



A high prevalence of vitamin D deficiency observed in the Dublin South East Asian population

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Vitamin D deficiency (25(OH) D \leq 30 nmol/L) is a significant global health concern. At far latitudes, non-ethnic population groups from lower latitudes can be at a significantly increased risk of deficiency due to increased skin pigmentation and genetic predisposition. Furthermore, some ethnic lifestyle choices or dietary habits can also increase the risk of deficiency⁽¹⁾. This is of particular concern as low vitamin D status can result in impaired bone health and osteoporosis and potentially imbalanced immune function and other chronic conditions⁽²⁾. The vitamin D status of ethnic minority groups has been examined extensively both in UK and European populations, but to-date, has not been investigated in the Irish context.

The aim of this study was to assess the vitamin D status from a selection of the Dublin population of South East Asian descent. The Asian population in Ireland is the 2nd biggest ethnic group making up 1.6% of the population, ahead of Irish Travellers (0.7%) or Black Irish/Black African (1.2%)⁽³⁾. A search was conducted, using the Biochemistry Department laboratory information system (iSOFT Telepath) of St James's Hospital Dublin, for vitamin D requests by GPs (known only to take patients self-identified as Asian) for participants of South East Asian descent. From 2010–2011, 115 participants were identified while another 86 were identified from the years 2015–2016. Samples for 25(OH)D analysis included total serum 25(OH)D (D2 and D3) concentrations which were quantified by using liquid chromatography–tandem mass spectrometry (API 4000; AB SCIEX) and batch analyzed at St. James's Hospital (which is accredited to ISO 15189 standard). The quality and accuracy of the method were continuously monitored by the use of internal quality controls, participation in the Vitamin D External Quality Assessment Scheme (DEQAS) and the use of the National Institute of Standards and Technology (NIST) 972 vitamin D standard reference material. The respective inter- and intra-assay coefficients of variation were 5.7 and 4.5 %.

Overall the median age was 31 years (age range: 2–64 years) with 59.1% male and the mean 25(OH)D concentration ranged from 10 nmo/l to 108 nmol/l. In 2010–2011, 79.1% of the total sample were vitamin D deficient, with 8.7% sufficient. Females had a significantly higher 25(OH)D concentration than males (22.3 vs 16.3 nmol/L; $P = 0.005$) but both groups had a significant proportion with deficient status (88.2% & 66.0% respectively). In males only, no participant reached the level of vitamin D sufficiency (>50 nmol/L). In 2015–2016, rates of deficiency had halved with 39.5% of the total sample deficient and 33.3% sufficient. Male deficiency rates were still higher compared to females (43.3% vs. 37.5% $P < 0.05$).

For the first time in Ireland, a study has investigated the vitamin D status of the 2nd largest ethnic population group. In the sample of adults and children of South Asian descent from 2011–2012, alarmingly, over 79% were vitamin D deficient, which was over 6 times the deficiency rate for Caucasian Irish adults. This improved in 2015–2016 though is still comparatively high. Given the importance of vitamin D for bone health outcomes, this sub-population could be at a significantly increased risk of rickets, impaired bone metabolism and osteoporosis. Currently, there is no unique vitamin D intake or vitamin D status maintenance guidelines recommended for adults of non-Irish descent. These findings provide useful data to help inform public health policy regarding endemic vitamin D deficiency within the total population.

1. O'Neill CM, Kazantzidis A, Kiely M *et al.* (2016) *J Steroid Biochem Mol Biol* **173**, 245–252.
2. Laird E, Ward M, McSorley M *et al.* (2010) *Nutrients* **7**, 693–724.
3. Central Statistics office, Census 2016 Summary results - Part 1.