Does the impact of a plant-based diet during pregnancy on birthweight differ by ethnicity?

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Birthweight is an indicator of newborn health(1) and a strong predictor of health outcomes in later life, including cardiovascular disease, diabetes, and obesity(2). Significant variation in dietary intake during pregnancy between ethnic groups(3) provides an ideal opportunity to investigate the influence of maternal diet on birthweight. We aimed to investigate the impact of maternal dietary patterns on birthweight in four multi-ethnic birth cohorts in Canada.

We analyzed 3,997 full-term mother-infant pairs from diverse ethnic groups. Multivariable regression was used to test the association between 3 principal component analysis-derived diet patterns (plant-based, Western, health-conscious) and birthweight. The foods comprising significant diet patterns were investigated to identify key foods contributing to this association.

No associations were identified between the Western and health-conscious diet patterns and birthweight; however, the plant-based dietary pattern was inversely associated with birthweight ($\beta = -67.6$ g per 1-unit increase; $P < 0.001$) and an interaction with non-white ethnicity and birthweight was present. Ethnically stratified analyses demonstrates that among white Europeans, maternal consumption of a plant-based diet associated with lower birthweight ($\beta = -65.9$ g per 1-unit increase; $P < 0.001$), increased risk of small for gestational age (SGA; OR = 1.46; 95 %CI: 1.08–1.54; $P = 0.005$), and reduced risk of large for gestational age (LGA; OR = 0.71; 95 %CI: 0.53–0.95; $P = 0.02$). Among South Asians, maternal consumption of a plant-based diet associated with a higher birthweight ($\beta = +40.5$ g per 1-unit increase; $P = 0.01$), partially driven by cooked vegetable consumption.

In conclusion, maternal consumption of a plant-based diet during pregnancy is associated with birthweight. Among white Europeans, a plant-based diet is associated with lower birthweight, reduced odds of an infant born LGA, and increased odds of SGA, whereas among South Asians living in Canada, a plant-based diet is associated with increased birthweight.