

# Obese children have higher stress hormone levels than normal-weight peers

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Obese children naturally produce higher levels of a key stress hormone than their normal weight peers, according to new research accepted for publication in The Endocrine Society's *Journal of Clinical Endocrinology & Metabolism*.

The body produces the hormone cortisol when a person experiences stress. When a person faces frequent stress, cortisol and other [stress hormones](#) build up in the blood and, over time, can cause serious health problems. This study measured cortisol in scalp hair, which reflects long-term exposure and has been proposed to be a biomarker for stress. The study is the first to show [obese children](#) have chronically elevated levels of cortisol.

"We were surprised to find obese children, as young as age 8, already had elevated cortisol levels," said one of the study's authors, Erica van den Akker, MD, PhD, of Erasmus MC-Sophia Children's Hospital in Rotterdam, The Netherlands. "By analyzing children's scalp hair, we were able to confirm high cortisol levels persisted over time."

The observational case-control study analyzed hair samples from 20 obese children and 20 normal weight children to measure long-term [cortisol levels](#). Each group included 15 girls and 5 boys between the ages of 8 and 12.

Obese subjects had an average cortisol concentration of 25 pg/mg in their scalp hair, compared to an average concentration of 17 pg/mg in the normal weight group. The hormone concentrations found in hair reflect [cortisol](#) exposure over the course of about one month.

"Because this study took an observational approach, more research will determine the cause of this phenomenon," van den Akker said. "We do not know whether obese children actually experience more psychological stress or if their bodies handle stress hormones differently."

Answering these key questions will improve our understanding of childhood obesity and may change the way we treat it."

**More information:** The study, "Increased Scalp Hair Cortisol Concentrations in Obese Children," was published online, ahead of print.

Provided by The Endocrine Society

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