

# **Study examines association between lifestyle patterns and BMI in early childhood**

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A new Australian study reveals that changes in lifestyle patterns were longitudinally associated with concurrent changes in body mass index (BMI)  $z$  scores, and maternal pre-pregnancy BMI, maternal dietary patterns and television viewing time are significant determinants, according to a paper published online in *Obesity*. This is the first study that used multi-trajectory modeling to examine the longitudinal relationship between concurrent changes in lifestyle patterns and BMI  $z$  scores in early childhood.

"The findings will inform early childhood obesity prevention intervention and policy, and will be of great interest to pediatricians, researchers, policymakers and the general public," said Miaobing Zheng of the Institute for Physical Activity and Nutrition, School of Exercise and Nutrition Sciences, Deakin University, in Geelong, Australia. Zheng is the corresponding author of the study.

Experts explain that [longitudinal studies](#) investigating the association between lifestyle patterns and obesity in children are scarce. An association between a healthy lifestyle pattern and lower obesity risk has, however, been previously reported in a few cross-sectional studies. In the present study, the co-occurrence of stable healthy lifestyle patterns along with a concurrent normal BMI  $z$  score trajectory of one unit from 18 to 60 months in about half of the children provides new longitudinal evidence supporting that children with healthy lifestyles were more likely to concurrently have normal BMI  $z$  score development.

Data of 439 children were used from the Melbourne Feeding Activity and Nutrition Trial (InFANT) program. This longitudinal cohort of children commenced in 2008 as a 15-month parent-focused cluster

randomized controlled trial aiming to reduce obesity risk behaviors in children until 18 months. Additional follow-ups without interventions occurred for children aged 42 and 60 months. Multi-trajectory modeling identified groups of children following similar lifestyle patterns and BMI  $z$  score trajectories and multi-nomial logistic regression assessed the determinants of the trajectory groups.

Three trajectory groups of child lifestyle patterns and BMI  $z$  scores were identified and distinguished, showing a mixture of healthy and unhealthy lifestyle behaviors and BMI  $z$  scores. Compared to Groups 1 "Unhealthy lifestyle pattern, Low BMI  $z$ " and 3 "Unhealthy lifestyle pattern, High BMI  $z$ ", Group 2 "Healthy lifestyle pattern, Mid BMI  $z$ " revealed the most distinctive trajectories across lifestyle patterns and BMI  $z$  scores. Group 2 comprised nearly 53 percent of children and followed a stable and low trajectory for an unhealthy lifestyle pattern characterized by energy-dense and nutrient poor discretionary food consumption and television viewing time and a high and rising trajectory for a healthy lifestyle pattern of fruit and vegetable intakes and time outdoors, along with a mean BMI  $z$  score of +1 unit over time.

Groups 1 and 3 shared similar high trajectories for an unhealthy lifestyle pattern of discretionary food consumption and television viewing time, and low trajectories for a healthy lifestyle pattern of fruit and vegetable intakes and time outdoors. The two groups however differed in BMI  $z$  score trajectories, showing stable patterns but at mean scores of 0 and +2 units, respectively. Child sex, breastfeeding duration and maternal physical activity were not associated with the identified trajectory groups.

The study's authors note that the co-occurrence of stable lifestyle patterns and BMI  $z$  score trajectories in early childhood highlight the importance of initiating [lifestyle](#) obesity prevention early in life, and such interventions could target both children and the mother. A multi-

behavior approach to simultaneously target healthy diet, [physical activity](#) and sedentary behaviors could be adapted.

"Young children learn by imitating that which they see daily. There is no doubt that [children](#) copy the behaviors observed in the presence of parents: healthy and unhealthy," said Liliana Aguayo, Ph.D., MPH, a childhood obesity expert, TOS member and research assistant professor from the Hubert Department of Global Health at Emory University in Atlanta, Ga. "Evidence from this study highlights the importance of [early childhood](#) as a critical period for development of obesity. More research is needed to identify effective approaches to simultaneously address parent and child health behaviors." Aguayo was not associated with the research.

The paper, titled "Association Between Longitudinal Trajectories of Lifestyle Pattern and BMI in Early Childhood", will be published in the May 2021 print issue.

**More information:** *Obesity*,  
[onlinelibrary.wiley.com/doi/10.1002/oby.23136](https://onlinelibrary.wiley.com/doi/10.1002/oby.23136)

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