

## INFLUENCE OF IN UTERO AND CHILDHOOD LEAD EXPOSURE ON BODY MASS INDEX AND WAIST CIRCUMFERENCE AT AGES 7-15 YR

**Karen E. Peterson**, *University of Michigan School of Public Health, United States*

**Kat Weber**, *University of Michigan School of Public Health, United States*

**Brisa N. Sánchez**, *University of Michigan School of Public Health, United States*

**Myriam Afeiche**, *University of Michigan School of Public Health, United States*

**Adrienne Ettinger**, *Yale University School of Public Health, United States*

**Lourdes Schnaas**, *Instituto de Perinatología, México*

**David Cantonwine**, *University of Michigan School of Public Health, United States*

**Adrianna Mercado-García**, *Instituto Nacional de Salud Pública, México*

**Mauricio Hernández-Avila**, *Secretaría de Salud, Mexico*

**Howard Hu**, *University of Michigan School of Public Health, United States*

**Martha M. Téllez-Rojo**, *Instituto Nacional de Salud Pública, México*

**Background and Aims.** Lead exposure in pregnancy has been negatively associated with weight at birth and during preschool years, but little is known about longer term effects on physical growth. We examined the association of *in utero*, early childhood and concurrent lead exposure with indices of fat mass and distribution during pre- and adolescence.

**Methods.** Among 673 mother-child pairs (325 females, 348 males), we estimated the effect of prenatal and early life lead exposure on body mass index (BMI) and waist circumference using separate multivariable linear regression models stratified by sex, adjusting for potential confounders (current child age and maternal BMI and maternal years of education at baseline).

**Results.** Mean $\pm$ SD lead exposure levels were: maternal patella, 11.5 $\pm$ 12.1• g/g, and tibia, 9.7 $\pm$ 10.0• g/g, bone lead; log<sub>e</sub>-umbilical cord blood lead (• g/dL), 1.52 $\pm$ 0.65; cumulative log<sub>e</sub>-blood lead (• g/dL) from 1 to 4 years (6.52 $\pm$ 1.86); log<sub>e</sub>-current blood lead (• g/dL), 0.94 $\pm$ 0.57. No measure of lead exposure was associated with BMI or waist circumference in boys or girls aged 7-15 yr. Mean child age (yr) was 10.2  $\pm$ 2.5; mean BMI was 19.7 $\pm$ 4.0 and waist circumference (cm) 68.5  $\pm$  11.4; mean current maternal BMI was 28.4 $\pm$ 5.0. Each one unit increment in maternal BMI was associated with a 0.2 higher BMI in children ( $p < 0.0001$ ), and was associated with a  $\geq 0.4$  cm larger waist circumference in boys and in girls ( $p \leq 0.001$ ), adjusted for each lead measure and other covariates.

**Conclusions.** Lead exposure *in utero* and in childhood did not appear to influence indices of weight status or fat distribution in pre- and adolescent Mexico City boys and girls. Further research should consider more proximal behavioral and environmental determinants of BMI and waist circumference and examine the long term effects of early lead exposure on linear growth.