Dietary intake of vitamin D amongst UK adolescents


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Vitamin D is important during the adolescent bone growth spurt, when ~50% of bone mineral accrual occurs, influencing present and future bone health. Commonly known as the ‘sunshine vitamin’, vitamin D is predominately obtained through cutaneous synthesis after exposure to ultraviolet B (UVB) radiation in sunlight, whilst a smaller percentage is obtained via the diet. However, at northerly latitudes, UVB is scarce during the winter months, and there is little information focusing on the oral vitamin D intake of adolescents. The main objectives of this study were to estimate dietary vitamin D intake in UK white Caucasian adolescents, and to determine whether the values meet the World Health Organisation (WHO) recommendation of 5 µg/day or the more recent Institute of Medicine (IOM) guidance of 15 µg/day. A further aim was to compare adolescent intake with that of previously collected data from an adult white Caucasian sample.

This was a 1 year observational study of 124 healthy white Caucasian adolescents aged 12–15 years recruited from six schools in Greater Manchester. Adolescents completed a daily dietary record of seven vitamin D-containing food categories and intake of supplements for one week in each season and the average daily vitamin D intake data was estimated. The vitamin D content of foodstuffs was determined from the 6th edition of McCance and Widdowson’s The Composition of Foods and from food package labelling. Data were compared with those similarly obtained from the 4-season daily dietary records of an adult sample (20–60 years, n = 109 completed) in Greater Manchester. Adolescents (n = 110 completed) showed little variation in vitamin D intake across the seasons. Their overall median (range) intake was only 1.92 (0.01–22.15) µg/day compared with 3.27 (0.02–27.38) µg/day in adults (P<0.01). As in the adult sample, oily fish was the main food contributor and vitamin D supplements were taken by a minority (25%) of adolescents.

We conclude that dietary vitamin D intake is very low amongst UK white adolescents and does not meet WHO recommendations. It is much lower than specified in the recent IOM guidance for US and Canadian citizens. Sun exposure levels and impact on vitamin D status are under study in this population, while the current data supports that within the adolescent population there is a risk that vitamin D requirements may not be met. This may have consequences for bone mineral accrual and subsequent bone health in later life.