

Low vitamin D levels in pregnancy associated with lower birth weights, study finds

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Women deficient in vitamin D early in their pregnancies are more likely to deliver babies with lower birth weights, University of Pittsburgh Graduate School of Public Health research reveals.

The study, funded by the National Institutes of Health, will be reported in the January print edition of the *Journal of Clinical Endocrinology & Metabolism* and is now available online.

"A mother's vitamin D level early in pregnancy may impact the growth of her baby later in pregnancy," said lead author Alison Gernand, Ph.D., M.P.H., R.D., post-doctoral associate in Pitt Public Health's Department of Epidemiology. "Also, if the mother was deficient in vitamin D during the first trimester, her baby had twice the risk of suffering from growth restriction in utero."

Dr. Gernand and her co-authors discovered that mothers with levels of vitamin D in their blood of less than 0.015 parts per million (37.5 nmol/L) in their first 26 weeks of pregnancy delivered [babies](#) who weighed an average of 46 grams less than their peers. Only full-term babies – those delivered between 37 and 42 weeks of pregnancy – were included in the study.

In addition, women who were vitamin D deficient in the first trimester of pregnancy – 14 weeks or less – were twice as likely to have babies who fell in the lower 10th percentile for weight when compared to other full-term babies born in the same week of [pregnancy](#), a condition known

as "small for gestational age."

Babies born small for gestational age are at five to 10 times greater risk for death in their first month and have a higher risk of chronic diseases, such as heart disease, hypertension and type 2 diabetes, later in life.

"This is one of the largest studies to examine a mother's vitamin D levels and their relationship with birth weights," said senior author Lisa M. Bodnar, Ph.D., M.P.H., R.D., assistant professor in Pitt Public Health's Department of Epidemiology. "It shows that clinical trials to determine if you can improve birth weights by giving women of reproductive age vitamin D supplements may be warranted."

Vitamin D is unique in that our bodies can make it from sunlight, though it also is in fortified foods, such as dairy products and breakfast cereals, and can be taken as a supplement. People with darker skin are more likely to be deficient in vitamin D. Applying the same conservative standard used in this study, researchers have found that nearly half of the black women and about 5 percent of the white women in the United States are vitamin D deficient.

The Pitt Public Health study used a random sample of 2,146 pregnant women who participated in the Collaborative Perinatal Project, which was conducted in 12 U.S. medical centers from 1959 to 1965. The blood samples collected by the project were well-preserved and able to be tested for vitamin D levels half a century later.

"Although the blood samples were in remarkably good condition, it would be beneficial to repeat our study in a modern sample," Dr. Bodnar said. "Today women smoke less, weigh more, have less sun-exposure and get more vitamin D in their foods – all things that could impact their vitamin D levels and babies' birth weights."

The researchers report that maternal [vitamin D](#) deficiency could cause low birth weight by impeding the typical increase in calcium absorption by pregnant [women](#), which could reduce fetal bone growth. It also could lead to a decrease in the hormones necessary to produce the glucose and fatty acids that provide for fetal energy needs.

Provided by University of Pittsburgh Schools of the Health Sciences

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