

# Infants of moms who smoke while pregnant at heightened risk of fracture during first year of life

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Infants of mothers who smoke during early pregnancy appear to have a small increased risk of fractures during the first year of life, finds a study from Sweden published by *The BMJ* today.

But the results show no long lasting effect on [fracture risk](#) later in childhood and up to early adulthood, suggesting that smoking in pregnancy only has a short term influence on bone health, say the researchers.

Many studies have found a link between smoking during pregnancy and growth problems in infants. But evidence of the impact of smoking during pregnancy on bone health and risk of [fractures](#) in children at different stages of life is scarce and inconsistent.

So a team of researchers based in Sweden set out to study the impact of maternal smoking during pregnancy on fractures in offspring from infancy to young adulthood.

Their findings are based on over 1.6 million people born in Sweden between 1983 and 2000 to women who smoked (377,367) and did not smoke (1,302,940) in early pregnancy.

Offspring were followed up from birth to an average age of 21 (maximum age 32 years). During this period 377,970 fractures were identified (a rate of 11.8 per 1000 person years).

The researchers also carried out [sibling](#) comparison analyses to control for any unwanted effects of unmeasured familial (genetic and environmental) factors shared by siblings, making the results more likely to be reliable.

Overall, maternal smoking was associated with a higher rate of fractures in offspring before 1 year of age. In absolute numbers, the risk of fracture in those exposed to maternal smoking was 1.59 per 1000 person years compared with 1.28 per 1000 person years in those not exposed—a small difference in fracture rate of 0.31 per 1000 person years in the first year of life.

This association followed a dose-dependent pattern (compared with no smoking, there was a 20% increased risk for 1-9 cigarettes/day and a 41% increased risk for 10 or more cigarettes/day) and persisted after adjusting for shared familial factors in sibling analyses.

Maternal smoking during pregnancy was also associated with an increased fracture risk in offspring from age 5 to 32 years. However, these associations did not display a clear dose dependent pattern, and did not persist in sibling comparison analyses, where siblings were discordant for maternal smoking.

This suggests that fracture risk later in childhood and up to early adulthood seem to be driven by [familial factors](#) shared by siblings, rather than by exposure to mother's smoking in the womb, say the authors.

There was no evidence of maternal smoking being associated with risk of fractures in offspring between the ages of 1 and 5 years across all analyses.

This is an observational study so can't establish cause, and the authors point to some limitations, such as the possibility that some women will not admit smoking during pregnancy or might under-report the number of cigarettes smoked.

Nevertheless, they say the data covered a large number of people and addressed risk of fractures during different developmental stages of life.

As such, they conclude: "The results of this study indicate that maternal [smoking](#) during [pregnancy](#) is associated with an increased risk of fractures before 1 year of age. Prenatal exposure to [cigarette smoke](#), however, does not seem to have a longer lasting biological influence on risk of fracture later in childhood and up to [early adulthood](#)."

**More information:** Maternal smoking during pregnancy and fractures in offspring: national register based sibling comparison study, *BMJ* (2020). [DOI: 10.1136/bmj.17057](https://doi.org/10.1136/bmj.17057)

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