

EXPOSURE TO BISPHENOL A DURING PREGNANCY AND MATERNAL AND NEONATAL THYROID HORMONE LEVELS

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Background and Aims: Bisphenol A (BPA) is widely used in the manufacture of polycarbonate bottles, food packaging, can linings, and dental sealants. High detection frequencies in numerous environmental and human specimens indicate that BPA is a widespread contaminant. Animal and *in vitro* studies suggest that BPA may disrupt thyroid hormone (TH) but little human data are available, particularly in pregnant women and neonates. Normal thyroid function during these critical developmental periods is essential for normal brain development. Our aim was thus to determine whether maternal exposure to BPA is related to thyroid hormone levels in pregnant women and neonates.

Methods: We measured BPA in urine samples collected during the first and second half of pregnancy in women participating in the Center for the Health Assessment of Mothers and Children of Salinas (CHAMACOS). Pregnant women who were ≥ 18 years, < 20 weeks gestation, English or Spanish speaking, and qualified for Medicaid (health insurance for low-income families) were eligible for participation in the study. Free thyroxine (T4), total T4 and thyroid-stimulating hormone (TSH) was measured in 339 maternal serum samples obtained at ~ 27 weeks' gestation. Neonatal TSH levels were abstracted from medical records ($n=371$).

Results: The median BPA urinary concentration was lower in CHAMACOS women (1.1 $\mu\text{g/L}$) than in the general U.S. population (2.8 $\mu\text{g/L}$). Preliminary analyses suggest that every 10-fold increase in maternal BPA urinary concentration in the second, but not the first, half of pregnancy was associated with a 0.5 $\mu\text{g/dL}$ decrease in total T4 (95%CI=-1.0, -0.1) after controlling for confounders. Associations were stronger when BPA was measured closer in time to total T4. BPA urinary concentrations were not associated with maternal free T4 or TSH, or with neonatal TSH.

Conclusion: Maternal exposure to BPA was inversely associated with total T4 during pregnancy. Findings may have implications for fetal brain development.