

Early pregnancy weight gain tied to fetal fat buildup

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Fetuses of pregnant people who gained excess weight in the first trimester of pregnancy show signs of excess fat distribution in the upper

arm and in the abdomen, according to a study by researchers at the National Institutes of Health. These findings may inform efforts to prevent excessive weight gain early in life, a risk factor for adult obesity and related conditions, such as heart disease, high blood pressure and diabetes.

The [study](#), conducted by researchers at NIH's Eunice Kennedy Shriver National Institute of Child Health and Human Development and other institutions, appears in the *American Journal of Clinical Nutrition*. The authors analyzed data from an earlier study of more than 2,600 singleton pregnancies, which included information on maternal weight before and during pregnancy and three-dimensional (3D) ultrasound scans (up to five) throughout pregnancy.

The authors found that pregnant people with excessive weight gain—defined as more than 2 kilograms (about 4.4 pounds) in the first trimester—had fetuses with larger abdominal circumference and abdominal area and larger fetal arm fat thickness, when compared to pregnant people with adequate weight gain. Fetuses from the excessive weight gain group continued to have greater arm thickness and abdominal measurements through the end of pregnancy, even when weight gain was not considered excessive during the second and third trimesters.

In contrast, most previous studies have not examined fetal 3D measures during pregnancy and have only linked total weight gain across pregnancy, not just in the first trimester, with birthweight.

The authors wrote that their findings suggest that the timing of weight gain, instead of total weight gain, could be important for developing efforts to prevent excess fetal size and reduce the risk of [heart disease](#) and other conditions later in life.

More information: Kathryn A Wagner et al, Relationship between gestational weight gain with fetal body composition and organ volumes in the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) Fetal Dimensional Study: a prospective pregnancy cohort, *The American Journal of Clinical Nutrition* (2025). DOI: [10.1016/j.ajcnut.2024.12.007](https://doi.org/10.1016/j.ajcnut.2024.12.007)

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