

Pregnant women's PFAS exposure linked to granddaughters' obesity risk

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The first human study to link blood levels of 'forever' chemicals known as PFAS in pregnant women with the risk of obesity in their

granddaughters is described in an ENDO 2020 abstract that will be published in the *Journal of the Endocrine Society*.

Per- and polyfluoroalkyl substances (PFAS) are manmade chemicals used as oil and water repellents and coatings for common products including cookware, carpets and textiles. These endocrine-disrupting chemicals persist when they are released into the environment, and they continue to accumulate over time.

The study presents the first evidence that certain PFAS chemicals found in homes and the environment are correlated with obesity in [future generations](#).

The new study found the link between PFAS exposure in pregnancy and the risk of obesity in granddaughters is stronger for grandmothers with lower cholesterol. The link was not accounted for by obesity in grandmothers' or in mothers' generations.

"We do not yet understand the joint role of cholesterol and PFAS exposure, which we also previously observed in a published study of daughters' breast cancer in our cohort. However, this science supports the idea that environmental chemicals in the blood of pregnant women, in this case, PFASs, could induce obesity at least as far as the grandchild generation in some pregnant women, even when the grandmother and mother do not have obesity themselves," said researcher Barbara A. Cohn, Ph.D., of the Public Health Institute in Berkeley, Calif. This is a unique proof of concept study that will require validation in [experimental research](#) where there can be a [control group](#).

Obesity is correlated with infertility, pregnancy complications, poor infant health and long-term risk of diabetes, heart disease and cancer among other health problems for the [young women](#) themselves. "These findings may help to explain the current U.S. and worldwide increases in

obesity in young adults," Cohn said.

The researchers evaluated women enrolled in the Child Health and Development Studies during the 1960s, when they were pregnant. Their pregnancy and early postpartum blood samples were stored. In the early 2000s, the researchers measured the weight, height and waist circumference of a subset of their daughters and granddaughters. These measurements were used to determine the daughters' and granddaughters' whole body obesity and abdominal obesity—markers for increased risk of diabetes, heart disease and cancer. Mothers also reported their weight at age 30, about the age that they were when pregnant with the granddaughters' generation. The study included 213 sets of grandmothers, mothers and granddaughters (639 women).

The California Department of Toxic Substance Control measured PFASs and other chemicals in the stored blood of the grandmothers that had been collected one to three days after they gave birth, which would correlate with levels during pregnancy. The researchers calculated that a 20-year-old granddaughter's joint risk of abdominal and whole body obesity increased 53% with a doubling of PFAS [blood levels](#) in her grandmother, when her [grandmother](#) also had lower cholesterol (bottom 25%). This translated to an estimated 2.3-fold increase in the joint risk of abdominal and whole-body obesity for [women](#) whose grandmothers were in the top 25% of PFASs exposure compared to the bottom 25% of PFASs exposure in this group.

"This information can eventually be used to guide public policy, prioritize PFAS clean up and advise [pregnant women](#) on reducing exposure," Cohn said. "Findings should stimulate experimental studies for confirmation of causality and discovery of how PFASs exposure in utero could cause granddaughters' [obesity](#)."

Provided by The Endocrine Society

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