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Using Linked Administrative Health Data to Examine Maternal Preconception Diabetes and Hypertension and Child Growth in Ontario, Canada: A Longitudinal Cohort Study

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Background

Research on whether maternal diabetes and hypertension prior to conception influence their children's health is limited. In Ontario, Canada, ICES is an independent research institute that securely houses population-based administrative health data, including diagnostic information, for individuals covered under the province's universal health insurance program.

Objectives

To determine whether maternal preconception diabetes and hypertension were associated with child age- and sex- standardized body mass index (zBMI).

Methods

This longitudinal cohort study included children 0 to 12 years enrolled in the TARGet Kids! primary care practice-based cohort (www.targetkids.ca) in Ontario, Canada (2008-2021). Maternal diagnoses of diabetes and hypertension prior to conception were identified through provincial administrative datasets held at ICES, deterministically linked to TARGet Kids! data using individual health insurance numbers. Child zBMI was derived from directly measured height and weight and electronic medical records. Linear mixed effects models were used to assess associations adjusting for confounders.

Results

Among 7,351 mothers (mean age at delivery 33 years), 308 (4.6%) had preconception diabetes (2.1%) or hypertension (2.9%). Children (n = 9,087; mean age 4.6 years; 48.4% female) contributed to 28,861 zBMI measures. Maternal preconception hypertension was associated with higher mean

child zBMI. The adjusted estimated difference for children of mothers with preconception hypertension with the average duration of hypertension prior to conception was 0.29 units higher in zBMI (95%CI: 0.03;0.55) compared with children of mothers without hypertension.

Conclusions

The association between preconception hypertension and higher child zBMI may indicate a potential maternal health target for the prevention of child overweight and obesity.

