

For the first time, study identifies time trends in pregnancy-related outcomes among American women with type 1 diabetes

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Researchers from the Joslin Diabetes Center investigated time trends in pregnancy-related outcomes among women with type 1 diabetes between 2004 and 2017, and found that the percentage of mothers with excess weight gain during pregnancy as well as the use of insulin pumps and CGMs increased significantly, while the prevalence of nephropathy fell dramatically to zero. Furthermore, the research highlights a trend toward increased pre-pregnancy obesity in this population, but the percentage of very large babies born remained the same. The research is published online on June 2, 2020 by the *Journal of Perinatology*.

The percentage of women with type 1 [diabetes](#) before [pregnancy](#) has climbed nearly 40% in the past two decades, according to the Centers for Disease Control and Prevention.

"Originally, our aim was to look at why women with type 1 diabetes have large birth weight babies, and to determine whether the prevalence of babies born very large has changed over the years in our population," says Florence Brown, MD, study coauthor and Co-Director of the Joslin and Beth Israel Deaconess Medical Center Diabetes in Pregnancy Program in Boston. "To understand this relationship, it is necessary to understand the influence of a broad number of variables."

For the study, researchers reviewed [medical records](#) of 700 pregnant women with type 1 diabetes who attended the Joslin Diabetes Center and Beth Israel Deaconess Medical Center Diabetes in Pregnancy Program between 2004 and 2017. Currently, this is the largest U.S. database on [pregnant women](#) with type 1 diabetes.

Researchers analyzed data on treatment, delivery and neonatal outcomes, as well as the mothers' [glucose levels](#), gestational weight gain and other maternal factors that impact outcomes in pregnancy. To calculate trends in these areas over time, patients were divided into three groups based on their delivery date: 2004 to 2008; 2009 to 2012; and 2013 to 2017. Researchers then compared changes over these time periods. The study revealed:

- A1c levels of the mothers remained steady in each trimester across the entire study period.
- The prevalence of diabetic nephropathy fell dramatically, dropping from 4.8% in 2004-2008 to 0% in 2013-2017.
- The percentage of mothers with excessive gestational weight gain increased by about 10% from 2004-2008 to 2013-2017. "This underscores the need to address BMI prior to pregnancy, making sure women have regular nutrition counseling to achieve weight goals," says Brown.
- Length of pregnancy increased slightly over time, and the number of vaginal deliveries rose from about 21% in the early years of the study to 29% in the later years. The prevalence of babies born very large remained high throughout the study period. These babies are at greater risk for later-life metabolic diseases, says Brown.
- Insulin pump use increased by about 23% between 2004 and 2017. In addition, CGM use also rose, from no use at the start of the study to nearly 40% during the later years of the study. "Our next study will look at the differences in [women](#) who use insulin pumps and CGMs and how that use effects

diabetes control and neonatal outcomes," says Brown.

These findings are important because they are a stepping stone to our next analysis, says Brown. "This is the first time we've really been able to paint a big picture, and identify the clues as to which factors may be associated with large birthweight, such as maternal BMI, maternal gestational [weight](#) gain and A1c levels."

More information: Sarit Helman et al, Time trends in pregnancy-related outcomes among women with type 1 diabetes mellitus, 2004–2017, *Journal of Perinatology* (2020). DOI: [10.1038/s41372-020-0698-x](https://doi.org/10.1038/s41372-020-0698-x)

Provided by Joslin Diabetes Center

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