

Pregnant mother's weight, glucose and blood pressure affect baby's size

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Being overweight or obese in pregnancy causes babies to be born larger, according to new research. The study, led by the universities of Exeter and Bristol, also found that having higher blood glucose (sugar) during pregnancy causes babies to be born larger. Conversely, having higher blood pressure in pregnancy causes babies to be smaller.

It has long been known that women who are overweight or who have diabetes in pregnancy tend to have bigger [babies](#). However, up to now it has been unclear whether the size of the baby has been caused by these characteristics in the mother, or what factors might be important in linking a mother's size to that of her babies.

Now, in an international research collaboration led by the universities of Exeter and Bristol, researchers have shown that excess weight and higher glucose levels in mothers cause their babies to be born heavier, while higher blood pressure causes lower birth weights. The team concluded that mothers with higher blood sugar tend to have bigger babies, even within a healthy range. Unlike

some previous studies, the research, published in the medical journal *JAMA*, also found that mothers' blood lipids (levels of fat) that are also related to being overweight did not seem important in determining the baby's size.

Dr Rachel Freathy, of the University of Exeter Medical School, who co-led the study, said: "Being born very large or very small can carry health risks for a newborn baby, particularly when that's at the extreme end of the spectrum. Higher and lower birth weights are also associated with diseases such as Type 2 diabetes later on in life. Understanding which characteristics of a mother influence the birth weight of her offspring, may eventually help us to tailor management of a healthy pregnancy and reduce the number of babies born too large or too small."

The researchers used data from more than 30,000 healthy women and their babies across 18 studies. They examined genetic variants associated with mothers' [body mass index](#), blood glucose and lipid levels and blood pressure, along with measurements of those characteristics in pregnancy. They also studied the weight of all the babies at birth. All the women had European ancestry and were living in Europe, America or Australia. Babies born between 1929 and 2013 were included in the study.

Dr Jess Tyrrell, of the University of Exeter Medical School, co-lead on the paper, said: "A lot of research into pregnancy and birth weight has been based on observation, but this can make it very difficult to determine what is cause and what is effect, creating a confusing picture for mothers, clinicians and healthcare workers. Our genetic method is more robust, giving clear evidence that mothers' weight, glucose and blood pressure affect the size of the baby."

Interestingly, even though being overweight or obese is usually associated with having a higher

blood pressure, the researchers found that higher blood pressure causes babies to be born smaller, suggesting that there are complicated factors affecting growth in the womb.

Professor Debbie Lawlor, of the University of Bristol, who co-led the study, said: "This is really important research than could only be done with collaboration from a large number of scientists and the involvement of participants from several countries, and we are grateful to everyone involved. We will continue to work together to answer the next important question, which is whether the effects of [mothers' weight](#), glucose and [blood pressure](#) on their babies [weight](#) at birth has a lasting effect as their children grow and become adults themselves - do children born to women with [high glucose levels](#) in [pregnancy](#) continue to be heavier throughout their lives?"

More information: *JAMA*, [DOI: 10.1001/jama.2016.1975](#)

Provided by University of Exeter

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