

Mother's BMI linked to fatter babies

August 19 2011

Babies of mothers with a higher pre-pregnancy body mass index (BMI) are fatter and have more fat in their liver, a study published in September's issue of the journal *Pediatric Research* has found. The researchers from Imperial College London say that the effect of a mother's BMI on her child's development in the womb might put them on a trajectory towards lifelong metabolic health problems.

The research team used magnetic resonance scanning to assess 105 babies born at Chelsea and Westminster Hospital. The babies were scanned while they were asleep to measure the amount of [fat](#) in their [liver cells](#), the total amount of fat in their bodies and its distribution. They found that liver cell fat in the babies and total fat, particularly around the abdomen, increased across the entire range of BMI in their mothers.

Children of overweight and [obese mothers](#) are already known to have a higher risk of being overweight and obese themselves, and of experiencing associated metabolic health problems such as type-2 diabetes. The authors of this new study suggest that the changes they found in babies' bodies might be signs of the first [biological changes](#) which, combined with an [unhealthy lifestyle](#), might put babies of [overweight mothers](#) on a path to ill health in later life.

Professor Neena Modi, from the Department of Medicine at Imperial College London and a Consultant Neonatologist at Chelsea and Westminster Hospital, who led the study, said: "This study demonstrates that a woman's BMI, even in the normal range, affects the amount of fat

in her baby at birth. Fatter women have fatter babies and there is more fat in the babies livers. If these effects persist through childhood and beyond, they could put the child at risk of lifelong metabolic health problems.

"There is growing evidence that a baby's development before birth has a major impact on their health in later life. This means that the prevention of obesity needs to begin in the womb.

"Today about half of all women of childbearing age in the UK are overweight or obese. Importantly, the link between maternal BMI and amount of fat in the baby spreads across the entire range of BMI, meaning it's not just an issue for overweight and obese mums. We need to identify what the optimal BMI for the mother is so we can help women ensure that their bodies are in the best possible condition before they get pregnant."

[Body mass index](#) is calculated by dividing one's weight in kilograms by the square of their height in metres. The World Health Organisation classes a BMI between 18.5 and 25 as normal weight, between 25 and 30 as overweight and over 30 as obese. Of the 105 mothers in the study, five were underweight, 69 were normal weight, 23 were overweight and eight were obese.

The researchers used proton [magnetic resonance](#) imaging and spectroscopy to measure total adipose tissue and its distribution and intrahepatocellular lipid (the amount of fat inside [liver](#) cells). In adults, high levels of both correlate strongly with impaired control of blood sugar.

More information: N. Modi et al. 'The influence of maternal body mass index on infant adiposity and hepatic lipid content.' Pediatric Research, Volume 70 – Issue 3, September 2011.

Provided by Imperial College London

Citation: Mother's BMI linked to fatter babies (2011, August 19) retrieved 20 March 2024 from <https://medicalxpress.com/news/2011-08-mother-bmi-linked-fatter-babies.html>

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