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## Prediction of Neonatal Birthweight associated with Maternal Obesity and Diabetes


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## **SI/CTR Abstract**

**Word count: 250 words**

### **Prediction of Neonatal Birthweight associated with Maternal Obesity and Diabetes**

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#### **Introduction**

To design a model that will predict neonatal birth weight within obese mothers by diabetic status.

#### **Methods**

A secondary data analysis of an RCT (NCT 02909582) was utilized to create a neonatal birth weight prediction model. Women (n=325) with a BMI > 35 kg/m<sup>2</sup> from a tertiary academic institution, 2016 – 2019, were included to estimate the risk of large for gestational age (LGA) infants and neonatal birth weight based on maternal pre-pregnancy BMI and diabetic status. LGA was defined as an infant birth weight > 90th percentile. Analysis included Chi-square, t-test, multivariate logistic and linear regression.

#### **Results**

Mean birthweight did not differ in obese mothers based on diabetic status. The frequency of large for gestational age infants was significantly greater for diabetic mothers (17% vs 7% without diabetes, p=0.024). Total pregnancy weight gain (continuous, lbs) (OR 1.03; 95% CI 1.01, 1.05; p=0.016) and pre-pregnancy BMI (continuous, OR 1.08; 95% CI 1.01, 1.15; p=0.018) were associated with the risk of LGA

infants when accounting for demographics (model  $R^2 = 0.074$ ). The presence of diabetes (RR 146; 95% CI 24, 268;  $p=0.019$ ), total weight gain (lbs) (RR 4; 95% CI 1, 7;  $p=0.015$ ), and gestational age (RR 197; 95% CI 175, 220;  $p<0.001$ ) were associated with neonatal birth weight when accounting for demographics (model  $R^2 = 0.550$ ).

## **Discussion**

These models incorporate the joint effects of maternal obesity and diabetic status in predicting neonatal birthweight, thereby enabling clinicians to counsel their high-risk patients on risk for large for gestational age infants.