

Mother's heart health in pregnancy impacts child's heart health in adolescence

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A mother's heart health while she is pregnant may have a significant impact on her child's cardiovascular health in early adolescence (ages 10 to 14), according to a new study from Northwestern Medicine and the

Ann & Robert H. Lurie Children's Hospital of Chicago.

The study will be published Feb. 16 in the *Journal of the American Medical Association (JAMA)*. It is the first study to examine the implications of a mother's [cardiovascular health](#) during [pregnancy](#) for offspring health in the longer term.

The findings are troubling, as they build upon previous Northwestern Medicine and Lurie Children's Hospital research that found more than 90% of U.S. [mothers](#) have suboptimal cardiovascular health levels during pregnancy.

"Our new findings suggest that the children of this large group of mothers with suboptimal cardiovascular health may be at higher risk for early declines in their own cardiovascular health during childhood," said lead author Dr. Amanda Perak, assistant professor of pediatrics (cardiology) and preventive medicine (epidemiology) at Lurie Children's Hospital and Northwestern University Feinberg School of Medicine. "If we can address these underlying causes of children's poor [heart health](#), we can hopefully help them avoid future heart attacks, strokes and premature deaths as they grow up."

Perak also is a pediatric preventive cardiologist at Lurie Children's Hospital.

Study findings:

Children born to mothers in the poorest category of cardiovascular health (representing 6% of mothers) had almost eight times higher risk for the poorest cardiovascular health category in [early adolescence](#), compared with children born to mothers who had ideal cardiovascular health in pregnancy, the study found.

Children born to mothers with any "intermediate" cardiovascular health metrics in pregnancy—for example, being overweight, but not obese—had over two times higher risk for the poorest cardiovascular health category in early adolescence, according to the study.

Analysis of multiple maternal risk factors at once

Most prior studies of the implications of a mother's health on her offspring have examined just one maternal risk factor at a time (i.e. obesity or hypertension), Perak said.

"Our study combined multiple factors across a range of levels, and found that the associations of maternal cardiovascular health with offspring cardiovascular health were not driven by any one metric (such as obesity)," Perak said. "Instead, all metrics were related to the offspring's later health."

How the study worked:

The study used data from the Hyperglycemia and Adverse Pregnancy Outcome Follow-Up Study, which was an observational study of pregnant women and their offspring. The scientists studied more than 2,300 mother-child pairs from six different countries. The pregnancies occurred between 2000 to 2006, and the children were examined at age 10 to 14 years in 2013 to 2016.

Using the American Heart Association's definition for cardiovascular health, the scientists categorized cardiovascular health for mothers based on their levels of body mass index (an indicator of weight versus height), blood pressure, cholesterol, glucose and smoking status at 28 weeks' gestation. The scientists categorized cardiovascular health for offspring based on their levels of body mass index, [blood pressure](#), cholesterol and

glucose at age 10 to 14 years old.

What's next?

"The children in this study are soon going to be adults, and as a next step, we'd like to measure cardiovascular health and signs of early cardiovascular disease as they enter adulthood," Perak said.

Additionally, she plans to investigate some of the underlying reasons why poorer maternal cardiovascular health in pregnancy might lead to poorer offspring cardiovascular health. For example, an adverse environment in the woman's uterus may lead to differences in which the offspring's genes are turned "on" or "off" at different times, which could be a reason for health differences, Perak said.

More information: *Journal of the American Medical Association* (2021). jamanetwork.com/journals/jama/.../1001/jama.2021.0247

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