

Mother's gestational diabetes diagnosis slows fetal brain response after meals

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When a pregnant woman has gestational diabetes, her unborn child tends to react more slowly to sounds after the mother consumes sugary foods or drinks compared to the offspring of a woman who does not have the condition, according to a new study published in the Endocrine Society's *Journal of Clinical Endocrinology & Metabolism*.

Gestational diabetes is a form of diabetes that can develop during pregnancy. When it occurs, the levels of sugar in the [pregnant woman's](#) blood are higher than normal. For every 1,000 American [women](#) who are pregnant, as many as 92 women develop gestational diabetes, according to the Endocrine Society's Endocrine [Facts and Figures](#) report.

"This is the first time a study has shown that the mother's gestational diabetes can affect how quickly her fetus reacts to stimuli after a meal," said one of the study's authors, Hubert Preissl, PhD, of University Hospital Tübingen as well as the German Center for Diabetes Research and the Institute for Diabetes Research and Metabolic Diseases of the Helmholtz Center Munich at the University of Tübingen in Tübingen, Germany. "The findings provide important insights into how the mother's gestational diabetes diagnosis can affect her child's brain activity."

Forty pregnant women, including 12 who had gestational diabetes, participated in the small study. Following an overnight fast, the women drank a 75-gram glucose solution. Researchers measured the women's blood sugar prior to, an hour after and two hours after ingestion.

Each time the mothers' blood sugar was drawn, the scientists used an auditory stimulus to prompt a response in the fetus. A sound was generated by a speaker, and scientists used plastic tubing transmitted it to a point on the mother's abdomen close to the baby's ear. Using a non-invasive neuroimaging technique called fetal magnetoencephalography, the researchers measured each fetus' response to the auditory stimulus.

An hour after the mothers' consumed the sugary solution, the researchers found children of women with gestational diabetes were slower to react to sounds than the children of women who did not have the condition. Fetuses of women who did not have gestational diabetes responded in an average of 206 milliseconds. In comparison, fetuses whose [mothers](#) had [gestational diabetes](#) responded in an average of 296 milliseconds.

"The findings tell us the brain function of the fetus is influenced by its mother's metabolism," Preissl said. "Our theory is that the mother's metabolism programs her child's metabolism in a manner that may have consequences for the child's obesity and diabetes risk later in life."

More information: The study, "Gestational Diabetes Impairs Human Fetal Postprandial Brain Activity," was published online at press.endocrine.org/doi/10.1210/jc.2015-2692, ahead of print.

Provided by The Endocrine Society

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