

Parental BMI, low income and smoking found to have strong effects on child BMI and overweight

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New research presented at this year's European Congress on Obesity (ECO) in Porto, Portugal (17-20 May) shows that parental body mass

index (BMI), low income and smoking have persisting, strong and direct effects on a child's future BMI and risk of overweight, independent of that child's birthweight and BMI in infancy. The study is by Dr Camilla Schmidt Morgen, Associate Professor Jennifer Baker, Professor Thorkild IA Sørensen and colleagues at Bispebjerg and Frederiksberg Hospital, Copenhagen, Denmark.

Prenatal risk factors for childhood overweight may operate indirectly through the development in body size in early life and/or independent of birthweight and early life BMI. In this study, the authors quantified the effects of maternal and paternal body mass index (BMI), maternal age, socioeconomic position (SEP), parity, gestational weight gain, maternal smoking during pregnancy, caesarean section, birth weight, and infancy BMI (at 5 and 12 months) on BMI at 7 and 11 years.

Family units with information on maternal, paternal and child BMI at ages 7 (n= 29 374) and 11 years (n= 18 044) were selected from the Danish National Birth Cohort. Information came from maternal interviews and medical health examinations. Statistical modelling was used to estimate the direct and indirect effects of prenatal risk factors on childhood BMI, and further modelling was used to estimate the associations with childhood overweight.

The strongest direct effects on BMI at age 7 and 11 years were found for [maternal smoking](#) during pregnancy, and for maternal and paternal BMI, with a slightly stronger [effect](#) for the mother's BMI than the father's. In analyses with overweight as the outcome, the authors also found that parental BMI and smoking during pregnancy had effects that were working beyond and independent of the child's body size during infancy.

As an example, a 7-year-old child would weigh on average 24.9kg. A child with a mother who gained 12 kg more than average and smoked during pregnancy, and had a low socioeconomic position and a father

who weighed 10.6 kg more than average would weigh 2.4 kg more than a child whose mother and father had average values for all of these factors. Similarly, an 11-year-old child would weigh on average 38.9kg. A child with same adverse values described above compared with parents with average values for these factors would weigh 5.9kg more.

The authors conclude: "Parental BMI, lower income and smoking during pregnancy have persisting, strong and direct effects on [child](#) BMI and overweight independent of birth weight and infancy BMI."

They add further research will be done with the same cohort to explore the direct and indirect effects of postnatal risk factors with a particular focus on infant nutrition.

Provided by European Association for the Study of Obesity

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