ORIGINAL ARTICLE

Determine the Prevalence of Vitamin D Deficiency among Patients Visited Outpatients of Liaquat University Hospital Hyderabad

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ABSTRACT

Objective: To determine the prevalence of vitamin D deficiency among patients visited out-patients department.
Study Design: Cross-sectional.
Place & Duration: Study was conducted at Liaquat University Hospital, Hyderabad for duration of six months from April 2019 to September 2019.
Methodology: One hundred and fifty patients were enrolled in this study. Patients visited the outpatient department were all above 18 years of age. Patient detailed demographics were recorded. Patients with any chronic disease or risk factor, diagnosed with rickets, osteoporosis, patients without documented serum vitamin D levels were excluded.
Results: The mean age was 22.46±3.68 with body mass index 21.38±2.52. The ratios of female patients were greater than that of males. Vitamin D varies in different ranges, the median of vitamin D in males were 24ng/ml while in females it was noted 18ng/ml. Vitamin D deficiency was presented in three stages i.e. mild deficiency, moderate and severe. Except these normal deficiency was also observed in patients.
Conclusion: The prevalence of vitamin D deficiency was excessive in females and young age groups. Commonest problem in our region is vitamin D deficiency and it can be controlled by early treatment.
Keywords: Vitamin D Deficiency, Mild, Moderate, Severity.

INTRODUCTION

Vitamin D is an important nutrient that, from birth to death, plays a major role in human health. Vitamin D3, so-called cholecalciferol and vitamin D2, also known as ergocalciferol, are two major types of vitamin D essential to humans.1 The key function of vitamin D in the body is to maintain the levels of calcium, iron , magnesium, phosphate and zinc by controlling intestinal absorption, and its deficiency results in rickets, osteomalacia and osteoporosis and it is assumed that the risk of developing ca

The levels of vitamin D below normal levels were also associated with the development of tuberculosis and, due to VDD, could develop a more serious form of this infection. As an antimicrobial, vitamin D has a major role; studies have shown that vitamin D inhibits the growth of in vivo mycobacteria. That explained why supplementation with vitamin D was considered for the treatment and prevention of Mycobacterium Tuberculosis.5,6 Vitamin D mediates its action in cells by means of a nuclear receptor. Recent studies show that vitamin D receptors are expressed by most cells in the human body, with some expressing the D-1-a-hydroxylase enzyme. 1,25(OH)D reportedly regulates more than 200 genes. It appears to be involved in cell proliferation , differentiation, apoptosis, angiogenesis, development of insulin and renin, and in stimulating production of macrophage cathelicidin.7-10

People in Pakistan suffer from poor nutrition because of illiteracy and poor food quality, which is one of the key reasons for vitamin D deficiency in our region. In urban conditions, we conducted this study to determine the deficiency of vitamin D among men and women. This research was performed at a tertiary care hospital in the central city of Punjab, Lahore.[11]

MATERIALS AND METHODS

This study was carried out in Medicine department of Liaquat University Hospital, Hyderabad for duration of six months during from April 2019 to September 2019 and comprised of total 150 patients of both genders. Patient's detailed demographics were recorded and patients with any risk factor included any chronic disease, diagnosed with rickets, osteoporosis, patients without documented serum vitamin D levels, metastatic cancers, prolonged immobilization due to any reasons, parathyroid diseases, were excluded from this study. 25-hydroxy vitamin D levels were measured in all patients. Normal level; were considered above 28 to 78ng/dl. Mild vitamin D deficiency was from 21-28ng/dl, moderate from 12-20 ng/dl and <12 ng/dl was considered severity of deficiency. The data was entered and analyzed through SPSS 22.

RESULTS

There were 110 (73.3%) females and rest of 40 (26.67%) were males. The mean age of patients were 22.46±3.68 years above then 18 years with body mass index BMI 21.38±2.52kg/m2. Levels of vitamin D were distributed among both males and females. Median and the range of vitamin D levels in females was 18ng/ml with range of 2.2-105ng/ml while for males median was 24ng/ml ranges from 6.5-97ng/ml. We concluded in our study 43(28.67) patients had normal vitamin D levels but in prevalence of vitamin D (22-28ng/ml) in mild state it was 31 (20.67), deficiency (12-20 ng/ml) in moderate it was noted as 35(23.33%) and it was severe 41(27.33%) in deficiency (<12ngml) (Tables 1-

2). The prevalence of vitamin D deficiency was compared among these groups. Younger patients and women showed greater prevalence in this study.

Table 1: Levels of vitamin D with respect to gender

Gender	No.	Median	Range	Total
Males	110(73.3%)	24ng/ml	6.5-97ng/ml	110
Females	40(26.67%)	18ng/ml	2.2-105ng/ml	40

Table 2: Levels of vitamin D with respect to stages (n=100)

Stage	Value
Normal	43(28.67)
Mild (22-28ng/ml)	31(20.67),
Moderate (12-20ng/ml)	35(23.33%)
Severe (<12 ng/ml)	41(27.33%)

DISCUSSION

Vitamin D deficiency in our society nowadays is normal, causing calcium deficiency. In our research we concluded that vitamin D deficiency is significant in patients visiting ambulatory departments. The findings of previous studies by Chung and al 12 and Larsen et al.13. This study found that of 150 patients, 27.33% had a significant vitamin D deficiency of less than 12 ng / dl vitamin D value. Bossé et al.14 presented similar findings.

In this analysis, we evaluated different vitamin D levels according to several variables, similar to that of the preceding studies by Bassil et al.15 in the Middle East, all of which together contribute to an ever growing vitamin D deficiency problem. All of these factors. The median range and vitamin D range of women in the range of 2.2 to 105 ng / ml was 18 N / L with 24 M / L range of 6.5 to 97 ng / ml for the male median range. The present study showed 43 (28.67) vitamin D patients but 31 (20.67) patients had a mild vitamin D prevalence, 35 (23.33%) were (22-28 ng / ml) deficiency, 26 (27.33%) were (< 11 ngml) moderate deficiency. These findings showed that the prevalence found in the current retrospective study was 75 percent (< 20 ng / mL) close to that of Hekimsoy and al16.

A research carried out by Meyer et al 17 reported in its study in Croatia and Alfauz et al19 in their studies in Saudi Arabia that vitamin D deficiency is rising with an increased age. However, Heidari Behzad et al. 20 have reported in their study in North Iran that vitamin D deficiency is increasing with an increase in age.

Our research findings have shown that the younger population has a high prevalence compared with the older population. This may be because the sun is shielded and the food quality is low and food is less enriched with vitamin D and calcium. This is also possible.

CONCLUSION

Prevalence of vitamin D deficiency was excessive in females and young age groups. Commonest problem in our region is vitamin D deficiency and it can be controlled by early treatment.

REFERENCES

1. Holick MF.. The D-lightful vitamin D for health. J Med Biochem. 2013;32:1–10. [PubMed] [Google Scholar]
2. Bendik I, Friedel A, Roos FF, Weber P, Eggersdorfer M.. Vitamin D: a critical and essential micronutrient for human health. Front Physiol. 2014;5:248. [PMC free article] [PubMed] [Google Scholar]
3. Schottker B, Jorde R, Peasey A, Thorand B, Jansen EH, Groot L. et al. Vitamin D and mortality: meta-analysis of individual participant data from a large consortium of cohort studies from Europe and the United States. BMJ. 2014;348:g3656. [PMC free article] [PubMed] [Google Scholar]
4. Hilger J, Friedel A, Herr R, Rausch T, Roos F, Wahl DA. et al. A systematic review of vitamin D status in populations worldwide. Br J Nutr. 2014;111:23–45. [PubMed] [Google Scholar]
5. Hejazi M E, Modarresi-Ghazani F, and EntezariMaleki T. A review of Vitamin D effects on common respiratory diseases: Asthma, chronic obstructive pulmonary disease, and tuberculosis. J Res Pharm Pract. 2016; 5(1):7.
6. Hansdottir S, and Monick MM. Vitamin D effects on lung immunity and respiratory diseases. Vitamins and hormones. 2011;86:217-37.
7. Bouillon R, Bischoff-Ferrari H, Willett W. Vitamin D and health: perspectives from mice and man. J Bone Min Res. 2008;23: 974-979.
8. Liu PT, Stenger S, Li H, et al. Toll-like receptor triggering of a vitamin D-mediated human antimicrobial response. Science. 2006;311: 1770-1773.
9. Nagpal S, Na S, Rathnachalam R. Noncalcemic actions of vitamin D receptor ligands. Endocr Rev. 2005;26:662-687.
10. DeLuca HF. Overview of general physiologic features and functions of vitamin D. Am J Clin Nutr. 2004;80:1689S-1696S.
11. Pittas AG, Chung M, Trikalinos T, Mitri J, Brendel M, Patel K, et al. Vitamin D and Cardiometabolic Outcomes: A Systematic Review. Ann Intern Med 2010; 152(5): 307-14
12. Chung M, Balk EM, Brendel M, Ip S, Lau J, Lee J, et al. Vitamin D and calcium: A systematic review of health outcomes. Evidence Report/Technology Assessment 2009; 08(183): 1-420.
13. Larsen ER, Mosekilde LF, Foldspang A. Vitamin D and calcium supplementation prevents osteoporotic fractures in elderly community dwelling residents: A pragmatic population-based 3-year intervention study. J Bone Miner Res J Bone Miner Res 2004; 19: 370-78. 13. Bassil D, Rahme
14. Bossé Y, Maghni K, Hudson TJ. 1alpha, 25-dihydroxy-Vitamin D3 stimulation of bronchial smooth muscle cells induces autocrine, contractility, and remodeling processes. Physiol Genomics. 2007;29:161–8
15. Bassil D, Rahme M, Hoteit M, Fuleihan GE. Hypovitaminosis D in the Middle East and North Africa: Prevalence, risk factors and impact on outcomes. Dermato-endocrinology 2013; 5(2): 274-98.
16. Hekimsoy Z, Dinc G, Kafesciler S, Onur E, Guvenc Y, Pala T. et al. Vitamin D status among adults in the Aegean region of Turkey. BMC Public Health. 2010;10:782.
17. Meyer HE, Holvik K, Lofthus CM, Tennakoon SU.. Vitamin D status in Sri Lankans living in Sri Lanka and Norway. Br J Nutr. 2008;99(5):941–4. [PubMed]
18. Laktasic-Zerjavic N, Korsic M, Crncevic-Orlic Z, Kovac Z, Polasek O, Soldo-Juresa D.. Vitamin D status, dependence on age, and seasonal variations in the concentration of vitamin D in Croatian postmenopausal women initially screened for osteoporosis. Clin Rheumatol. 2010;29:861–67.
19. Alfawaz H, Tamim H, Alharbi S, Aljaser S, Tamimi W.. Vitamin D status among patients visiting a tertiary care center in Riyadh, Saudi Arabia: a retrospective review of 3475 cases. BMC Public Health. 2014;14:159.
20. Heidari B, Haji Mirghassemi MB.. Seasonal variations in serum vitamin D according to age and sex. Caspian J Intern Med. 2012;3:535–40.