Obese mothers risk shortening lives of children by up to 17 years, study suggests

The children of obese mothers have shorter telomeres

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Obese and overweight mothers risk shortening the lives of their children by up to 17 years a new study suggests.

Scientists in Belgium discovered a strong link between [Body Mass Index (BMI)](http://www.telegraph.co.uk/financialservices/insurance/7865259/Calculate-your-BMI.html) and the length of telomeres in research involving women and their babies.

Telomeres are the protective caps at the end chromosomes which shield DNA in a similar way to the plastic aglets at the end of shoe-laces, preventing unravelling.

The length of telomeres is a good indication of biological age so scientists were keen to find out if length differed in babies whose mothers were overweight or obese.

They discovered that for each increase in BMI point above a normal level, [telomeres](http://www.telegraph.co.uk/news/science/science-news/11073662/How-standing-might-be-the-best-anti-ageing-technique.html)were around 50  base pairs shorter, the equivalent of  being 1.1 to 1.6 years older.

BMI is calculated by measuring height compared to weight and normal range falls between 18.5 and 24.9. For the most obese women, who had a BMI of 40, telomere length suggested that their children were 17 years older biologically, placing them high risk of illness and early death.

Prof Tim Nawrot, of [Hasselt University](http://www.uhasselt.be/en), one of the study authors, said: “Compared with newborns of mothers with a normal BMI, newborns of women with obesity are older on a molecular level, because shortened telomere lengths mean that their cells have shorter lifespans.

“So maintaining a healthy BMI during a woman’s reproductive age may promote molecular longevity in the offspring.”



Scientists took blood samples from the umbilical cords of newborn babies to determine the length of their telomeres

Writing in the journal journal*BMC Medicine*, the team concluded:“Newborns from obese mothers compared with newborns from normal weight mothers were biologically approximately 12 to 17 years older, based on telomeric year equivalence in adulthood.”

Researchers examined 743 mothers, who were 17 to 44 years of age, and their newborn babies and measured telomere length in umbilical cord blood which was drawn immediately after delivery. The authors ruled out many other potential factors that may be associated with telomere length, including parents’ age at birth, socio-economic class, ethnicity, maternal smoking status, newborns’ gender or birth weight.

Around one in three women in Britain now give birth when they are overweight, so the authors say the findings could have wide implications for the health of the population in future.

Prof Nawrot added: “Prior to our study, there was no evidence of an association between pre-pregnancy BMI and newborn telomere length, although meta-analyses suggest an association between BMI and telomere length in adults.

“Our results add to the growing body of evidence that high maternal BMI impacts fetal programming, which could lead to altered fetal development and later life diseases.

“The public health impact of our findings is considerable as in affluent societies about 30 per cent of women of reproductive age are overweight.”

Prof Neena Modi, president of the Royal College of Paediatrics and Child Health said:“This intriguing study provides further evidence of the life-long impact of maternal obesity on a child’s life. The study makes clear that babies born to obese mothers may be at greater vulnerability to chronic diseases in adult life.

“The study provides a strong justification for intervention in pregnancy, infancy, childhood and young adult life to tackling the national burden of obesity. It means advising women of reproductive age to maintain a healthy weight, supporting parents, and creating healthy societies to ensure infants and children do not become overweight."