

Quitting smoking during the first trimester of pregnancy still puts the baby at risk

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Although quitting smoking during the first trimester of pregnancy reduces the risk of low birth weight, it isn't enough to protect the unborn child from being born shorter and with smaller brain size, a new study from the University of Eastern Finland shows. The study looked at 1.4 million mother-child pairs in Finland, analysing the effect of maternal smoking on newborns' body size and body proportions when the mother had smoked only during the first trimester as opposed to continued smoking. The findings were published in *BMJ Open* yesterday.

Smoking during pregnancy increases the risk for adverse pregnancy outcomes not only in the neonatal period, but also much later, possibly even in late adulthood. Tobacco smoke contains thousands of chemicals, which can cross the placenta and enter foetal circulation. Among them nicotine has a multitude of adverse effects on the development of organs, including the brain. Other well-known toxic chemicals in [tobacco smoke](#) include [carbon monoxide](#), which can interfere with the unborn child's oxygen supply.

"Smoking during pregnancy is relatively common. In this study, 84.5% were non-smokers and 3.5% quit smoking during the first trimester, but 12% continued to smoke after the first trimester," Researcher Isabell Rumrich from the University of Eastern Finland says.

The study showed that maternal smoking is associated with a stronger reduction in body length and head circumference than in [birth weight](#), leading to changed body proportions. The effects on body proportions of

having quit smoking during the first trimester or having continued smoking after the first trimester were similar, stressing the importance of early pregnancy as a sensitive exposure window. Among the newborns exposed to maternal smoking only during the first trimester, all three measurements of [body size](#) (birth weight, body length and head circumference) showed signs of growth restriction. In addition, their body proportions were abnormal.

Furthermore, the study suggests a limited potential to repair foetal damage induced in early pregnancy. Maternal smoking can have an effect on cell proliferation during organogenesis in early prenatal development. Insights during this period have been shown to persist throughout life.

"The most important finding of our study is that although quitting smoking in the first trimester reduces the risk of low birth weight, brain size and [body length](#) in relation to body weight seem not to catch up. This stresses the importance of quitting smoking already before pregnancy, since even smoking only during early pregnancy can have devastating effects on the long term health of the [unborn child](#)," Rumrich notes.

More information: Isabell Rumrich et al. Effects of maternal smoking on body size and proportions at birth: a register-based cohort study of 1.4 million births, *BMJ Open* (2020). [DOI: 10.1136/bmjopen-2019-033465](#)

Provided by University of Eastern Finland

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