

Prenatal exposure to environmental chemicals linked to childhood growth changes

October 18 2023



Credit: Pixabay/CC0 Public Domain

A new study led by researchers from the Barcelona Institute for Global Health (ISGlobal) has shed light on the influence that Endocrine-Disrupting Chemicals (EDCs) can have on children's growth during their

early years. The [results](#), published in *Environmental Health Perspectives*, show that prenatal exposure to some of these environmental chemicals and their mixtures is linked to accelerated Body Mass Index (BMI) gain from birth to nine years old.

The study, involving 1,911 [mother-child pairs](#) from the [Project INMA](#) birth cohort in Spain, focused on assessing exposure to a wide range of Endocrine-Disrupting Chemicals. These chemicals are found in our diet and in everyday products like plastics, personal care items, and pesticides and include Persistent Organic Pollutants (POPs), Perfluoroalkyl Substances (PFASs), Polychlorinated Biphenyls (PCBs), phthalates and phenols (including parabens and bisphenol A).

The research team measured the concentrations of these chemicals in urine and blood samples collected from pregnant women. Subsequently, they measured the BMI of the children over time. BMI is a measure that combines a child's height and weight and is commonly used to assess weight status and obesity.

The [statistical analysis](#) showed that [prenatal exposure](#) to specific POPs, including Hexachlorobenzene (HCB) and Dichlorodiphenyldichloroethylene (DDE), as well as certain PFASs, can significantly alter a child's BMI trajectory. These alterations are characterized by either lower birth size followed by accelerated BMI gain or higher birth size with accelerated BMI gain.

One of the main novelties of the study is that, in addition to studying individual chemicals, the researchers also conducted a mixture analysis. This involved examining how a combination of different EDCs might impact children's growth, which offers a more realistic representation of how humans are exposed to EDCs. This approach showed that the mixture of EDCs was associated with an increased risk of children belonging to a trajectory of accelerated increase in BMI, with HCB,

DDE and PCBs being the main contributors to this mixture effect.

Parisa Montazeri, ISGlobal researcher and first author of the study, commented, "Our findings underscore the potential impact of early-life chemical exposures on childhood growth patterns, which can have long-term implications for health. Understanding these relationships is crucial for informing public health efforts aimed at preventing [childhood obesity](#) and its related health consequences."

"These revelations are of significant public health interest, as accelerated growth during childhood has been linked to various health issues during childhood and in later life, including obesity, cardiovascular diseases, and diabetes", says Martine Vrijheid, head of ISGlobal's program on [Environment and Health over the Lifecourse](#) and senior author of the study.

The study's authors emphasize the need for more research to assess the health implications of prenatal environmental chemical exposure over the course of a child's life. Understanding these connections is crucial for informing policies and interventions aimed at reducing the health risks associated with exposure to harmful chemicals during pregnancy.

Phthalates and brain volumetric measures

Another recent study coordinated by ISGlobal found an [association between exposure to phthalates in pregnancy and smaller volumetric measures](#) in certain parts of the brain and lower IQ in children.

The research, published in *Molecular Psychiatry*, suggested that those children whose mothers had a higher exposure to certain phthalates during pregnancy tend to show smaller total gray matter in their brains when they reach the age of 10. The researchers also found that maternal exposure to plasticizers during pregnancy is associated with lower child

IQ at age 14.

Phthalates are a group of endocrine-disrupting chemicals which are ubiquitously used as plasticizers and solvents in a wide range of commercial products.

More information: Prenatal exposure to multiple endocrine disrupting chemicals and childhood BMI trajectories in the INMA cohort study, *Environmental Health Perspectives* (2023). [DOI: 10.1289/EHP11103](https://doi.org/10.1289/EHP11103)

Provided by Barcelona Institute for Global Health

Citation: Prenatal exposure to environmental chemicals linked to childhood growth changes (2023, October 18) retrieved 27 April 2024 from <https://medicalxpress.com/news/2023-10-prenatal-exposure-environmental-chemicals-linked.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.