Proceedings of the Nutrition Society (2018), **77 (OCE3)**, E104 doi:10.1017/S0029665118001088

Irish Section Meeting, 20–22 June 2018, Targeted approaches to tackling current nutritional issues

Voluntary fortification is ineffective to maintain the vitamin B12 and folate status of older Irish adults: Evidence from The Irish Longitudinal Study on Ageing (TILDA)

E. Laird[1], A.M. O'Halloran[1], D. Carey[1], D. O'Connor[1], R.A. Kenny[1,2] and A.M. Molloy[2]
[1]*The Irish Longitudinal Study on Ageing, Trinity College Dublin, Ireland, Trinity College Dublin, Ireland and*
[2]*School of Medicine, Trinity College Dublin, Ireland*

Mandatory fortification with folic acid and/or vitamin B12 (B12) is under debate in many countries including Ireland which has a liberal, but voluntary fortification policy. Older adults can be at risk of both deficiency and high folate status though little is known on the actual prevalence and the major predictors. A recent Irish National Survey that previously examined vitamin B12 and folate status was limited to a small number of older adults and had a narrow range of demographic and clinical data[(1)]. Therefore, the aims of this study were (i) to report the B12 and folate status of a large, nationally representative sample of the older Irish population (n > 5,000) and (ii) to investigate the demographic, socio-economic, geographic, seasonal, health and lifestyle determinants of these vitamin concentrations in this population, which is subject to a voluntary, but liberal food fortification policy

The plasma concentration of folate and B12 was measured by microbiological assays in 5,290 community dwelling older Irish adults (aged 50–98 yrs) from The Irish Longitudinal Study on Ageing (TILDA) cohort (Wave 1 data collection, 2009 to 2011. Folate and B12 containing dietary supplements and medications and detailed demographic, geographic and socio-economic factors were assessed by questionnaire. Proportions of folate and B12 deficiency prevalence were generated by season sampled, geographic area and by population characteristics. Linear regression was used to investigate the association between folate and B12 concentration and demographic, geographic, health and lifestyle variables.

The prevalence of deficient or low B12 status (<185 pmol/L) was 12%, while 15% had deficient/low folate status. High folate status (>45 nmol/L) was observed in 8·9% while 3·1% had high B12 status (>601 pmol/L). The largest positive predictor of B12 concentration was self-reported B12 injection and/or supplement use (51·5 (9·4 to 93·6) (coefficient pmol/L; (95% CI); P = 0·016) followed by female gender and geographic location. The largest negative predictor was metformin use (−33·6 (−51·9 to −15·4); P < 0·0001). The largest positive predictor of folate concentration was folic acid supplement use (6·0 (3·0 to 9·0 nmol/L); P < 0·001) followed by gender and statin medications. The largest negative predictor was geographic location (−5·7 (−6·7 to −4·6) P < 0·0001) followed by seasonality and smoking.

Our data (and others previously) indicate that the current policy of voluntary fortification is ineffective at preventing the occurrence of deficiency and low blood folate and B12 status. Serious consideration must now be given to the implementation of mandatory folic acid and B12 fortification. Such a policy would ensure that the requirements of the 'at risk' older adult population are met while also helping to reduce the prevalence of folate responsive neural tube defects (NTDs). The continued delay in consideration of this implementation could put greater than 191,000 and 153,000 older Irish adults at risk of the health consequences of low folate and B12 status, respectively.

1. Hopkins SM, Gibney MJ, Nugent AP, *et al.* (2015) *Am J Clin Nutr* **101**, 1163–1172.