Abstract


Vitamin B-12 and homocysteine status in a folate-replete population: results from the Canadian Health Measures Survey.

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BACKGROUND: Vitamin B-12 is an important cofactor required for nucleotide and amino acid metabolism. Vitamin B-12 deficiency causes anemia and neurologic abnormalities—a cause for concern for the elderly, who are at increased risk of vitamin B-12 malabsorption. Vitamin B-12 deficiency is also associated with an increased risk of neural tube defects and hyperhomocysteinemia. The metabolism of vitamin B-12 and folate is interdependent, which makes it of public health interest to monitor biomarkers of vitamin B-12, folate, and homocysteine in a folic acid-fortified population.

OBJECTIVE: The objective was to determine the vitamin B-12, folate, and homocysteine status of the Canadian population in the period after folic acid fortification was initiated.

DESIGN: Blood was collected from a nationally representative sample of ~5600 participants aged 6-79 y in the Canadian Health Measures Survey during 2007-2009 and was analyzed for serum vitamin B-12, red blood cell folate, and plasma total homocysteine (tHcy).

RESULTS: A total of 4.6% of Canadians were vitamin B-12 deficient (<148 pmol/L). Folate deficiency (<320 nmol/L) was essentially nonexistent. Obese individuals were less likely to be vitamin B-12 adequate than were individuals with a normal BMI. A total of 94.9% of Canadians had a normal tHcy status (≤13 μmol/L), and individuals with normal tHcy were more likely to be vitamin B-12 adequate and to have high folate status (>1090 nmol/L).

CONCLUSIONS: Approximately 5% of Canadians are vitamin B-12 deficient. One percent of adult Canadians have metabolic vitamin B-12 deficiency, as evidenced by combined vitamin B-12 deficiency and high tHcy status. In a folate-replete population, vitamin B-12 is a major determinant of tHcy.

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