

Prevalence of Vitamin D Deficiency in Jammu Region

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Abstract

Vitamin D deficiency is a worldwide health problem. This cross sectional one year study was carried among healthy subjects of both sexes without known, thyroid, renal or hepatic disease or malignancy. The 25(OH)D concentrations were measured by competitive radioimmunoassay. The subjects were classified as vitamin D-deficient, or -sufficient on the basis of 25(OH)D concentrations of <30 ng/mL, 30-100 ng/mL respectively, according to recent consensus. Total 702 subjects participated in the study female predominated the study. Vitamin D deficiency was prevalent among 76.39% of the total population. Thus the current study suggest high prevalence of vitamin D deficiency exist in Jammu region among healthy population.

Key Words

Vitamin D deficiency, Diabetes, Chronic diseases , 25(OH)D

Introduction

Vitamin D is an endogenous, naturally occurring, photochemically-produced steroidal molecule with essential functions in systemic homeostasis and physiology, including modulation of calcium metabolism, cell proliferation, cardiovascular dynamics, immune/inflammatory balance, neurologic function, and genetic expression. Vitamin D deficiency is a worldwide health problem that affects not only musculoskeletal health but can affect many chronic diseases such as osteoporosis, cardiovascular disease, hypertension, cancer, depression, epilepsy, type 1 diabetes, insulin resistance, autoimmune disease, migraine, polycystic ovary syndrome, and musculoskeletal pain (1).

There is widespread prevalence of varying degrees (50- 90%) of Vit D deficiency with low dietary calcium intake in Indian population according to various studies published earlier (2). Most of the researchers report a uniformly high prevalence of vitamin D deficiency, in various groups of the population like school children, adolescent, rural girls, pregnant women and postmenopausal women (3-6).

Epidemiologic studies have shown association of vitamin D deficiency and increased risk of chronic diseases, such as cancer, cardiovascular disease, type 2 diabetes, and autoimmune diseases, such as multiple sclerosis and type 1 diabetes mellitus (7). The studies do

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exist from India indicating high prevalence of Vit D deficiency in, however the data is still scanty. Moreover, no epidemiological study exist from this part of the country. Hence, the first study evaluating the prevalence of Vitamin D deficiency in the Jammu region was undertaken. Such regional data will be of immense use for the health care providers to plan health policy for the general population

Material and Methods

This cross sectional one year study was carried among healthy subjects of both sexes without known, thyroid, renal or hepatic disease or malignancy. Patients with history of surgery, hospitalization, or major medical illness within the past one year were excluded from the study. Patients on hormone replacement therapy, glucocorticoids, biophosphonates, teriparatide and other drugs affecting bone metabolism were excluded as well.

Intake of conventional calcium/vitamin D supplements was not considered an exclusion criterion. All subjects were enrolled after taking a written informed voluntary consent.

The 25(OH)D concentrations were measured by competitive radioimmunoassay after acetonitril extraction (DiaSorin, Stillwater, MN; catalog no. 68100E). The minimal detectable limit of the 25(OH)D assay is 1.5 ng/mL. N-tact PTH was measured by immunoradiometric assay (DiaSorin; catalog no. 26100). The minimal detectable limit of the N-tact PTH assay is 0.7 pg/mL. The subjects were classified as vitamin D-deficient, or -sufficient on the basis of 25(OH)D concentrations of <30 ng/mL, 30-100 ng/mL respectively, according to recent consensus (7,8).

Statistical Analysis

The data was categorised in n (%)

Results

The results of the current study are depicted in *table-1*. Total 702 subjects participated in the study female predominated the study. Vitamin D deficiency was prevalent among 76.39% of the total population. Female and advancing age subjects predominated the current study.

Table-1 Showing Demographic Profile of Study Population

N=702
Mean Age of Study Population - 49.96
M:F-184(26.21%):518(73.79%)
Vit D Status of the study Population
Deficiency <30ng/ml- 534 (76.06%)
Adequacy 30-100ng/ml 147(20.94%)
>100 ng/ml 21(2.99%)

Discussion

Vitamin D deficiency prevails in epidemic proportions all over the Indian subcontinent, with a prevalence of 70%-100% in the general population. Vitamin D deficiency is highly prevalent in both urban and rural settings, and across all socioeconomic and geographic strata.(9)

Similarly to our study, a very high (88.6%) prevalence of vitamin D deficiency among pregnant women and adolescent girls from a rural Indian community.(10)

Prevalence of vitamin D deficiency among health care professionals in different regions of India was also recorded very high. Seventy-nine percent of subjects were deficient, 15 % were insufficient, and just 6 % were sufficient in vitamin D status.(11)

Similar to our study most of the researchers report a uniformly high prevalence of vitamin D deficiency, in healthy school children in northern India and adolescent population (12,13).

The results of current study are similar to the studies of Bruyère *et al* (14) and Harinarayan CV *et al* (6). As their studies also reported like our study high prevalence of Vitamin D inadequacy and deficiency among advancing age women.

Epidemiological studies have shown an association of vitamin D deficiency and increased risk of chronic diseases like cancer, cardiovascular disease, type 1& 2 diabetes suggesting that that Vitamin D deficiency not only affects musculoskeletal health but also affects a wide range of acute and chronic diseases. (16) Thus, results of such studies may prove very useful for the healthcare providers to make country wide assessment of this health problem. Routine screening for calcium and vitamin

deficiency and their supplementation starting at all ages is highly recommended in view of this highly prevalent health problem. Prevention by sensible sunlight exposure, food fortification and routine supplementation are the currently recommended options for tackling this nutritional deficiency.

Conclusion

High prevalence of vitamin D deficiency exist in Jammu region among healthy population.

References

1. Holick MF. Vitamin D: importance in the prevention of cancers, type 1 diabetes, heart disease, and osteoporosis. *Am J Clin Nutr* 2004; 79(3):362-71
2. Harinarayan CV, Joshi SR. Vitamin D status in India-Its implications and Remedial Measures. *J Assoc Physicians India* 2009; 57:40-48.
3. Marwaha RK, Sripathy G. Vitamin D and Bone mineral density of healthy school children in northern India. *Indian J Med Res* 2008;127: 239-244.
4. Khadilkar AV. Vitamin D deficiency in Indian Adolescents. *Indian Paediatr* 2010; 47:756-757.
5. Sahu M1, Bhatia V, Aggarwal A, Rawat V, Saxena P, Pandey A, Das V. Vitamin D deficiency in rural girls and pregnant women despite abundant sunshine in northern India. *Arch Osteoporos* 2012 ;7(1-2):187-92.
6. Harinarayan CV. Prevalence of vitamin D insufficiency in postmenopausal south Indian women. *Osteoporosis Int* 2005; 16 (4): 397-402.
7. Dawson-Hughes B, Heaney RP, Holick MF, Lips P, Meunier PJ, Vieth R. Estimates of optimal vitamin D status. *Osteoporos Int* 2005; 16:713- 6.
8. Hollis BW. Circulating 25-hydroxyvitamin D levels indicative of vitamin D sufficiency: implications for establishing a new effective dietary intake recommendation for vitamin D. *J Nutr* 2005;135:317-22.
9. G R, Gupta A. Vitamin D deficiency in India: prevalence, causalities and interventions. *Nutrients* 2014 21;6(2): 729-75
10. Sahu M1, Bhatia V, Aggarwal A, Rawat V, Saxena P, Pandey A, Das V. Vitamin D deficiency in rural girls and pregnant women despite abundant sunshine in northern India. *Clin Endocrinol (Oxf)* 2009 May;70(5):680-4.
11. Beloyartseva M1, Mithal A, Kaur P, Kalra S, Baruah MP, Mukhopadhyay S, Bantwal G, Bandgar TR. Widespread vitamin D deficiency among Indian health care professionals. *Arch Osteoporos* 2012 ;7(1-2):187-92
12. M arwaha RK, Sripathy G. Vitamin D and Bone mineral density of healthy school children in northern India. *Indian J Med Res* 2008;127:239-244.
13. Khadilkar AV. Vitamin D deficiency in Indian Adolescents. *Indian Paediatr* 2010;47:756-757.
14. Bruyère O, Slomian J, Beaudart C, Buckinx F, Cavalier E, Gillain S, Petermans J, Reginster JY. Prevalence of vitamin D inadequacy in European women aged over 80 years. *Arch Gerontol Geriatr* 2014 pii: S0167-4943(14)00040-5.
15. Griz LH, Bandeira F, Gabbay MA, Dib SA, Carvalho EF. Vitamin D and diabetes mellitus: an update 2013. *Arq Bras Endocrinol Metabol* 2014; 58(1):1-8.