

## ADIPOKINES AND BONE HEALTH IN HISPANIC CHILDREN

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**Keywords:** Pediatrics, Adipocytokine Dysregulation, BMC, BMD

**Background:** Leptin and adiponectin are adipocytokines with important metabolic functions. Leptin to adiponectin ratio is a marker of adipose tissue dysfunction which is associated with insulin resistance and cardiometabolic risk. We previously reported a negative effect of adiposity on bone health. In this analysis, we examined the relationship of adipokines to bone mass in a large cohort of Hispanic youth. We hypothesized that adipocytokine dysregulation in childhood may contribute to adverse bone health in children with obesity.

**Materials/Methods:** We studied 501 (237 males and 264 females) children and adolescents from the Viva la Familia Study. They were all pubertal; mean age (SD) 14.1 (2.5) years; 27% were normal weight (NW), 20% overweight (OW) and 53% obese (OB). They underwent measurement of body composition, total body less head bone mineral content (BMC) and density (BMD) by DXA scan; fasting leptin and adiponectin. The leptin to adiponectin ratio was calculated.

**Results:** Leptin concentration and leptin to adiponectin ratio were higher in OW and OB compared to NW ( $p < .001$ ) whereas adiponectin was lower in OW and OB compared to NW ( $p < .001$ ). After adjusting for sex, age, Tanner stage and lean mass, BMC was inversely related to leptin ( $r = -0.15$ ,  $p = .001$ ) and leptin to adiponectin ratio ( $r = -0.20$ ,  $p < .001$ ) but positively related to adiponectin ( $r = 0.12$ ,  $p = .007$ ). Similar relationships were found for BMD. In a regression model with BMC as the dependent variable, independent of sex, age, Tanner stage, lean mass and fat mass, leptin to adiponectin ratio negatively contributed ( $\beta = -0.060$ ,  $p = .002$ ) to the variance of BMC ( $R^2 = 0.877$ ,  $p < .001$ ). Similar findings were seen with BMD as the dependent variable.

**Conclusions:** Adipose tissue dysfunction has a negative relationship with BMC and BMD. This suggests that adipokine dysregulation may influence bone health in children.

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