

## ABSTRACT

**OBJECTIVES.** Our aim with this **study** was to assist clinicians by estimating the predictive value of earlier levels of BMI status on later risk of overweight and **obesity** during the middle childhood and early adolescent years.

**METHODS.** We present growth data from the National Institute of Child Health and Human Development **Study** of Early Child Care and Youth Development, a longitudinal sample of 1042 healthy US children in 10 locations. Born in 1991, their growth reflects the secular trend of increasing overweight/**obesity** in the population. Height and weight of participating children in the **study** were measured at 7 time points. We examined odds ratios for overweight and **obesity** at age 12 years comparing the frequency with which children did versus did not reach specific BMI percentiles in the preschool- and elementary-age periods. To explore the question of whether and when earlier BMI was predictive of weight status at age 12 years, we used logistic regression to obtain the predicted probabilities of being overweight or obese (BMI  $\geq 85\%$ ) at 12 years old on the basis of earlier BMI.

**RESULTS.** Persistence of **obesity** is apparent for both the preschool and elementary school period. Children who were ever overweight ( $>85$ th percentile), that is,  $\geq 1$  time at ages 24, 36, or 54 months during the preschool period were  $>5$  times as likely to be overweight at age 12 years than those who were below the 85th percentile for BMI at all 3 of the preschool ages. During the elementary school period, ages 7, 9, and 11 years, the more times a child was overweight, the greater the odds of being overweight at age 12 years relative to a child who was never overweight. Sixty percent of children who were overweight at any time during the preschool period and 80% of children who were overweight at any time during the elementary period were overweight at age 12 years. Follow-up calculations showed that 2 in 5 children whose BMIs were  $\geq 50$ th percentile by age 3 years were overweight at age 12 years. No children who were  $<50$ th percentile for BMI at all points during elementary school were overweight at age 12 years. Children who have higher range BMIs earlier, but not at the 85th percentile, are also more likely to be overweight at age 12 years. Even at time points before and including age 9 years, children whose BMIs are between the 75th and 85th percentile have an  $\sim 40\%$  to 50% chance of being overweight at age 12 years. Children at 54 months old whose BMIs are between the 50th and 75th percentile are 4 times more likely to be overweight at age 12 years than their contemporaries who are  $<50$ th percentile, and those whose BMIs are between the 75th and 85th percentile are  $>6$  times more likely to be overweight at age 12 years than those  $<50$ th percentile.

**CONCLUSIONS.** The data from this **study** indicate that children with BMIs  $>85$ th percentile, as well as with BMIs in the high reference range are more likely than children whose BMI is  $<50$ th percentile to continue to gain weight and reach overweight status by adolescence. Pediatricians can be confident in counseling parents to begin to address the at-risk child's eating and activity patterns rather than delaying in hopes that overweight and the patterns that support it will resolve themselves in due course. Identifying children at risk for adolescent **obesity** provides physicians with an opportunity for earlier intervention with the goal of limiting the progression of abnormal weight gain that results in the development of **obesity**-related morbidity

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In 2007, Dr. Nader who is from the University of California at San Diego led a study to determine if early-age levels of BMI were predictive of overweight at middle childhood and early adolescent ages. The data gained throughout this study was taken from 1,042 children who were born in 1991 and their locations varied between ten different areas of the United States. The height and weight of these children were measured at seven different time periods. The frequency was compared with those children who did or did not reach certain BMI percentiles in the preschool and elementary school ages. Data results collected, demonstrated young children who were overweight at least one time in the following age frames (two, three, or four years old) proved to be an indicator that they would be overweight in their teenage years (Thomas, 2002). **Based on their research, the study found that 60 percent of the children who were overweight at any time during the preschool period, and 80 percent of the children who were overweight at the elementary school age period, were overweight at age 12 (Nader, 2006, p. 1).**