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# Fit Kids Body Mass Index Screening Project Update

A Survey of Westchester County School Children
in Kindergarten, Second, Fourth, and Tenth Grades
School Years 2006-07/2007-08 From Select School Districts

April 2010

DEPARTMENT OF HEALTH

**Fit Kids Body Mass Index Screening Project Report, 2010 Update**

**Westchester County Department of Health**
**April 2010**

## Introduction

In May 2007, the Westchester County Department of Health (WCDH) released its first report of the "Fit Kids Body Mass Index (BMI) Screening Project"[1]. The project collected information on height, weight, gender, date of measurements, month and year of birth, grade, and school year of 8,600 children of grades K, 2, and 4 from 41 public elementary schools. The project concluded that among the 8,600 children included in the study, more than 1 in 3 children were either obese (17.2%) or overweight[2] (16.8%). Compared to the national level of 32.2% among children aged 4-10 (estimated with the 2003-2004 NHANES data by CDC)[3], Westchester County children are more likely to be obese or overweight (34.0%).[4]

Using the updated NHANES data collected during 2007-2008, a recent CDC study reveals that, nationwide, among children and adolescents aged 2 through 19 years, 16.9% were obese and 14.8% were overweight in 2007-2008. Among children aged 6 to 19 years, 18.7% were obese and 16.0% were overweight. In other words, 31.7% of the American children aged 2 to 19, or 34.7% of the American children aged 6 to 19 were either obese or overweight[5]. The study also concludes that the prevalence of obesity and overweight has not changed significantly between 1999-2000 and 2007-2008 among children aged 2 to 19.

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[1] http://www.westchestergov.com/health/FitKids/2007/BMI_Report_June07.pdf.

[2] The weight status category was defined as: Obese: BMI equal to or greater than the 95th percentile (referred as overweight in previous report); Overweight: BMI ranges from 85th to less than the 95th percentile (referred as at risk of overweigh in previous report; Healthy weight: BMI ranges from 5th percentile to less than the 85th percentile; Underweight: BMI less than the 5th percentile.
http://www.cdc.gov/healthyweight/assessing/bmi/childrens_BMI/about_childrens_BMI.html.

[3] WCDH, under the guidance of CDC staff members, extracted and analyzed the 2003-2004 NHANES data to calculate the BMI levels among children in various age groups. These estimates were calculated using the survey weights originally developed by NHANES.

[4] Significant at 0.001.

[5] Cynthia L. Ogden, Margaret D. Carroll, Lester R. Curtin, Molly M. Lamb, and Katherine M. Flegal. 2010. "Prevalence of High Body Mass Index in US Children and Adolescents, 2007-2008." The Journal of the American Medical Association. Vol. 303 No. 3.

Following the first publication of the "Fit Kids BMI Screening Project" report, WCDH extended its study in 2009 to collect additional data from Westchester County public schools. As in the first phase, reporting was voluntary and a total of 69 public schools submitted weight and height data of children enrolled in grades K, 2, 4, as well as 7 and 10 for school year 2007-2008. To increase the sample size, WCDH included data submitted during the first phase for those schools that elected not to participate in the 2009 data collection. which included data for school year 2006-2007 from 24 schools. The final data include 93 schools (37.3% of the 249 public schools) and 19,642 children (35.1% of approximately 56,000 children in enrolled in grades K, 2, 4, 7, and 10 ), covering school years 2006-2007 and 2007-2008.

## Methodology

Similar to the data analysis published in the first report, each child's Body Mass Index (BMI) was calculated as weight in pounds divided by height in inches squared and multiplied by a factor of 703.[6] The BMI status was grouped into four weight categories, obese (BMI≥95$^{th}$ percentile), overweight (BMI 85$^{th}$ percentile to <95$^{th}$ percentile), healthy weight (BMI 5$^{th}$ percentile to <85$^{th}$ percentile), and underweight (BMI<5$^{th}$ percentile), as defined by the CDC's sex and age specific classifications for BMI percentiles.

During the first phase of this project, WCDH, under the guidance of CDC staff members, extracted and analyzed the 2003-2004 NHANES data to calculate the BMI levels among children in various age groups using the survey weights originally developed by NHANES. As mentioned earlier, there were no significant changes between 1999-2000 and 2007-2008 at the national level for children aged 2 to 19, as concluded by the recent CDC study. We, therefore, continue to compare the Westchester County data with the national data collected from the 2003-2004 NHANES data in order to maintain the same national baseline information that reflects the age groups under study.

## Results

As noted in Table 1, among the 19,642 children included in the study, 19.1% of children are obese and an additional 17.4% are overweight. Thus, more than 1 in 3 children (36.5%) fall into the combined category of being obese or overweight. Compared to the national level of

[6] Centers for Disease Control (CDC). Overweight and obesity: defining overweight and obesity. Atlanta, GA: US Department of Health and Human Services, CDC; 2005. Available at http://www.cdc.gov/obesity/defining.html.

35.0% among children aged 4-17 in 2003-2004[7], Westchester County has a statistically significant higher percentage of obese and overweight children.

**Table 1: Percent of Westchester County Elementary School Aged Children (K,2,4,7,10) by Body Weight Status Compared with National Estimates All Participating Schools, 2006-07/2007-08 School Year**

| Body Weight Status | BMI-for-Age Range | Westchester | National (Age 4-17) |
|---|---|---|---|
| Underweight | <5th Percentile | 3.2 | 2.9 |
| Healthy weight | 5th to <85th Percentile | 60.3 | 62.1 |
| Overweight | 85th to <95th Percentile | 17.4 | 17.5 |
| Obese | ≥95th Percentile | 19.1 | 17.5 |
| **Obese or Overweight** | **≥85th Percentile** | **36.5** | **35.0** |

**Table 2: Prevalence of Obesity and Overweight by Sex and Grade All Participating Schools, 2006-07/2007-08 School Year**

| Grade | Number of cases | Obese and Overweight | | | | | |
|---|---|---|---|---|---|---|---|
| | | Female | | Male | | Total | |
| | | Number | % | Number | % | Number | % |
| K | 4,373 | 753 | 35.5 | 814 | 36.1 | 1,567 | 35.8 |
| 2 | 4,745 | 768 | 33.4 | 904 | 37.0 | 1,672 | 35.2 |
| 4 | 4,515 | 773 | 34.6 | 961 | 42.0 | 1,734 | 38.4 |
| 7 | 3,306 | 599 | 37.0 | 712 | 42.2 | 1,311 | 39.7 |
| 10 | 2,703 | 396 | 30.4 | 486 | 34.7 | 882 | 32.6 |
| **Total** | **19,642** | **3,289** | **34.4** | **3,877** | **38.5** | **7,166** | **36.5** |
| **National Estimates (Age 4-17)** | **3,023** | **540** | **33.6** | **565** | **36.4** | **1,105** | **35.0** |

As noted above in Table 2, among all the students (grades K, 2, 4, 7 and 10) included in the WCDH study, males are more likely to be obese or overweight than females. Compared to the national estimates by gender, the prevalence rate of obesity and overweight among the children in the WCDH study is only significant for males and not for females.

[7] See footnote 3.

When comparing the prevalence rate by sex for each grade individually, the difference was statistically significant for all grades except the Kindergarteners. Among the elementary school children, there were significant differences between the Kindergartners and the 4th graders as well as the 2nd graders and the 4th graders. Among the middle school and high school children, the 7th graders had a significantly higher rate of obesity or overweight than the 10th graders.

Of the 93 schools in the study, 42 schools, representing 48% of children in the study, had a prevalence rate of obesity or overweight that is significantly higher than the national level. Twenty-six of the 93 schools, representing 25% of the children in the study, have a prevalence rate that is significantly lower than the national level. The prevalence rates in the other 23 schools were similar to the national estimate.

## Discussion

As revealed by the analysis from the 93 participating schools, children from these schools are at a higher rate of obesity or overweight than the national level. Since the participation in this project was completely voluntary and not based on a representative sample, it is not possible to generalize the findings to all Westchester County students in grades K, 2, 4, 7 and 10. However, the results from this project indicate the ongoing importance of addressing childhood overweight and obesity among school aged children in Westchester County.

## Bibliography

Centers for Disease Control (CDC). A SAS Program for the CDC Growth Charts. Available at http://www.cdc.gov/nccdphp/dnpao/growthcharts/resources/sas.htm .

Centers for Disease Control (CDC). Analytic and Reporting Guidelines: The National Health and Nutrition Examination Survey (NHANES). Available at http://www.cdc.gov .

Centers for Disease Control (CDC). About BMI for Children and Teens. http://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/about_childrens_bmi.html .

Centers for Disease Control (CDC). Overweight and obesity: defining overweight and obesity. Atlanta, GA: US Department of Health and Human Services, CDC; 2005. Available at http://www.cdc.gov/nccdphp/dnpa/obesity/defining.htm .

Guo SS, Wu W, Chumlea WC, Roche AF. Predicting overweight and obesity in adulthood from body mass index values in childhood and adolescence. American Journal of Clinical Nutrition 2002; 76(3): 653-8.

Hedley AA, Ogden CL, Johnson CL, Carroll MD, Curtain LR, Flegal KM. Prevalence of overweight and obesity among US children, adolescents, and adults, 1999-2002. Journal of the America Medical Association 2004; 291:2847-50.

Hu Wu WT, Foley TA, Wilcox RA, Kozera RM, Morgenstern BZ, Juhn YJ. Childhood obesity among Head Start enrollees in southeastern Minnesota: prevalence and risk factors. Ethnicity and Disease 2007; 17(1):23-8.

Magarey AM, Daniels LA, Boulton TJ, Cockington RA. Predicting obesity in early adulthood from childhood and parental obesity. International Journal of Obesity and Related Metabolic Disorders 2003; 27(4):505-13.

National Health and Nutrition Examination Survey 2003-2004. Documentation, Codebook, and Frequencies. November 2005, June 2006.

Ogden, Cynthia L, Margaret D. Carroll, Lester R. Curtin, Molly M. Lamb, and Katherine M. Flegal. 2010. "Prevalence of High Body Mass Index in US Children and Adolescents, 2007-2008." The Journal of the American Medical Association. Vol. 303 No. 3.

Ogden L C, Carroll MD, Curtain LR, McDowell MA, Tabak CJ, Flegal KM. Prevalence of Overweight and Obesity in the United States, 1999-2004. Journal of the America Medical Association 2006; 295: 1549-55.

Park MK, Menard SW, Schoolfield J. Prevalence of overweight in a triethnic pediatric population of San Antonio, Texas. International Journal of Obesity and Related Metabolic Disor 2001; 25(3):409-16.

Sorof J, Daniels S. Obesity hypertension in children: a problem of epidemic proportions. Hypertension 2002; 40(4):441-7.

Strauss RS, Pollack HA. Epidemic increase in childhood overweight, 1986-1998. Journal of the America Medical Association 2001; 286:2845-8.

US Surgeon General. Fact sheet: overweight in children and adolescents. Available at: http://www.surgeongeneral.gov/topics/obesity .