Examining the possible link between obesity prior to pregnancy and increased risk of childhood cancer

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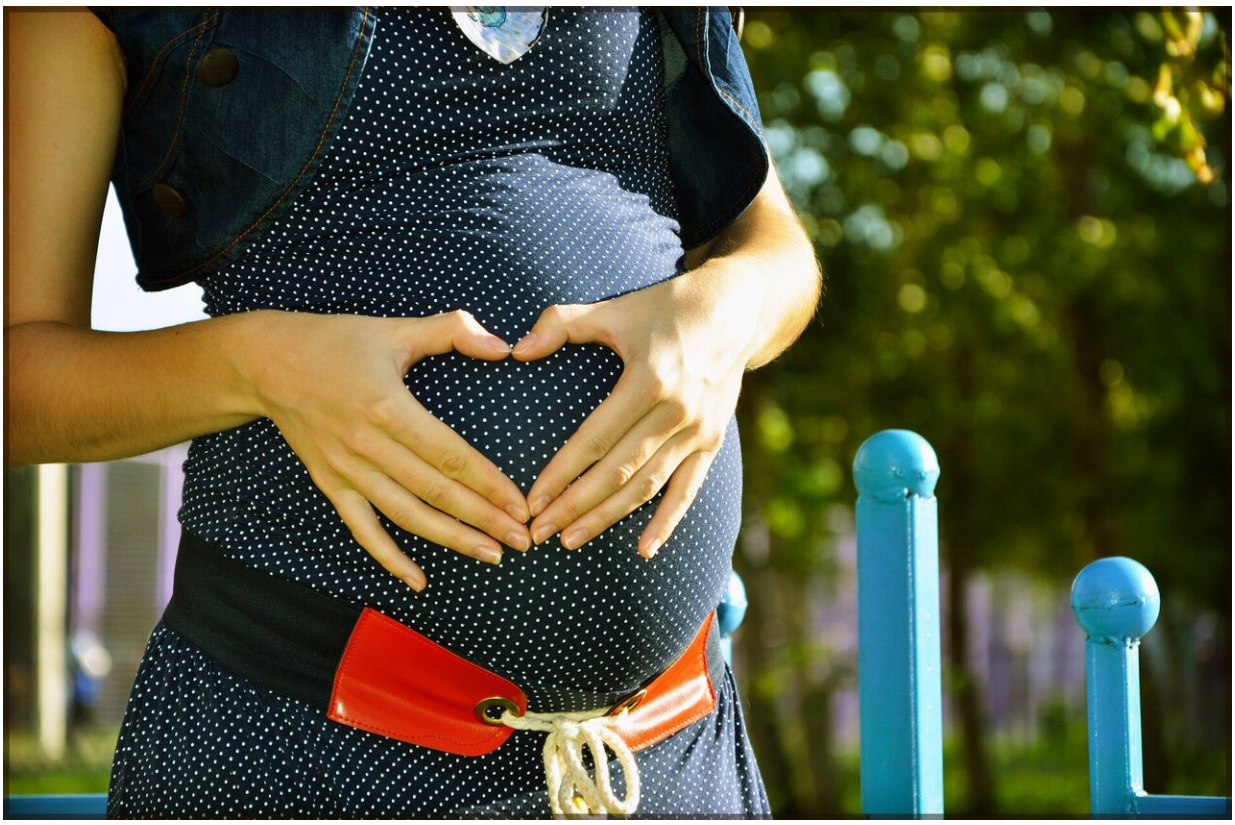

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In work published in *Leukemia Research*, University of Minnesota Medical School researchers explored the possible biological mechanisms

that could explain the association between being overweight or obese prior to pregnancy and the increased risk of acute lymphoblastic leukemia (ALL) in children.

"Recent research has found that increasing rates of overweight and obesity among people of childbearing age in recent decades may be contributing to concurrently increasing rates of pediatric acute lymphoblastic leukemia," said Andrew Marley, MPH, Ph.D., a postdoctoral fellow at the U of M Medical School. "However, it is unknown how maternal obesity may be impacting ALL development."

Researchers say explanations for this possible increased risk include:

- Changes in fetal or newborn epigenetics—or behavioral and environmental factors that can affect the way genes work.
- Altered insulin-like growth factor profiles and insulin resistance.
- Modified adipokine—or cell signaling proteins from adipose tissue—production and secretion.
- Changes to immune cell populations.
- Impacts on birthweight and childhood body weight.

The research team stated each of these mechanisms have biologically sound reasoning because they are impacted by obesity, can be observed in fetuses or newborns, and have been documented in pediatric ALL patients at diagnosis. They have also been linked with ALL development.

"This review is important because if we identify the mechanisms behind this association, we can provide better and more tailored approaches to treatment and prevention," Dr. Marley said.

Although the reasons for an association between obesity prior to pregnancy and leukemia development in children have been proposed, evidence remains circumstantial. Further research is suggested to find a

biological signature connecting pre-pregnancy overweight and obesity to leukemia risk in children. Researchers say more specific epidemiological and clinical research could help provide a better understanding of the association and improve future prevention and treatment efforts.

More information: Andrew R. Marley et al, Maternal obesity and acute lymphoblastic leukemia risk in offspring: A summary of trends, epidemiological evidence, and possible biological mechanisms, *Leukemia Research* (2022). DOI: 10.1016/j.leukres.2022.106924

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