

# Different fat types can help or hinder obese girls' bone health

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According to a new study accepted for publication in The Endocrine Society's *Journal of Clinical Endocrinology & Metabolism* (JCEM), obese teenage girls with a greater ratio of visceral fat (fat around internal organs) to subcutaneous fat (fat found just beneath the skin) are likely to have lower bone density than peers with a lower ratio of visceral to subcutaneous fat.

"Visceral [fat](#) is known to increase the risk of diabetes and heart disease in obese people," said Madhusmita Misra, MD, of Massachusetts General Hospital and senior author of the study. "Our study suggests that visceral fat may also have an impact on bone health. This finding is particularly relevant given the rising prevalence of obesity and recent studies suggesting a higher risk of fractures in some obese individuals."

In this study, researchers examined 30 adolescent girls (15 obese/15 normal weight) between the ages of 12 and 18 years. After measuring weight and height, researchers used magnetic resonance imaging (MRI) to measure subcutaneous and visceral fat tissue and dual energy x-ray absorptiometry (DXA) to assess bone density at the spine, hip and whole body. They found that subcutaneous fat and visceral fat had reciprocal associations with [bone density](#) measures, with subcutaneous fat demonstrating positive associations and [visceral fat](#) demonstrating inverse associations.

"We do not yet fully understand the chemical mediators of the associations between regional fat and [bone health](#)," said Misra. "It is

possible that inflammatory cytokines, types of signaling molecules used in cellular communication, or hormones like adiponectin or leptin are potential mediators of these associations between fat and bone, but further studies are needed to determine their true impact on bone metabolism."

**More information:** The article, "Visceral Fat is a Negative Predictor of Bone Density Measures in Obese Adolescent Girls," will appear in the March 2010 issue of JCEM.

Provided by The Endocrine Society

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