

Folate and vitamin B₁₂ status in European adolescents: associations with gender, age, and maturity

by

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Aim: To examine the association between folate and vitamin B₁₂ status with gender, age, and maturity in European adolescents.

Methods: Plasma folate, red blood cell (RBC) folate, cobalamin, and holo-transcobalamin (competitive immunoassays, CVs: intraassay 5-11%, interassay 8-14%) were measured in 1097 adolescents (53% ♀, 14.9±1.2 years) participating in the multicenter cross-sectional HELENA study (Healthy Lifestyle in Europe by Nutrition in Adolescence). To check if vitamin levels are associated with gender, age, and maturity (Tanner stages) univariate analyses of variance were done separately for each vitamin parameter.

Results: Number of participants within the age groups (12.5-13.99, 14-14.99, 15-15.99, 16-17.49 years) was similar between genders (X^2 -test, $P>0.05$). In Tanner stages III-V were situated 94% females, but 89% males (X^2 -test, $P=0.006$). Cobalamin levels (♂: 329.1±125.9 vs. ♀: 368.8±155.8 pmol/L) varied between genders (t-test, $P<0.001$), but folate (♂: 18.5±10.4 vs. ♀: 19.0±10.5 nmol/L), RBC folate (♂: 803.9±365.5 vs. ♀: 770.0±315.5 nmol/L) and holo-transcobalamin (♂: 62.1±28.1 vs. ♀: 64.0±35.0 pmol/L) were similar (t-test, $P>0.05$). Age was associated neither with folate nor with vitamin B₁₂ status ($P>0.05$). Instead, maturity was inversely associated with folate ($P=0.018$), RBC folate ($P=0.032$), and holo-transcobalamin ($P=0.024$), however not with cobalamin concentrations ($P>0.05$).

Conclusion: Compared with chronological age, biological maturity seems to be a better predictor of folate and vitamin B₁₂ status within European adolescents participating in the HELENA study.

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