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Dairy intakes in older Irish adults and effects on vitamin micronutrient status: Data from the TUDA study

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Consumption of dairy products has been associated with positive health outcomes including a lower risk of hypertension, improved bone health and a reduction in the risk of type 2 diabetes^(1,2). The suggested dairy intake for health in older adults is three servings per day⁽³⁾ but recent analysis of the National Adult Nutrition Survey (NANS) of older Irish adults (>65 yrs; *n* 226) found the mean daily dairy intake to be only 1.92 servings⁽⁴⁾. These reports are not surprising as the trend to reduce dairy intakes has been substantial in recent years⁽⁵⁾. No studies have investigated the consequences of such declines in the dairy intakes of older adults and the subsequent effects on vitamin micronutrient status within this vulnerable sector of the population.

Participants (*n* 4,317; after excluding those with severe frailty or cognitive impairment - with an MMSE score <25) were from the Trinity Ulster Department of Agriculture (TUDA) ageing cohort, a large study of older Irish adults (aged >60 yrs) designed to investigate gene-nutrient interactions in the development of chronic diseases of ageing. Participants completed a modified food frequency questionnaire (FFQ) on the frequency of consumption of milk, cheese and/or yogurt. The daily intake portion for milk, cheese and yogurt was calculated from the FFQ responses (once per day intake response equaled 1 portion). Blood samples were analysed for vitamin biomarkers as follows: vitamin B12 (total serum cobalamin and holotranscobalamin (holoTC)), folate (red cell folate (RCF) and serum folate), vitamin B2 (erythrocyte glutathione reductase activation coefficient (EGRac)), vitamin B6 (serum pyridoxal phosphate) and vitamin D (serum 25(OH)D). Those receiving supplements for each vitamin were excluded from the analysis.

The mean total reported dairy intake was 1.16 (SD 0.79) portions per day with males consuming significantly fewer total dairy portions compared to females (1.07 vs 1.21 respectively) ($P < 0.05$). There was no significant difference in total daily dairy serving intakes by age decade (60–69, 70–79, >80 yrs). Overall, only 3.5% of the total population (*n* 151) achieved the recommended daily dairy intake of three or more servings per day. A significantly higher proportion of females (4%) compared to males (2.4%) met these dairy requirements ($P = 0.011$) while a significantly higher proportion of males (45.6%) compared to females (35.7%) reported consuming only 0–<1 dairy servings per day ($P < 0.0001$). Blood concentrations of vitamin B12 biomarkers, RCF, vitamin B2 and vitamin B6 were significantly worse in those with the lowest tertile of dairy intake (0–0.71 servings) compared to those in the highest tertile (1.50–4.50 servings) ($P < 0.05$). In a linear regression model examining predictors of nutritional biomarker concentrations, the daily yogurt intake was a significant predictor for concentrations of holoTC, RCF vitamin B2, vitamin B6 and vitamin D.

This study is one of the largest to-date examining daily dairy intakes in older Irish adults, and provide evidence that daily dairy intakes (in particular yogurt) contribute significantly to the nutritional biomarker status of older adults. The majority of participants sampled (~96%) did not meet the recommended guideline intake of three servings of dairy per day. These results suggest that older Irish adults who are already vulnerable to micronutrient inadequacies, are forgoing the nutritional advantages of vitamin-rich dairy products.

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