

# Health of fathers-to-be is linked to risk of pregnancy loss

December 18 2020

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More than a quarter of pregnancies might be ectopic or end in miscarriage or stillbirth if the father-to-be is unhealthy and has three or more medical conditions such as obesity, diabetes, high blood pressure or high cholesterol levels.

In a [retrospective study](#) of nearly a million pregnancies between 2009 and 2016 in the US, published today (Friday) in *Human Reproduction*, researchers found that if the father was diagnosed with [metabolic syndrome](#), which includes these medical conditions, there was an increased risk of the mother losing the pregnancy.

Compared to men who had none of the components of metabolic syndrome, the risk of pregnancy loss increased by 10%, 15% and 19% respectively for men with one, two or three or more components.

Associate Professor Michael Eisenberg from Stanford University School of Medicine (California, U.S.), who led the research, said: "It's been known for some time that the health of mothers has an impact on the developing foetus and events at the time of birth. This is the first study to suggest that pregnancies sired by men with increasing numbers of medical conditions are at higher risk of ending in miscarriage, [ectopic pregnancy](#) or stillbirth.

"In the group of men we studied, the risk of losing the pregnancy was 17% in couples where the father had no components of the metabolic syndrome but increased to 21% in couples where the father has one metabolic syndrome component, 23% where he has two, and 27% where he has three or more.

"While this study cannot prove that poor paternal health is a cause of pregnancy loss, it shows there is an association. The clinical implications of these findings are that pre-conception counselling should not forget the father, as his health may have an important impact on the pregnancy."

The researchers analysed data from US insurance claims covering 958,804 pregnancies. As well as metabolic syndrome, they gathered information on other medical conditions such as [chronic obstructive](#)

[pulmonary disease](#) (COPD), depression and heart disease. They also calculated the burden of chronic disease for all patients, which included age and medical history of problems such as heart failure, heart attack, diseases of the blood vessels, kidney and liver disease, cancer, stroke and dementia. They adjusted their calculations to take account of other factors that could affect pregnancy, in particular, the mother's age, health, weight, and whether or not the father or mother smoked.

A total of 4.6% of men in the study were aged over 45 years and 23.3% had at least one component of metabolic syndrome prior to conception. There were 785,809 live births and 172,995 pregnancies (22%) lost to ectopic pregnancy, miscarriage or stillbirth during the period of the study.

As expected, pregnancy losses increased with the mother's age and the number of other [medical conditions](#) she had. However, the association with the health of the father and pregnancy loss remained. The risk of losing a pregnancy also increased with the age of the father.

The mechanisms by which the father's health might affect the risk of pregnancy loss is not known.

Prof Eisenberg said: "We hypothesise that the father's health and lifestyle could adversely affect the genetic make-up and expression in the sperm, and that this may alter how well the placenta functions. If the placenta isn't working properly then this could lead to the pregnancy losses that we observed; for instance, we know already that paternal smoking and diet can affect sperm quality."

Limitations of the study include: potential lack of detail and accurate diagnoses inherent in obtaining information from insurance claims databases; [pregnancy](#) losses that did not result in a medical claim, for instance early miscarriage, were not included in the database, although

the frequency of miscarriages, still births and ectopic pregnancies observed in the study were similar to estimates for the general US population; as the findings include only privately insured and employed parents, the findings might not be generalisable to other populations; information on important factors such as sociodemographic status, race and substance abuse, was incomplete.

Prof Eisenberg concluded: "We now need confirmatory studies. Hopefully, paternal health can be more integrated into future studies. In addition, investigations that target the possible mechanisms will help to better understand the associations we found."

**More information:** "Association between preconception paternal health and pregnancy loss in the USA: an analysis of US claimants", Alex M. Kasman et al. *Human Reproduction*, [DOI: 10.1093/humrep/332](https://doi.org/10.1093/humrep/332)

Provided by European Society of Human Reproduction and Embryology

Citation: Health of fathers-to-be is linked to risk of pregnancy loss (2020, December 18)  
retrieved 6 May 2024 from

<https://medicalxpress.com/news/2020-12-health-fathers-to-be-linked-pregnancy-loss.html>

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