

Plenary 3: The Lifestyle Dilemma

Our modern lifestyle – its effects on vitamin D status and health

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Background – Recent publications from New Zealand national nutrition surveys have reported lower than expected levels of serum 25-hydroxyvitamin D (25OHD), with mean levels being 50 nmol/L in both children and adults. These low levels are primarily the result of a modern lifestyle that is spent mainly indoors, resulting in much reduced sun exposure among modern urban populations compared to the outdoor agrarian lifestyle of our forebears. There is increasing evidence that low vitamin D status increases the risk of a range of chronic diseases, including osteoporosis, cancer, hypertension and diabetes. However, there is uncertainty among health professionals as to the serum 25OHD levels required for optimum health.

Objective – to review the epidemiological evidence on the association between blood 25OHD levels and risk of chronic disease.

Design – evidence from a range of epidemiological study designs, including cohort, nested case-control and cross-sectional studies is reviewed, including The Third National Health and Nutrition Examination Survey (NHANES III), a large cross-sectional survey representative of the general US population carried out in 1988-1994, in which about 19,000 participants had serum 25OHD measurements.

Outcomes – inverse associations exist between serum 25OHD levels and a range of diseases, including colon cancer, bone density, diabetes, hypertension, coronary heart disease and lung function. Disease risk is lowest in people with serum 25OHD levels above 80 nmol/L.

Conclusions – the current definition of vitamin D deficiency based on a blood 25OHD cut-point of 50 nmol/L is not supported by recent epidemiological evidence which suggests that 25OHD levels need to be above 80 nmol/L for optimum health. A range of public health strategies is required to increase vitamin D levels in the general population, including regular safe sun exposure (without getting burnt), fortification of food and increased availability of vitamin D supplements.