

## Directed in vitro technique may increase insulin resistance among offspring

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A special type of in vitro fertilization, or IVF, may increase the risk for insulin resistance among children conceived in this way, according to a new study from Greece. The results will be presented Monday at The Endocrine Society's 95th Annual Meeting in San Francisco.

During natural fertilization, as well as other IVF treatments, the egg is exposed to many sperm. In both of these cases, the strongest, healthiest sperm has the best chance of reaching and fertilizing the egg.

In contrast, the type of [assisted reproductive technology](#), or ART, examined in this study involves injecting a single sperm directly into a single egg. Developed in 1992, this IVF technique, called intracytoplasmic sperm injection, or ICSI, provides a new way of treating [male infertility](#) by offering men with [low sperm count](#) or poor sperm mobility the possibility of conceiving a child.

The problem with this method is that random sperm selection may result in fertilization with unsuitable sperm. This raises the concern that ICSI may place offspring at greater [genetic risk](#) for developing disease in the future, although few studies have examined this risk.

"These results support the serious concerns for increased predisposition ART offspring may face for metabolic disorders in adult life, due to factors associated directly or indirectly with the ART methodology per se," said the study's lead author Gkourogianni Alexandra, MD, pediatrics resident at the University of Athens Medical School in Greece. "They

support an increased risk for [insulin resistance](#) in children conceived by ICSI, even before any standard biochemical abnormalities become evident."

For this study, the investigators used [metabolomics](#), which is the study of chemicals, or metabolites, that the body produces when it processes food. By measuring blood concentrations of these chemicals, investigators were able to assess the risk of developing obesity, insulin resistance, which is a symptom of diabetes, and [metabolic syndrome](#), which comprises several abnormalities that increase the risk of heart disease, diabetes and stroke.

Of 72 metabolites examined, 38 that previous studies linked to obesity, insulin resistance and metabolic syndrome were significantly different among ICSI children, compared to those who were not conceived by this method. Additionally, two other substances that researchers use as biomarkers for these conditions differed between the two groups.

Study participants included 10 girls who were conceived by the ICSI method and 10 who were not. All participants were pre-pubertal. Investigators used a highly sensitive test, called gas chromatography-mass spectrometry, to detect molecular differences in participants' blood samples.

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Provided by The Endocrine Society

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