

Vitamin D in childhood—high rates of deficiency in a cohort of Irish children

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Vitamin D is essential in the uptake and metabolism of calcium and is intrinsic for bone health. Childhood/adolescence are periods of intensive bone growth, with vitamin D deficiency causing improper bone mineralisation, resulting in rickets. Recent evidence suggests that the prevalence of rickets is increasing globally⁽¹⁾, with levels in the UK the highest seen in five decades⁽²⁾. Vitamin D intakes have been found to be insufficient (<5µg/day) in up to 94% of 600 Irish children age 5–12 years⁽³⁾, with little recent evidence on vitamin D status. The aim is to assess vitamin D status in a sample of children and adolescents (1–18 years) via a cross sectional analysis of GP requested vitamin D samples analysed at St James's Hospital (SJH).

The SJH catchment area (53°N) includes Dublin City, County and Eastern Leinster. 25(OH)D concentrations (measured by LC-MS/MS) of children age 1–17 years (N = 1,269) between 2014–2020 were analysed. Results were analysed with percentage of deficiency (<30 nmol/L) and insufficiency (30–49 nmol/L). This data was stratified by age (<12 years, >12 years), gender and season (Low; Dec-May vs. High; Jun-Nov), and statistically analysed.

Vitamin D deficiency was highly prevalent in this population with 23% <30 nmol/L and more than half (51%) with insufficient vitamin D status (<50 nmol/L). The geometric mean 25(OH)D was 43.81 nmol/L (SD 25.47). Those over 12 years were more likely to be deficient vs. under 12 years (24% vs. 16%, p = 0.033), with girls more likely to be deficient vs. boys (25% vs. 18%, p = 0.003). Deficiency and insufficiency were also more common in low season vs. high season (30% vs 16%, p < 0.001), (32% vs. 23%, p < 0.001, respectively).

Vitamin D deficiency and insufficiency is highly prevalent in this childhood population, with girls, those over 12 years and those assessed in the low vitamin D season most at-risk. These results indicate that low vitamin D status is more common in this childhood cohort versus previously published results in an adult survey of the same population⁽⁴⁾. As such, further analysis is planned to explore factors contributing to VDD in this cohort including location, trends in retesting and over time. Poor vitamin D status is common in a large survey of Irish children age 1–17 years, and as such public health measures, including the consideration of a policy for mandatory fortification, should be activated to address this issue.

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