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Growth Trajectories in Early Childhood: what is the Relative Importance of Antenatal and Postnatal Factors?

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INTRODUCTION: Childhood obesity frequently persists into adulthood, so that obese children carry greatly increased risks of cardiovascular disease and other conditions into their adult lives. Identifying and better understanding differences between patterns of growth in children in early life may give important insights into the roots of childhood obesity.

METHODS: As part of an ongoing longitudinal study of 557 families, children’s heights and weights were measured at birth, 6, 9, 12 months, 2, and 3½ years. Standardized body mass indices (BMI) were derived at each time, and latent class growth models used to identify groups of children with different growth trajectories. We investigated the relationship between distinct growth trajectory groups and a range of antenatal and postnatal exposures.

RESULTS: We identified four growth trajectory groups across early childhood, corresponding to low, medium, high, and accelerating growth. Compared to children in the medium growth trajectory group, those in the accelerating group were more likely to have a mother with BMI > 30 in early pregnancy (Odds Ratio = 4.5; 95% confidence interval 1.4–14.4) than a mother of normal weight. Parity was also significantly associated with accelerating growth trajectory. Neither breastfeeding nor timing of introduction to solids were significantly associated with growth trajectories.

CONCLUSIONS: Of the antenatal and postnatal exposures that we considered, the most important factor that differentiated between the growth trajectory groups was maternal BMI in early pregnancy. Initiatives to address intergenerational transmission of obesity and its consequences are vital for the health of Australian families.