Folate and Vitamin B12 Status in Women of Reproductive Age in Rural Areas in Haryana, Northern India (P10-117-19)

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Objectives: To conduct a household and biomarker survey to assess the baseline prevalence of folate deficiency and insufficiency and vitamin B12 deficiency in women of reproductive age prior to the start of a wheat flour fortification program in the Ambala District in Haryana, India.

Methods: A multistage cluster probability household and biomarker survey was conducted. Participants were women of reproductive age (18–49 y) who were not pregnant and resided in rural areas of two subdistricts in Ambala District in Haryana. Venous blood samples were collected among 866 women. Plasma, serum, and red blood cells (RBC) were separated by centrifugation, processed, and stored at <-80°C until analysis. RBC and serum folate concentrations were measured using microbiologic assay and serum vitamin B12 was measured via chemiluminescence. Serum folate deficiency was defined as serum folate <7 nmol/L and RBC folate deficiency and insufficiency were defined as RBC folate <305 nmol/L and <748 nmol/L, respectively. Vitamin B12 deficiency was defined as vitamin B12 <200 pg/mL and vitamin B12 marginal deficiency was defined as vitamin B12 ≥200 and <300 pg/mL.

Results: The geometric mean concentrations for serum folate, RBC folate, and serum vitamin B12 were 12.3 (95% confidence interval [CI]: 11.8, 12.9) nmol/L, 544 (95% CI: 516, 573) nmol/L, and 190 (95% CI: 176, 206) pg/mL, respectively. The prevalence of folate deficiency was 11.3% (95% CI: 9.2, 13.9) for serum folate and 9.7% (95% CI: 7.8, 12.0) for RBC folate, and the prevalence of RBC folate insufficiency was 78.6% (95% CI: 74.8, 82.5). A total of 58.3% (95% CI: 54.2, 62.5) of women were vitamin B12 deficient (<200 pg/mL) and an additional 22.9% (95% CI: 19.7, 26.1) were marginally deficient for vitamin B12.

Conclusions: The magnitude of folate insufficiency and vitamin B12 deficiency in this Northern Indian population is a substantial public health concern. The findings from the survey help establish the baseline for a planned wheat flour fortification program aimed at reducing these micronutrient deficiencies.

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