

## **Parental pre-pregnancy obesity and the risk of offspring weight and body mass index change from childhood to adulthood**

### **ABSTRACT**

The purpose of this study was to examine the association of parental pre-pregnancy weight and body mass index (BMI) on offspring weight and BMI change from childhood to adulthood. We analysed BMI data from a subsample of parents ( $n = 1494$ ) from the Mater-University of Queensland Study of Pregnancy cohort that started in the early 1980s in Brisbane, Australia: data were collected at pre-pregnancy and then also for offspring at 5, 14 and 21-year follow-ups. Multiple regression for continuous outcomes and multinomial regression for categorical outcomes were performed. A total of 14.7% of offspring experienced BMI change from normal at 5 years to overweight or obese (OW/OB) at 14 years, 15.3% of normal at 14 years to OW/OB at 21 years and 22.8% from normal at 5 years to OW/OB at 21 years. Overall, the strength of the association of parental BMI with offspring BMI was stronger as offspring become older. Pre-pregnancy parental BMI differentially impacts offspring OW/OB across the life course. For every unit increase in paternal and maternal BMI z-score, offspring BMI z-score increased, on average, by between 0.15% ( $\text{kg m}^{-2}$ ) and 0.24% ( $\text{kg m}^{-2}$ ) throughout all three stages of life when both parents were OW/OB; these associations were stronger than with one parent. Parental pre-pregnancy BMI and OW/OB is a strong predictor of offspring weight and BMI change from early life to adulthood.

**Keyword:** Obesity; Overweight; Weight change