

With Maternal Diabetes Korean Study Finds No Overall Childhood Cancer Link

A recent nationwide Korean cohort study found no statistically significant association between maternal diabetes and overall [childhood cancer](#) risk.

Maternal diabetes has been linked to many adverse health outcomes in both mothers and offspring. However, its association with childhood [cancer](#) remains unclear, motivating the current study.

The study used data from the Korean [National Health Insurance](#) database, which covers 97% of all Koreans. It followed 549,851 singleton infants born during 2003–2004 until the end of 2021.



Study

The risk of childhood cancer was compared between offspring of mothers with and without diabetes. The results were adjusted for maternal age, pre-pregnancy and gestational hypertension, preterm birth, offspring sex, and neonatal conditions including transient tachypnea, [respiratory distress syndrome](#), necrotizing enterocolitis, intraventricular hemorrhage, and bronchopulmonary dysplasia.

Of the mothers, 6.0% had diabetes during pregnancy. These mothers had a higher mean age and were more likely to have [hypertension](#) and preterm birth. The offspring were more likely to have respiratory distress syndrome and necrotizing enterocolitis, while the rates of the other neonatal conditions examined were similar.

During the follow-up period, a total of 6,049 children, 1.1%, developed cancer. After adjusting for maternal and neonatal factors, the researchers found no statistically significant association between maternal diabetes and overall childhood cancer risk. No significant association was found in any [age-at-diagnosis](#) category.

When stratified by cancer type, the relative risk of [urinary tract cancer](#) was increased by 81% and remained statistically significant after correction for multiple comparisons. However, the authors caution that this should not be overinterpreted, as the absolute risk remained extremely low. In absolute terms, the observed cumulative risk was increased by 0.04 percentage points, or 37 more cases per 100,000 children born to mothers with diabetes compared with other children.

The authors term this “an epidemiologic signal requiring replication rather than as evidence of a large absolute cancer burden.”

Findings and Conclusion

When gestational diabetes and pre-pregnancy diabetes were separately analyzed, only gestational diabetes showed nominal associations with a 15% higher risk of non-hematopoietic, or non-blood, cancer and a 75% higher risk of urinary tract cancer. However, because the formal test found no statistically significant difference between the subtype estimates, the authors conclude that there is no evidence of a clear difference in risk by [diabetes subtype](#).

In contrast, several prior studies indicated a higher cancer risk with maternal [pre-pregnancy](#) diabetes. This might be due to the small number of cancer events among offspring exposed to pre-pregnancy diabetes in this study.

The authors note that differences in the findings compared with previous studies may be due to several factors. For instance, women with pre-pregnancy diabetes might plan their pregnancies and maintain tighter [glycemic control](#), thus potentially reducing the risk of cancer in the offspring.

The current study included only live births, thus potentially introducing selection bias and underestimating any association by excluding pregnancies ending in [fetal demise](#), particularly among women with poorly controlled pre-pregnancy diabetes. Some exposure misclassification may also have occurred if women with previously unrecognized pre-pregnancy diabetes were classified as having gestational diabetes when hyperglycemia was detected during pregnancy, potentially distorting the risk estimates for both gestational and pre-pregnancy diabetes.

The authors hypothesize the involvement of several biological mechanisms linking maternal diabetes to urinary tract cancer in the offspring, such as maternal hyperglycemia leading to fetal hyperglycemia or [hyperinsulinemia](#) and altered insulin-like growth factor signaling, which may promote cellular proliferation and inhibit apoptosis; oxidative stress, leading to DNA damage; and epigenetic modifications that may affect tumor suppressor genes and increase cancer risk over the long term in the offspring. These proposed pathways were not examined directly in the study.

Overall, the findings suggest that [maternal diabetes](#) was not significantly associated with the overall risk of childhood cancer. It was, however, associated with a higher relative risk of childhood urinary tract cancer, though the absolute risk remains low. The urinary tract finding requires replication in other populations.

These findings are broadly reassuring for mothers with diabetes in pregnancy, without minimizing the need for optimal glucose control in pregnancy to avert other adverse [health](#) outcomes in mothers and offspring.

Source:

<https://www.news-medical.net/news/20260804/Korean-study-finds-no-overall-childhood-cancer-link-with-maternal-diabetes.aspx>