

# Caesarean babies are more likely to become overweight as adults

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Babies born by caesarean section are more likely to be overweight or obese as adults, according to a new analysis.

The odds of being overweight or obese are 26 per cent higher for adults born by [caesarean section](#) than those born by vaginal delivery, the study found (see footnote).

The finding, reported in the journal *PLOS ONE*, is based on combined data from 15 studies with over 38,000 participants.

The researchers, from Imperial College London, say there are good reasons why many women should have a C-section, but mothers choosing a caesarean should be aware that there might be long-term consequences for their children.

Around one in three to four births in England are by caesarean section, around twice as many as in 1990. In some countries, the rate is much higher, with 60 per cent of mothers in China and almost half in Brazil having the procedure.

Some previous studies have suggested that the odds of other adverse long-term outcomes, such as asthma and type-1 diabetes in childhood, are also higher in babies born by caesarean.

The new study, which includes data from 10 countries, found that the average BMI of adults born by caesarean section is around half a unit

more than those born by vaginal delivery. It is the largest to show a link between caesarean delivery and BMI in adulthood.

The authors say they cannot be certain that caesarean delivery causes higher body weight, as the association may be explained by other factors that weren't recorded in the data they analysed.

Professor Neena Modi from the Department of Medicine at Imperial College London, the report's senior author, said: "There are good reasons why C-section may be the best option for many mothers and their babies, and C-sections can on occasion be life-saving. However, we need to understand the long-term outcomes in order to provide the best advice to women who are considering caesarean delivery.

"This study shows that babies born by C-section are more likely to be overweight or obese later in life. We now need to determine whether this is the result of the C-section, or if other reasons explain the association."

Dr Matthew Hyde, one of the researchers, said: "There are plausible mechanisms by which [caesarean delivery](#) might influence later body weight. The types of healthy bacteria in the gut differ in babies born by caesarean and [vaginal delivery](#), which can have broad effects on health. Also, the compression of the baby during [vaginal birth](#) appears to influence which genes are switched on, and this could have a long-term effect on metabolism."

**More information:** *PLOS ONE* [DOI: 10.1371/journal.pone.0087896](https://doi.org/10.1371/journal.pone.0087896)

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