

EARLY CHILDHOOD SLEEP DURATION PREDICTS ADIPOSITY AND CHANGES IN CHILDHOOD BODY MASS INDEX

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Background: Concurrent and prospective associations have been observed between short sleep duration and weight status in early childhood. Few studies have examined the persistence and robustness of these relationships into middle childhood using repeated measures of adiposity. The current study sought to examine the extent to which early childhood sleep duration is a predictor of BMI z-score trajectory from ages 3 to 8 and body fat at age 8.

Materials/Methods: In a prospective birth cohort study of 305 mother-child dyads, mother's reported their child's total sleep duration in an average 24-h period at 6, 12, 18, and 24 months. Height and weight were measured at ages 3, 4, 5, and 8 years, and used to calculate BMI z-scores. Percent body fat was assessed by bioelectrical impedance scale at age 8. Latent growth curve models were used to determine the best form of change over time in early childhood sleep duration and BMI z-score. To evaluate the associations of interest, early childhood sleep duration trajectory was regressed onto BMI z-score trajectory and body fat percentage.

Results: On the average, early childhood sleep duration remained relatively stable across the 6 to 24 month period while BMI z-score evidenced linear increases across ages 3 to 8. Sleep duration was a significant predictor of BMI z-score trajectory: shorter parent-reported sleep was associated with greater increases in BMI z-score across mid-childhood. In addition, shorter sleep in early childhood was associated with a higher percent body fat at 8-years-old.

Conclusions: Short sleep in early childhood appears to be a risk factor for greater weight acceleration and adiposity. Future research should use objective methodologies to quantify early childhood sleep duration and uncover the mechanisms that place short-sleeping young children at risk for overweight and obesity.