

Thinking about getting pregnant? First check your risks for heart disease

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A woman's heart health before she becomes pregnant is strongly related to her likelihood of experiencing a complication during her pregnancy or labor, reports a new Northwestern Medicine study.

The study examined the presence of four cardiovascular risk factors in [women](#) before they became pregnant: smoking, unhealthy body weight, hypertension and diabetes. With the presence of each additional risk factor, the likelihood that the woman would experience an adverse [pregnancy](#) outcome got increasingly higher. Those adverse outcomes include maternal intensive care unit (ICU) admission, [preterm birth](#), low birthweight and fetal death.

"We're not surprised that obesity or hypertension are associated with higher risk of adverse pregnancy outcomes, but what is striking is that we found that with each additional risk factor, the risk of adverse pregnancy outcome gets successively higher," said corresponding author Dr. Sadiya Khan, assistant professor of medicine and of preventive medicine at Northwestern University Feinberg School of Medicine. "The sum of all the risk factors is greater than the individual parts."

The study of more than 18 million pregnancies will be published July 21 in the *European Journal of Preventive Cardiology*, a journal of the European Society of Cardiology.

The findings argue for more comprehensive pre-pregnancy cardiovascular assessment rather than focusing on individual risk factors, such as body mass index or blood pressure in isolation, said Khan, also a Northwestern Medicine cardiologist and epidemiologist.

"In reality, not all pregnancies are planned, but ideally we would evaluate women well in advance of becoming pregnant, so there is time to optimize their health," Khan said. "We also need to shift our focus toward prioritizing and promoting women's health as a society—so instead of just identifying hypertension, we prevent blood pressure from becoming elevated in the first place."

"There's a gap in understanding how these results affect longer-term

health in women and their children," said first author Michael Wang, a fourth-year medical student at Feinberg. "This data is exciting because it will hopefully help in the design of interventions and focus greater attention on filling the care gap for these women."

A 'perfect storm' for pregnancy complications:

Levels of pre-pregnancy obesity and high [blood pressure](#) are rising, Khan said, and there are some indications women are acquiring cardiovascular risk factors at earlier ages than before. Additionally, more women are getting pregnant later in life, giving risk factors more time to accumulate.

"Taken together, this has created a perfect storm of more risk factors, earlier onset and later pregnancies," Khan said.

Breaking down the numbers:

The study was a cross-sectional analysis of maternal and fetal data from the U.S. National Center for Health Statistics (NCHS), which collects information on all live births and fetal deaths after 20 weeks' gestation. Individual-level data was pooled from births to women ages 15 to 44 from 2014 to 2018.

A total of 18,646,512 pregnancies were included in the analysis. The average maternal age was 28.6 years.

The scientists assigned women a risk factor score of 0-4 (0 for no risk factors or 4 for all four risk factors, for example). More than 60% of women had one or more pre-pregnancy [cardiovascular risk factors](#), with 52.5%, 7.3%, 0.3%, and 0.02% having 1, 2, 3 and 4 risk factors, respectively.

The study found a graded association between a higher number of risk factors and the pregnancy being complicated by any of the four adverse outcomes. For example, compared to women with no risk factors, the risk ratio for maternal ICU admission was 1.12 times more likely to occur for one risk factor; 1.86 times more likely for two risk factors; 4.24 times more likely for three risk factors; and 5.79 times more likely for four [risk factors](#).

All analyses were adjusted for maternal age at delivery, race/ethnicity, education, receipt of prenatal care, parity and birth plurality.

More information: "Association of pre-pregnancy cardiovascular risk factor burden with adverse maternal and offspring outcomes," *European Journal of Preventive Cardiology* (2021). [DOI: 10.1093/eurjpc/zwab121](https://doi.org/10.1093/eurjpc/zwab121)

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