

Children born through IVF may have higher risk of hypertension

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Children conceived through assisted reproductive technologies may be at an increased risk of developing arterial hypertension early in life, among other cardiovascular complications, according to a Swiss study published today in the *Journal of the American College of Cardiology*.

Developed in 1978, assisted reproductive technologies (ART) has helped millions of individuals and families who cannot conceive naturally. The most common ART methods are in vitro fertilization and intracytoplasmic sperm injection, which can expose the gamete and embryo to a variety of environmental factors before implantation. Children conceived using ART make up 1.7 percent of all infants born in the United States every year and currently over six million persons worldwide.

The study authors assessed the circulatory system of 54 young, healthy ART adolescents (mean age 16) by measuring ambulatory blood pressure, as well as plaque build-up, blood vessel function and artery stiffness. Body mass index, birth weight, gestational age, and maternal BMI, smoking status and [cardiovascular risk](#) profile were similar between the ART adolescents and 43 age- and sex-matched control participants.

Through 24-hour ambulatory blood pressure monitoring, researchers discovered that ART adolescents had both a higher systolic and diastolic blood pressure than the control participants of natural conception at 119/71 mmHg versus 115/69, respectively. Most importantly, eight of

the ART adolescents reached the criteria for the diagnosis of [arterial hypertension](#) (over 130/80 mmHg) whereas only one of the [control participants](#) met the criteria.

"The increased prevalence of arterial hypertension in ART participants is what is most concerning," said Emrush Rexhaj, MD, director of Arterial Hypertension and Altitude Medicine at Inselspital, University Hospital in Bern, Switzerland and the lead author of the study. "There is growing evidence that ART alters the blood vessels in [children](#), but the long-term consequences were not known. We now know that this places ART children at a six times higher rate of hypertension than children conceived naturally."

The authors also studied these participants five years before this study and found that the arterial blood pressure between ART and control children was not different.

"It only took five years for differences in arterial blood pressure to show," Rexhaj said. "This is a rapidly growing population and apparently healthy children are showing serious signs of concern for early cardiovascular risk, especially when it comes to [arterial hypertension](#)."

In an accompanying editorial, Larry A. Weinrauch, MD, cardiologist at Mount Auburn Hospital said that the study's small cohort may understate the importance of this problem for ART adolescents, especially since multiple birth pregnancies and maternal risk factors (such as eclampsia, chronic hypertension and diabetes) were excluded from the study.

"Early study, detection and treatment of ART conceived individuals may be the appropriate course of preventative action," Weinrauch said. "We need to be vigilant in the development of elevated [blood pressure](#) among children conceived through ART to implement early lifestyle-based modifications and, if necessary, pharmacotherapy."

Limitations of this study include that only single-birth children were studied, as well as that participants were recruited from one procreation center. Prematurity, low birth weight and preeclampsia (all known cardiovascular risk factors) were excluded from the study. These limitations may have resulted in a lower cardiovascular risk among the participants compared to the overall ART population.

More information: *Journal of the American College of Cardiology* (2018). [DOI: 10.1016/j.jacc.2018.06.060](https://doi.org/10.1016/j.jacc.2018.06.060)

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