

## Editorial

### Vitamin D Deficiency- An Ignored Epidemic

Vitamin D deficiency is a global health problem. With all the medical advances of the century, *vitamin D deficiency* is still epidemic. Over a billion people worldwide are vitamin D deficient or insufficient.<sup>(1)</sup> Yet no international health organization or governmental body has declared a health emergency to warn the public about the urgent need of achieving sufficient vitamin D blood levels.

Vitamin D, also described as "the Sun Vitamin" is a steroid with hormone like activity. It regulates the functions of over 200 genes and is essential for growth and development. There are two forms of vitamin D. Vitamin D2 (ergocalciferol) and vitamin D3 (cholecalciferol).<sup>(2)</sup> Vitamin D status depends on the production of vitamin D<sub>3</sub> in the skin under the influence of ultraviolet radiation from sun and vitamin D intake through diet or vitamin D supplements. Usually 50 to 90% of vitamin D is produced by sunshine exposure of skin and the remainder comes from the diet. Natural diet, most human consume, contain little vitamin D. Traditionally the human vitamin D system begins in the skin, not in the mouth. However, important sources of vitamin D are egg yolk, fatty fish, fortified dairy products and beef liver.<sup>(3)</sup>

Vitamin D3 deficiency can result in obesity, diabetes, hypertension, depression, fibromyalgia, chronic fatigue syndrome, osteoporosis and neuro-degenerative diseases including Alzheimer's disease. Vitamin D deficiency may even contribute to the development of cancers, especially breast, prostate, and colon cancers. *Current research indicates vitamin D deficiency plays a role in causing seventeen varieties of different cancers as well as heart disease, stroke, autoimmune diseases, birth defects, and periodontal disease.*<sup>(4)</sup> Vitamin D3 is believed to play a role in controlling the immune system (possibly reducing one's risk of cancers and autoimmune diseases), increasing neuromuscular function and improving mood, protecting the brain against toxic chemicals, and potentially reducing pain.<sup>(5)</sup>

Serum 25-hydroxyvitamin D [25 (OH) D] concentration is the parameter of choice for the assessment of vitamin D status. Recently, many studies have used 30 ng/mL as a cut-off value and most experts now recommend the normal level of 25-hydroxyvitamin D (25OHD) to be  $\geq 30$  ng/mL. Vitamin D insufficiency is defined when the levels are between 20-29 ng/mL and at levels of  $\leq 20$  ng/mL the patient is considered vitamin D deficient.<sup>(6)</sup>

Exposure to sunshine each day helps human body to manufacture the required amount of vitamin D. However, due to fear of developing skin cancer most people avoid the sun exposure. To prevent vitamin D deficiency, one should spend 15 to 20 minutes daily in the sunshine with 40% of the skin surface exposed. High concentration of melanin in the skin slows the production of vitamin D; similarly aging greatly reduces skin production of vitamin D. Use of sunblock, common window glass in homes or cars and clothing, all effectively block UVB radiation – even in the summer. People who work indoors, wear extensive clothing, regularly use sunblock, are dark skinned, obese, aged or consciously avoid the sun, are at risk of vitamin D deficiency.

Despite the abundance of sunshine in the Middle East allowing vitamin D synthesis all year round, the region registers some of the lowest levels of vitamin D and the highest rates of hypovitaminosis D worldwide. This major public health problem affects individuals across all life stages, especially pregnant women, neonates, infants, children and the elderly. Furthermore, while rickets is almost eradicated from developed countries, it is still reported in several Middle East countries. These observations can be explained by limited sun exposure due to cultural practices, dark skin color, and very hot climate in several countries in the gulf area, along with prolonged breast feeding without vitamin D supplementation, limited outdoor activities, obesity, and lack of government regulation for vitamin D fortification of food, in several if not in all countries.<sup>(7)</sup>

A study carried out recently among young healthy man living in eastern province of Saudi Arabia revealed the prevalence of vitamin D deficiency between 28% to 37%.<sup>(8)</sup> Similarly, other studies conducted in Saudi Arabia on population at high risk reported the vitamin D deficiency to be 50% to 80%.<sup>(9)</sup>

Long term strategies to address this deficiency problem should include public education, national health policies for screening and prevention through food fortification, and treatment with vitamin D supplementation. In conclusion vitamin D deficiency is epidemic worldwide, Saudi Arabia and many other sunny countries are no exception. Keeping in mind the consequences of vitamin D deficiency on Saudi population this health issue should be addressed with due attention and concrete steps.

### References

1. Hollick MF, Chen TC. Vitamin D deficiency a worldwide problem with health consequences. *Am J Clin Nutr* 2008; 87:10805-68
2. Lips P. Vitamin D physiology. *Progress in Biophysics and Molecular Biology*. 2006; 92:4-8.
3. Heldenberg D, Tenenbaum G, Weisman Y. Effect of iron on serum 25-hydroxy vitamin D and 24, 25-dihydroxyvitamin D concentration. *Am J Clin Nutr* 1992; 54: 533-536.
4. Calvo MS, Whiting SJ, Barton CN. Vitamin D intake, A global perspective of current status. *J Nutr* 2007; 135: 310-7.
5. Iqbal R, Khan A, Possible causes of vitamin D deficiency. *J Pak Med Asso* 2010, 60(1): 1-2.
6. Sadat Ali M, Al Elq A. Osteoporosis in Saudi Arabia; A pilot study. *Ann Saudi Med* 2006; 26: 450-454
7. Bandeira F, Gris L. Vitamin D deficiency a global perspective. *Arq Bras Endocrinol Metab* 2006; 50/4: 640-646
8. Sadat-Ali M, AlElq A, Al-Turki H, Al-Mulhim F, Al-Ali A. Vitamin D levels in healthy men in eastern Saudi Arabia. *Ann Saudi Med* 2009; 29:378-8
9. Mohammed S, Addae S, Suleiman S, Adzaku F, Annobil S, Kaddoumi O et al. Serum calcium, parathyroid hormone, and vitamin D status in children and young adults with sickle cell disease. *Ann Clin Biochem* 1993; 30: 45-51

**Professor Dr Zahid Naeem**

MBBS, MCPS, DPH, FCPS

Family & Community Medicine Department

College of Medicine, Qassim University, Saudi Arabia

drzahid777@yahoo.com