

High pregnancy weight gain tied to higher risk of death in the following decades

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Pregnant people who gained more than the now-recommended amount of weight had a higher risk of death from heart disease or diabetes in the decades that followed, according to new analysis of 50 years of data

published in *The Lancet* and led by researchers from the Perelman School of Medicine at the University of Pennsylvania.

The group studied a large national data set that stretched from when a person gave birth through the next five decades, assessing [mortality rates](#) to show the potential long-term effects of [weight gain](#) in pregnancy. Higher risk of [death](#) was found for all [weight](#) groups studied—including those defined as underweight, [normal weight](#), or overweight prior to their pregnancies—but no increase in risk was uncovered among those who had been obese.

"We hope that this work leads to greater efforts to identify new, effective, and safe ways to support pregnant people in achieving a healthy weight gain," said the study's lead author, Stefanie Hinkle, Ph.D., an assistant professor of Epidemiology and Obstetrics and Gynecology at Penn.

"We showed that gaining weight during pregnancy within the current guidelines may protect against possible negative impacts much later in life, and this builds upon evidence of the short-term benefits for both maternal health and the health of the baby."

As in their previous work showing links between complications in pregnancy and [higher death rates in the following years](#), Hinkle and her colleagues—who included members of Penn's departments of Biostatistics, Epidemiology and Informatics, and Obstetrics and Gynecology, as well as the Intramural Research Program of the National Institute of Child Health and Human Development—examined data from the Collaborative Perinatal Project.

This project catalogued data from a racially diverse cohort of people who gave birth in the 1950s or 1960s and linked their records to mortality data that ran through 2016, approximately 50 years later. The

researchers analyzed information from more than 45,000 people that included their [body mass indices \(BMI\)](#), weight changes over pregnancy, and compared these data to modern recommendations.

Those numbers were then linked first to deaths of any cause, then to deaths by cardiovascular- or diabetes-related causes.

Modern recommendations for weight gain during pregnancy were set in 2009 and are linked directly to a person's weight at the start of their pregnancy. They [range from 28 to 40 pounds for people considered "underweight" by BMI standards to 11 to 20 pounds for those considered "obese"](#). In the present day, almost half of those who are pregnant gain more weight than recommended.

Approximately 39 percent of the people in the cohort had died by 2016, and the death rate increased in correlation with pre-pregnancy BMI—those with the lowest BMI died at a lower rate than those with the highest BMI.

Among those who were "underweight" before pregnancy but gained more than the (now) recommended amount of weight, the risk of death related to [heart disease](#) climbed by 84 percent. Among those considered to be of "normal" weight before their pregnancy (which was roughly two-thirds of the cohort), all-cause mortality rose by nine percent when they gained more weight than recommended, with their risk of heart disease-related death climbing by 20 percent.

Finally, those considered "overweight" had a 12 percent increased risk of dying if they gained more weight than is now recommended, with a 12 percent increase in their risk of diabetes-related death.

The study found no correlation between high weight gain during pregnancy and subsequent deaths among those in the obese range. While

their study wasn't designed to look into that specific point, Hinkle said that it's possible this group's already-elevated death rate could have had a bearing on this finding.

Weight gain during pregnancy doesn't happen in a vacuum, as health care access, nutrition, and stress can all play a significant factor in it. But now that they have a better picture of the long-term risks associated with unhealthy gains, Hinkle and her colleagues hope to find more that will help address the issue.

"We are committed to delving deeper into the various factors that can affect pregnant individuals' ability to achieve healthy weight gain during [pregnancy](#)," Hinkle said. "Our team is dedicated to exploring the social, structural, biological, and individual aspects that play a role in this process."

More information: Stefanie N Hinkle et al, Gestational weight change in a diverse pregnancy cohort and mortality over 50 years: a prospective observational cohort study, *The Lancet* (2023). DOI: 10.1016/S0140-6736(23)01517-9 , [dx.doi.org/10.1016/S0140-6736\(23\)01517-9](https://doi.org/10.1016/S0140-6736(23)01517-9)

Provided by Perelman School of Medicine at the University of Pennsylvania

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