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# Folate and vitamin $B_{12}$ status in a representative sample of Irish adults

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There has been extensive research into the role of folate and vitamin $B_{12}$ in health and disease. In addition to the well-established role of folate in the prevention of neural tube defects (NTD)[(1)], an optimal folate and vitamin $B_{12}$ status may be protective against other diseases such as CVD, certain cancers, cognitive decline and osteoporosis[(2)].

The aim of the present study was to assess folate and vitamin $B_{12}$ status in a sample of Irish adults. Participants who provided a blood sample during the National Adult Nutrition Survey[(3)] were included in this study. Red cell folate (RCF), serum folate and serum vitamin $B_{12}$ (serum $B_{12}$) were measured by microbiological assay. Data were transformed to normalise the distribution of the datasets and statistical significance was assessed using independent samples *t* test and one-way ANOVA with Scheffe *post hoc* test.

| | 18–35 | | 36–50 | | 51–64 | | ≥ 65 | | |
|---|---|---|---|---|---|---|---|---|---|
| Age group (years) | Mean | SD | Mean | SD | Mean | SD | Mean | SD | P |
| **Males** | (*n* 220) | | (*n* 151) | | (*n* 104) | | (*n* 58) | | |
| RCF (nmol/l) | 956 | 361 | 982 | 414 | 998 | 384 | 1028 | 395 | NS |
| Serum folate (nmol/l) | 28.4 | 15.8 | 29.8 | 19.0 | 29.9 | 16.6 | 29.3 | 14.1 | NS |
| Serum $B_{12}$ (pmol/l) | 349[a] | 124 | 318[ab] | 104 | 306[bc] | 125 | 268[c] | 96 | <0.001 |
| **Females** | (*n* 186) | | (*n* 173) | | (*n* 101) | | (*n* 71) | | |
| RCF (nmol/l) | 859[a] | 357 | 917[ab] | 403 | 988[b] | 394 | 1053[b] | 446 | 0.002 |
| Serum folate (nmol/l) | 29.3 | 19.1 | 30.4 | 18.7 | 34.5 | 19.5 | 34.5 | 22.9 | NS |
| Serum $B_{12}$ (pmol/l) | 291 | 127 | 305 | 123 | 304 | 127 | 331 | 127 | NS |

[abc]Different superscript letters indicate significant differences between age groups of the same sex.

Mean concentrations of all biomarkers were within normal ranges for all subgroups. Young men (18–35 years) had higher RCF and serum $B_{12}$ levels compared to women of the same age, while older women (>65 years) had higher serum $B_{12}$ than men of the same age ($P<0.005$). Deficient or borderline RCF levels (<453 nmol/l)[(4)] were most common among women of child-bearing age (10%). Only 1.1% of the population had a borderline deficiency of serum folate (<6.8 nmol/l)[(4)]; however, high levels (>45.3 nmol/)[(4)] were detected in 23% of older men and women (>65 years). Deficient or borderline serum $B_{12}$ levels (<148 pmol/l)[(4)], present in 6% of the total population, were highest among men and women aged 51–64 years (9%).

These findings indicate that the majority of the Irish adult population have an adequate folate and vitamin $B_{12}$ status. However, this work has highlighted some subgroups of the population with suboptimal status including young women and older adults. Future analyses of this sample will examine the contributory factors to suboptimal folate and vitamin $B_{12}$ status including an analysis of dietary intakes.

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