

# Obesity may affect puberty timing and hormones in girls

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Puberty looks different, in terms of both reproductive hormones and breast maturation, in girls with excess total body fat, according to a new study published in the Endocrine Society's *Journal of Clinical Endocrinology & Metabolism*.

Previous studies found that girls with obesity start puberty and experience their first menstrual period earlier than girls with normal weight. It is unknown if excess body fat can alter not only the timing of puberty, but also a girl's reproductive hormone levels and development of reproductive organs such as the breasts, ovaries and uterus.

"We found that in mid- to late puberty, girls with greater total body fat demonstrated higher levels of some reproductive hormones including follicle-stimulating hormone (FSH), inhibin B and male-like hormones such as testosterone. In some girls with higher total body fat, higher testosterone levels were associated with irregular menstrual cycles, acne and excess body hair," said study author Natalie D. Shaw, M.D., of the National Institute of Environmental Health Sciences (NIEHS), part of the National Institutes of Health (NIH) in Durham,

N.C. "In late puberty, girls with greater body fat also showed delayed [breast](#) maturation, as determined by breast ultrasound, and earlier menarche. There were no differences in maturation of the ovaries or uterus as a function of body fat."

The researchers studied 90 girls between 8 and 15 years old (36 with obesity, 54 with normal weight) over the course of four years. They calculated total body fat using dual-energy X-ray absorptiometry (known as a DXA scan), tracked puberty using Tanner staging, conducted breast and pelvic ultrasounds, measured hormones levels in blood samples and recorded each girl's age at her first period. The researchers found that girls with higher total body fat had differences in reproductive [hormone](#) levels, developed mature breasts more slowly and got their first period earlier than [girls](#) with lower total body fat.

"The long-term consequences of these differences in [puberty](#) markers deserves further study," Shaw said.

**More information:** Madison T Ortega et al. Longitudinal investigation of pubertal milestones and hormones as a function of body fat in girls. *The Journal of Clinical Endocrinology & Metabolism*. [doi.org/10.1210/clinem/dgab092](https://doi.org/10.1210/clinem/dgab092)

Provided by The Endocrine Society

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