

Maternal pre-pregnancy body mass index and fetal acidosis in vaginal deliveries and cesarean deliveries: The Japan Environment and Children's Study

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Abstract

Objective: To evaluate the association between maternal pre-pregnancy body mass index and fetal acidosis while accounting for the mode of delivery. **Design:** Prospective cohort study **Setting:** Japan **Population:** Participants from the Japan Environment and Children's Study with singleton pregnancies after 22 weeks of gestation who gave birth during 2011–2014 **Methods:** Participants were categorized into five groups according to pre-pregnancy body mass index (BMI) (kg/m²): G1 (BMI<18.5), G2 (18.5 to <20.0), G3 (20.0 to <23.0), G4 (23.0 to <25.0), and G5 (≥25.0). Multiple logistic regression analysis evaluated the effect of maternal pre-pregnancy BMI on fetal acidosis while accounting for the mode of delivery. **Main outcome measures:** Fetal acidosis was defined as umbilical artery pH (UaA-pH) <7.2 or <7.1. **Results:** We analyzed 71,799 participants. Adjusted odds ratios (aORs) of UaA-pH <7.2 using G3 as the reference group were 1.17 (95% confidence interval [CI], 1.06–1.30) in G5 and 0.89 (95% CI, 0.82–0.97) in G2. After stratification, aORs of UaA-pH <7.2 were 1.12 (95% CI, 1.08–1.35) in G5 and 0.90 (95% CI, 0.83–0.98) in G2, and the aOR of UaA-pH <7.1 was 0.80 (95% CI, 0.65–0.98) in G2 using G3 as the reference group for vaginal delivery. No association existed between pre-pregnancy BMI and fetal acidosis for delivery via cesarean section. **Conclusions:** In Japanese women, pre-pregnancy BMI ≥25.0 kg/m² significantly increased the likelihood of fetal acidosis in newborns delivered vaginally.

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