**Does treatment of GDM modify the effect of maternal pre-pregnancy BMI on perinatal outcomes?**

**Background**

The incidence of gestational diabetes (GDM) and the number of overweight and obese pregnant women are rising. While both GDM and high BMI independently cause adverse outcomes, less is known about combined risks to maternal and neonatal outcomes.

**Aims**

Explore the individual and combined risks of high maternal BMI and GDM diagnosis on maternal and neonatal outcomes. Specifically, the primary aim is to determine whether the current management of GDM modifies the effect of high maternal BMI on the risk of large for gestational age (LGA) birth.

**Methods**

Data of 21,980 pregnant women were categorised into four groups based on their pre-pregnancy BMI (‘healthy’ <25 kg/m2 vs Overweight/Obese BMI ≥25 kg/m2) and GDM status. Risk ratios were calculated after adjusting for confounding, to measure the independent and combined risks of high maternal BMI and GDM along with stratum specific risk ratios. The effect measure modification (EMM) of BMI by GDM diagnosis was assessed using the Relative Excess Risk due to Interaction (RERI).

**Results**

Compared with a reference group of women with healthy BMI and no GDM (n=9578), the risk of LGA was similar among women with GDM and healthy BMI (1.05 (95%CI 0.87, 1.28)), higher among women with no GDM and high BMI (RR 1.75 (95%CI 1.60, 1.93), and higher again among women with both GDM and high BMI (2.16 (95%CI 1.92, 2.42). There was evidence that treatment for GDM modified the effect of high BMI on LGA (RERI 0.34 (95%CI -0.12, 0.28). Findings for other outcomes differed widely with no evidence of EMM for newborn respiratory distress and caesarean section.

**Conclusions**

Women with higher BMI alone or with GDM may need an individualised approach to improve risk of LGA.