Prepregnancy body mass index and gestational weight gain and the risk for adverse perinatal outcome in non-diabetic gravidas?

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Objective
To assess the associations of prepregnancy body mass index (BMI) and gestational weight gain (GWG) with pregnancy outcomes in non-diabetic women.

Methods
A retrospective cohort study of 4,139 non-diabetic women with singleton pregnancies who delivered in a single tertiary center. Women were divided into 4 groups according to pre-pregnancy BMI: underweight (<18.5kg/m², N=348), normal weight (18.5-25kg/m², N=2,659), overweight (25-30kg/m², N=754) and obese (BMI>30kg/m², N=378). In addition, our cohort was further subcategorized according to GWG in respect to the Institute of Medicine (IOM). Perinatal outcome was compared between the different BMI and GWG subgroups.

Results
Maternal age, preeclampsia, induction of labor, birthweight and LGA increased as BMI increased in a dose-dependent pattern. Using a multivariate logistic regression compared to normal weight women, overweight women were at increased risk for LGA (1.88, 1.34-2.62;p<0.001), CS (1.64, 1.25-2.15;p<0.001) and NICU admission (1.63, 1.09-2.43;p=0.01), obese women were at increased risk for LGA (2.32, 1.48-3.65;p<0.001), CS (1.71, 1.19-2.46;p=0.004), Shoulder dystocia (3.39, 1.10-10.43;p=0.03) and NICU admission (2.14, 1.28-3.56;p=0.003). Underweight women were at increased risk for SGA, (1.82, 0.13-2.93;p=0.01). The rate of gravidas who exceeded the recommended GWG increased as BMI category increased in a dose dependent pattern. The risk for LGA was increased as GWG and BMI increased in a dose dependent manner. When dividing our cohort into GWG subgroups, considering appropriate GWG according to IOM guidelines (N=1481) as a reference group, GWG more than IOM guidelines (N=1,210) was associated with LGA (1.57, 1.27-1.96;p<0.001), birthweight >4kg (1.50, 1.08-2.06;p<0.001) and a lower rate of SGA (0.53, 0.35-0.80; p=0.003). GWG less than IOM guidelines (N=1448) was associated with lower risk for both LGA (0.42, 0.32-0.56;p<0.001) and birthweight above 4kg (0.45, 0.29-0.69;p<0.001), yet a higher risk for SGA (1.49, 1.09-2.04;p=0.01).

Conclusion
Both increased pre-pregnancy BMI and GWG are independent risk factors for LGA infants and other adverse perinatal outcomes in non-diabetic patients. These two parameters act independently and synergistically on the risk for LGA infants.