

# Diabetes in pregnancy linked to heightened risk of cardiovascular and cerebrovascular diseases

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Women with a history of diabetes in pregnancy (gestational diabetes) are at substantially higher risk of cardiovascular and cerebrovascular

diseases—conditions that affect blood flow in the heart and brain—finds an analysis of the available evidence, published by *The BMJ* today.

The increased risks relate to overall and specific types of cardiovascular and [cerebrovascular diseases](#) and cannot be solely attributed to conventional cardiovascular risk factors or subsequent diabetes.

Gestational diabetes develops when the body can't produce enough insulin to control blood sugar levels during pregnancy.

It's already known that women with [gestational diabetes](#) are at an increased risk of cardiovascular problems, but it's less clear which specific types of cardiovascular and cerebrovascular diseases are involved.

To address this, a team in China examined research databases for studies reporting the association between gestational diabetes and incident cardiovascular and cerebrovascular diseases.

Fifteen observational studies published between 2006 and 2022 were included in their analysis. Of these, four were from Canada, three from the United States, two from the United Kingdom, and one each from Israel, Sweden, France, Iran, Korea, and Denmark.

The studies were of varying quality, but the researchers were able to assess the certainty of evidence using the recognized GRADE system, which they judged as low or very low quality.

Of 51,3324 women with gestational diabetes, 9,507 had cardiovascular and cerebrovascular disease. Of more than eight million control women without gestational diabetes, 78,895 had cardiovascular and cerebrovascular disease.

Compared with women without gestational diabetes, women with a history of gestational diabetes showed a 45% increased risk of overall cardiovascular and cerebrovascular diseases, 72% for cardiovascular diseases and 40% for cerebrovascular diseases.

Women with gestational diabetes showed increased risks of coronary artery diseases, [heart attack \(myocardial infarction\)](#), heart failure, angina, cardiovascular procedures, and stroke.

The risk of serious blood clots (venous thromboembolism) was also seen to increase by 28% in women with previous gestational diabetes.

The association between gestational diabetes and cardiovascular and [cerebrovascular disease](#) was reduced to varying degrees when the researchers took account of factors such as geographical region, [study design](#) and quality, smoking, body mass index, socioeconomic status, and pre-existing conditions.

The risk of cardiovascular and cerebrovascular diseases was, however, reduced but remained significant when restricted to women who did not develop subsequent overt diabetes.

The researchers acknowledge that their study was limited by the low quality of the included [observational studies](#), which could have affected the validity of the observed associations, and no information on repeated measurements of gestational diabetes diagnosis during follow-up were available.

However, they say their comprehensive and systematic analysis, along with the large sample size and country representativeness, means they are confident that their results are reliable and widely applicable.

The precise mechanisms of how gestational diabetes contributes to

increased risk of cardiovascular and cerebrovascular diseases remains unknown, they write. However, they say their findings contribute to a more comprehensive understanding of the adverse cardiovascular and cerebrovascular outcomes associated with gestational diabetes mellitus.

"Our results highlight the need for early intervention in women at high risk of gestational diabetes mellitus, and for continuous monitoring of women with gestational diabetes mellitus," they conclude.

And they expect the quality of evidence to improve with future updates and more high quality studies.

**More information:** Association of gestational diabetes mellitus with overall and type specific cardiovascular and cerebrovascular diseases: systematic review and meta-analysis, *The BMJ* (2022). [DOI: 10.1136/bmj-2022-070244](https://doi.org/10.1136/bmj-2022-070244)

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