

Dietary and Supplemental Iodine Intake and Urinary Iodine Concentration in a Large Pregnancy Cohort in the United States

Adrienne Griebel-Thompson, Scott Sands, Lynn Chollet-Hinton, Danielle Christifano, Debra Sullivan, Holly Hull, and Susan Carlson

University of Kansas Medical Center

Objectives: The EAR and RDA for iodine (I) intake in pregnancy are 160 and 220 $\mu\text{g}/\text{d}$, respectively; however, dietary I intake by United States (US) pregnant women is unknown. Several professional organizations have recommended a supplement of 150 $\mu\text{g}/\text{d}$ during pregnancy, though, the current use of prenatal supplements with I is also unknown. Our objective was to determine I intake from diet and supplements and relate I intake to I status, measured by urinary I concentration (UIC).

Methods: Pregnant women ($n = 966$) were interviewed about their dietary intake by the Diet History Questionnaire 2.0 or multiple 24-hour recalls at baseline and their dietary I intake was estimated using the USDA, FDA and ODS-NIH Database for the Iodine Content of Common Foods (ICCF). Participants were interviewed monthly until delivery to assess I intake from prenatal supplements. Urine samples were collected between 12–20 weeks of gestation, and UIC was measured by the modified Sandell-Kolthoff reaction. A chi-square

test compared groups with insufficient and adequate I status to the proportion who met the EAR for I intake.

Results: The group median intake of I from diet was below the EAR (108.8 $\mu\text{g}/\text{d}$) however, median intake increased to 188.5 $\mu\text{g}/\text{day}$ when supplemental I was included. Seventy-three % of participants (707/966) had a dietary intake below the EAR and 45% (436/966) remained below the EAR after including supplemental I. The group median UIC of 154.2 $\mu\text{g}/\text{L}$ indicated a population with marginally adequate I status by WHO standards. Almost half (48%) had a UIC considered to be I insufficient ($\leq 150 \mu\text{g}/\text{L}$) by WHO. Although slightly more than half (55%, 529/966) were taking a supplement containing I, only 27% (259/966) were taking the recommended 150 $\mu\text{g}/\text{d}$. Iodine status was significantly associated with EAR intake, with 52.1% (227/436) of those with an intake below the EAR being I insufficient (UIC $\leq 150 \mu\text{g}/\text{L}$) compared to 44.7% (237/530) of those with an I intake above the EAR ($p = 0.0229$).

Conclusions: While consuming a prenatal supplement with I improved the proportion of participants with an intake above the EAR, nearly 45% of the group who consumed more than the EAR had insufficient I status.

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