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Vitamin B₁₂: Is there a need for dietary supplements?
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Background – The Indian dietary pattern is highly influenced by intergenerational religious practices. Some of these dietary practices have resulted in the exclusion of some meat products, which compromise the intake of vital nutrients such as vitamin B₁₂. B₁₂ is only available in animal and yeast products. Previous studies in the Indian population have shown a high B₁₂ deficiency in the presence of a high folate status with undesired metabolic effects in both meat-eating and non-meat-eating populations. B₁₂ and folate are nutrients essential for cell division.

Objective – To establish the presence of B₁₂ deficiency in migrant Indian non-meat-eating preadolescent girls and to investigate dietary and supplementation options for optimising B₁₂ intake in non-meat-eaters.

Design – A cross sectional pilot study was conducted in 12 migrant Indian preadolescent girls (6 non- meat-eating and 6 meat-eating) girls living in Auckland. Seven day dietary intake and biomarkers of B₁₂ status (serum B₁₂ and methylmalonic acid, MMA) were measured. Whole foods that can provide B₁₂ were ranked and compared in cost and composition to B₁₂ supplements available in central Auckland shops.

Outcome – A frank vitamin B₁₂ deficiency was present in two of the six non meat eating participants i.e. serum B₁₂ <170pmol/L, [398±221pmol/L (range 110-870pmol/L), n=12]. Reported intake of B₁₂ was lower in non-meat-eaters compared with meat-eaters (1.8 ± 0.6 vs. 2.5±0.8 µg/day, P = 0.11). Serum folate and intake were adequate in both the groups (27 ± 8 pmol/L, 342 ± 269 µg/day). B₁₂ status was further confirmed using specific biomarker MMA. To provide the daily requirement of 2 µg/day of B₁₂, an adult would need 200 ml of trim milk (0.8 µg), 1 egg (0.98 µg), one teaspoon marmite (0.5 µg) and a slice of reduced fat cheese (0.3 µg). An average supplement per day would cost $0.30 and would provide 37 µg of B₁₂, which is approximately 18 times the daily requirement.

Conclusion – Low B₁₂ status is present in non-meat-eating Indian preadolescents. Selected easily available foods can provide adequate daily B₁₂ for at risk groups. Compared to supplements, whole foods are part of, rather than additional to a balanced diet. If B₁₂ needs cannot be met by diet then supplementation and fortification of some commonly consumed foods should be considered.

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Role of sunlight exposure and food fortification in maintaining vitamin D status in Australian aged care residents
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Background – Vitamin D deficiency is prevalent in aged care residents as access to sunlight is difficult and dietary intake is low because few foods contain vitamin D.

Objective – To determine the contribution of sun exposure and dietary vitamin D intake to vitamin D status in residents in an Australian residential aged care facility.

Design – A group of 83 residents were drawn from a larger study which examined the effect of vitamin D fortified milk supplementation (cholecalciferol 5 µg/100 mL) for six months on nutritional status. Serum 25(OH)D concentrations were measured at baseline and six months. The estimation of personal UV exposure over a period of two days was made using a UV dosimeter.

Outcomes – Baseline serum 25(OH)D concentration, mean (SD) 31.5 (18.0) nmol/L, was positively correlated to UV exposure (r = 0.28, P = 0.0118). Vitamin D from the fortified milk was the major factor contributing to the improvement of vitamin D status (21% of variance, P = 0.0049). Serum 25(OH)D at six months, 47.9 (18.4) nmol/L, was positively related to total vitamin D intake when fortified milk was provided (r = 0.52, P = 0.0003), but not to UV exposure (r = −0.02, P = 0.9185). The mobility level, as expressed as total Activities of Daily Living score, explained about 16% variance of serum 25(OH)D concentration at six months (P = 0.0072).

Conclusions – Results of this study indicate that many Australian care residents are suffering from vitamin D insufficiency/deficiency. Increased exposure to sunlight in combination with vitamin D fortified milk could assist in improving vitamin D status. However it is not clear if the adoption of these strategies will be sufficient to raise serum 25(OH)D to a level high enough to prevent falls and fractures.