MATERNAL LEAD LEVELS AT ONE-MONTH POSTPARTUM IN RELATION TO DIETARY FOOD GROUP INTAKE

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Background and Aims: Increasing evidence suggests that dietary intake of fiber and micronutrients such as calcium, iron and vitamin C may interact with lead absorption, deposition, and excretion; however, there is limited information on the association with specific food groups so we assessed relationships between their intake over the course of pregnancy and lead levels in blood, bone, and breast milk at one-month postpartum in a cohort of 613 lactating women in Mexico City.

Methods: Maternal dietary intake was assessed using a semi-quantitative food frequency questionnaire of 120 foods that were grouped into 8 groups: dairy products, legumes, fruits and vegetables, whole grain cereals, refined cereals, all-meats, fats and oils and typical Mexican foods. Blood and breast milk were analyzed for lead by ICP-MS and maternal bone lead was estimated by K-x-ray fluorescence (KXRF).

Results: In a multivariate linear regression model using log-transformed blood and breast milk lead, women in the highest (v. lowest) tertile of intake of whole grain cereals had 0.10□g/dL lower blood lead levels (95% CI: -0.19, -0.01). Women in the highest (v. lowest) tertile intake of fruit and vegetables had lower lead levels in breast milk and tibia bone: -0.21 □g/L (95% CI: -0.42, 0.007) and -1.05□g/g (95% CI: -1.97, -0.12), respectively. Results were adjusted for parity, exclusive or partial breastfeeding, current use of lead-glazed ceramics, hemoglobin, body mass index, dietary energy intake, years of living in Mexico City, education and number of previous pregnancies. We found no association with patella lead levels.

Conclusions: Dietary fiber in whole grain cereals may inhibit lead absorption. The lower lead levels associated with higher intake of fruits and vegetables may be related to decreased absorption and/or the impact of Vitamin C, which has been previously reported to increase excretion of lead by acting as a natural chelating agent.