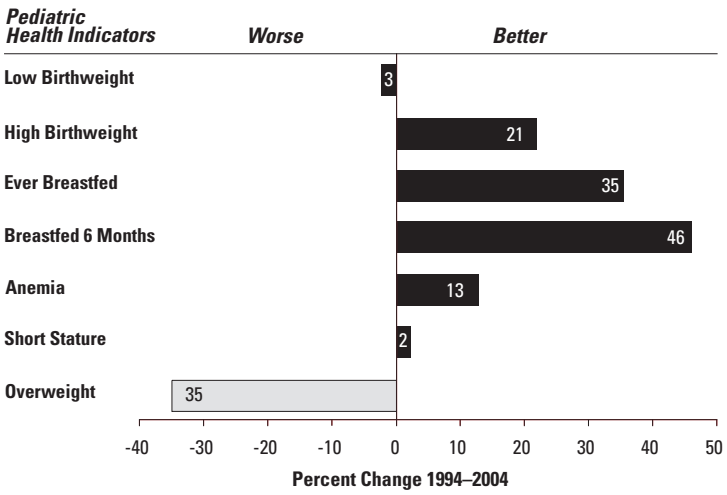
Figure 9. Changes in infant and child health status, 1994–2003



2004 National PedNSS Table 2D

Pediatric Health Progress Review

Several advances in nutrition and health indicators were observed in the PedNSS population from 1995 through 2004 (Figure 9). The prevalence of high birthweight decreased, with the greatest improvement seen among white and American Indian or Alaska Native children. Reductions occurred in the prevalence of anemia; a decrease occurred among all racial and ethnic groups, with the greatest absolute improvement taking place among black children. Improvements have occurred in both the prevalence of infants ever breastfed and those breastfed for at least 6 months. The largest absolute improvement in the prevalence of ever being breastfed and breastfeeding for at least 6 months occurred among Hispanic children.

In general, short stature and low birthweight remained stable during the 10-year period. For short stature, slight improvements were seen among American Indian or Alaska Native and Asian or Pacific Islander children. For low birthweight, no racial or ethnic group has yet achieved the *Healthy People 2010*[2] objective to reduce the low-birthweight prevalence to 5%.

Areas of concern remain. 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. The prevalence of breastfeeding remained lowest for black infants. Overweight is a major public health problem that has steadily increased; 3.8% more children aged 2 to 5 years were overweight in 2004 than in

1995. This change is a relative increase of 35%. Although Hispanic and American Indian or Alaska Native children have the highest prevalence of overweight, increases occurred among all racial and ethnic groups.

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, encouraging healthy eating habits, and advocating for regular physical activity and reduced television-viewing time.
- 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 and support breastfeeding interventions through public health programs, medical care systems, work sites, and communities.
- Promote adequate dietary iron intake and screening of children at risk for iron deficiency.
- Promote routine screening for overweight and at risk of overweight using BMI-for-age as recommended by the American Academy of Pediatrics Policy Statement.[7]

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