

# Appetite-regulating hormone levels in breast milk vary by mother's weight

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Nearly 20 percent of children and adolescents and 14 percent of toddlers in the United States are obese. One contributing factor, among many possibilities, may be what a baby eats during their critical first six months of life and how it affects their continued growth. Ideally, breast milk is their only food during this critical stage.

Given the importance of [breast milk](#), School of Public Health Professor Ellen Demerath has been conducting the MILk study, which analyzes breast [milk](#)'s complex composition and tracks the ways it relates to growth and [weight gain](#).

New findings from the ongoing study, which measured the levels of appetite-regulating hormones in the milk of women who had varying [weight status](#) before, during and after pregnancy, were recently published in the journal Obesity. Demerath looked at appetite-regulating hormones in breast milk because previous research suggests that high levels of some types of hormones may interfere with the growth rate of children during their early months.

To measure the relationship between weight and

hormone levels, the study team collected health record weight data and milk samples from 135 exclusively breastfeeding women participating in the long-term study.

The researchers measured three particular hormones in the milk:

- leptin, an [appetite suppressant](#);
- insulin, which suppresses eating as well as controls sugars entering body tissues;
- adiponectin, a hormone that has a role in appetite regulation and limits inflammation in the body.

The study found:

- obese mothers had elevated levels of leptin and insulin and lower amounts of adiponectin in their milk;
- leptin milk levels were higher for women with greater weight gain during pregnancy and decreased for mothers who lost weight postpartum.

"Breast milk is complicated, and through this new research, we found its composition really does differ and it depends to some extent on the mom's weight status," says Demerath.

According to Demerath, it's much too early to speculate what the [hormone](#) levels mean for babies and their risk for becoming obese.

"We're very early in the understanding of how breast milk works and differs among people," says Demerath. "It could be that the [hormone levels](#) we found in [obese mothers](#) are beneficial to the baby. Also, the main risk may have nothing to do with the mom's weight status and could be driven by other factors, such as the mother's diet quality."

Demerath says the next step in the investigation is to follow the babies who drink the milk by

measuring the amounts of hormones they consume and tracking how that relates to their growth and weight gain. She hopes to secure funding to follow the children up to age five when they start choosing food largely on their own.

Provided by University of Minnesota

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