

Vitamin D deficiency



Until recently Vitamin D deficiency was thought to be a rare disorder in Australia where sunlight abounds for most of the year.

Vitamin D is a fat-soluble vitamin, which can be found naturally in cod liver oil, oily fish, as an additive in some foods and is produced by the skin when exposed to sunlight.

Land organisms have been producing sunlight-mediated vitamin D for millions of years. Vertebrates evolved from the calcium rich oceans to live on earth. They depended on vitamin D synthesis by the skin for the efficiency of intestinal absorption of scarce sources of dietary calcium.

The diet consumed by human beings is not rich in Vitamin D. It seems that many of us don't get enough sun and our diet is often inadequate to make up the difference. Only a narrow range of foods is a good source of Vitamin D. They include fatty fish, fish oils, eggs and some dairy products. In Australia, only margarine, and a few dairy products are fortified with vitamin D.



It cannot be assumed that dietary fortification is adequate to meet everyone's requirements.

Incidental sunlight is the most important source of Vitamin D. The amount of sunlight, high-energy ultraviolet B light, reaching the skin depends on such things as latitude, season, smog (which reduces penetration of ultraviolet light through the atmosphere) and the actual amount of direct sun exposure. Sun exposure is further modified by clothing and the use of sun protection agents.

Vitamin D deficiency was thought to be a rare disorder in populations living at latitudes where sunlight abounds for most of the year, and for this reason no recommended daily allowance for vitamin D has been established for Australia. Vitamin D is vital for maintaining the body's calcium and phosphorus levels and sustaining a variety of metabolic and physiological functions, including bone health. Deficiency can lead to osteoporosis and an increased risk of vertebral and hip fractures.

Vitamin D deficiency causes rickets in children and osteopenia and osteomalacia in adults, exacerbates osteoporosis, and can lead to muscle weakness and pain.

A number of reports have recently found an alarming increase in the incidence of vitamin D deficiency among the elderly in

residential care and among dark-skinned women who cover most of their body and head for religious reasons. Elderly people at risk include those in hospital, residential care or nursing homes, those with dementia and men with hip fracture. The factors leading to this problem are reduced mobility; limited sunlight exposure, use of sun-protection agents; and, in particular, a reduced ability of aged skin to produce vitamin D from a given dose of ultraviolet B light.

Women who are veiled or have dark skin pigmentation are susceptible to vitamin D deficiency because most clothing effectively absorbs sunlight and increased melanin pigmentation reduces the production of vitamin D in the skin.

As most of the vitamin D in neonates is acquired from maternal transfer, vitamin D deficiency in mothers is likely to have adverse consequences for their infants and children.



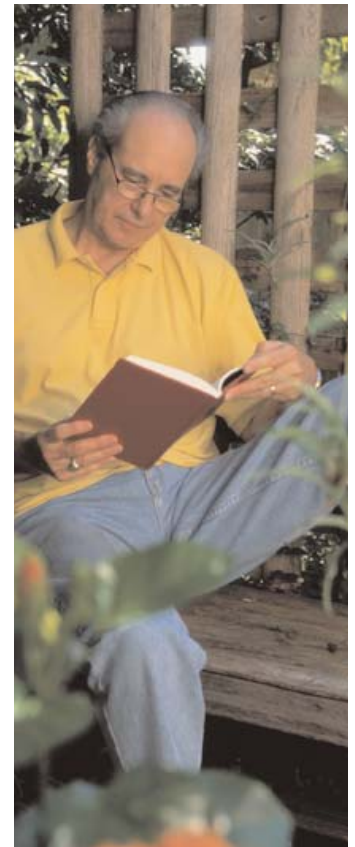
Even in regions where sunlight abounds more attention should be paid to incidental exposure to sunlight as the major source of vitamin D.



Because latitude, season, skin pigmentation, sunscreen use and pollution can greatly influence the skin's production of vitamin D simple recommendations are often difficult. Excessive exposure, particularly between 10am and 2pm in summer months, should be avoided in order to minimize skin damage and the risk of skin cancer.

However, exposure to incidental sunlight for 5-15 minutes 4-6 times a week can reduce the risk of osteoporosis, osteomalacia, muscle weakness and fractures and give a sense of well-being.

With adequate incidental sun exposure supplementation with Vitamin D is unnecessary. However, for those persons unable to get enough sunlight on their skin, for example nursing home residents or where dark skin pigmentation and/or veiling prevents adequate exposure, fortified foods with vitamin D and/or supplementation with oral vitamin D is likely to be required.



Currently in Australia, only those receiving little or no sunlight, such as those in residential care or long-term hospital stays are considered for oral supplements, a consideration that may need to be reassessed.

Source: Osteoporosis Australia ■

