

PREVALENCE OF VITAMIN D DEFICIENCY IN PATIENTS WITH CHRONIC DISEASES LIKE DIABETES AND HYPERTENSION PRESENTING TO MEDICINE CLINIC IN BAHRIA INTERNATIONAL HOSPITAL, LAHORE, PAKISTAN

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ABSTRACT

Objective: To demonstrate the prevalence of vitamin D deficiency in patients with chronic diseases like Diabetes and Hypertension presenting to medicine clinic

Methods: It was an observational and Cross-Sectional study. The data was collected from patients visiting the Medicine clinic in Bahria International Hospital, Lahore from June 2017 to March 2018. A total of 115 patients were included in this study with a convenient sampling technique used to reach outpatients with a history of diabetes and hypertension. The data was analyzed the data through descriptive statistics and represented in the form of figures, tables frequencies, and percentages.

Results: Retrospectively 115 patients were analyzed. Patients with level <30ng/ml were considered deficient. We found 112/115 patients with vitamin D deficiency i.e. with levels <30ng/ml. Females were more affected (n= 69) than males (n=46).

Conclusion Present study concludes that vitamin D deficiency is still an under-diagnosed and underestimated problem as it is more common in individuals with chronic diseases like Diabetes and Hypertension.

Key Words: Vitamin D Deficiency, Vitamin D and Chronic Diseases, Diabetes and Vitamin D, Hypertension and Vitamin D, Vitamin D and Pakistani population

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INTRODUCTION

Vitamin D is considered a vital component for bone mineralization. Its insufficiency leads to impaired calcium absorption that leads to rickets and Osteomalacia¹. Vitamin D is a fat-soluble vitamin, available in two forms, Ergocalciferol (Vitamin D2) and Cholecalciferol (Vitamin D3). Cholecalciferol is a naturally occurring vitamin that is synthesized in the skin from endogenous cholesterol source upon exposure

to sunlight. Ergocalciferol is often used as a food additive². Vitamin D deficiency is a frequently occurring condition, approximating to about one billion sufferers worldwide. In adults, vitamin D deficiency is set as serum 25-hydroxyvitamin D level of less than 20ng/ml(50nmol/L), and vitamin D insufficiency is set as serum 25-hydroxy vitamin D level of 20-30ng/ml(50-75nmol/L)³.

Vitamin D helps calcium and phosphorus absorption through small intestine and functions like a steroid hormone⁴. After its formation in skin or absorption from dietary sources it is stored in fat cells and brought into circulatory system by vitamin D binding protein. Vitamin D3 (Cholecalciferol) is biologically inactive and must be metabolized to 25-(OH) D3 in liver and then to its biologically active form 1-25-dihydrocholecalciferol [1-25-(OH)₂D₃] in kidneys⁵. Vitamin D 25(OH)₂ D₃ is predominant form in plasma and major storage form as well⁶.

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We have tried to determine the prevalence of vitamin D deficiency in people suffering from chronic illness like Diabetes and Hypertension. Our major participants are relatively dark-skinned people and dark skin pigmentation has been found to decrease the skin synthesis of vitamin because of UV light cannot reach appropriate layer of skin⁷.

METHODS

We retrospectively analyzed 115 individuals visiting our Diabetes & General Medicine clinic in Bahria International Hospital, Lahore aged 18 years to 76 years suffering from chronic diseases like Diabetes and Hypertension in the period from June 2017 to March 2018. Patients who were not willing for study, already taking vitamin D supplements in food, patients on antiepileptic medication and corticosteroids were not included in study. Informed consent was taken; study has been approved by ethical committee of Bahria International Hospital, Lahore.

RESULTS

From our data analysis we found that most of the individuals who were visiting clinic in Bahria International Hospital, Lahore were deficient of vitamin D level. Results of our study in Lahore city which a sunny city located in Punjab Pakistan, confirms high prevalence of vitamin D deficiency in individuals around 83.4%. We found that 97.3% of individuals suffering with chronic diseases like Diabetes and Hypertension were found to have Vitamin D below appropriate level e.g. <30ng/ml.

In this study we included a total of 115 patients visiting the clinic of diabetes and general medicine in Bahria International Hospital, Lahore from June 2017 to March 2018. Out of total 115 patients 46 (23.3%) were male and 69 (36%) were females.

The mean age of participants found as 47.82. Most of the patients about 55 (47.8%) were found to have a deficiency of vitamin D with levels<20ng/ml where 41(21.5%) individuals were severely deficient with vitamin D levels of < 10ng/ml while 16(13.7%) were having insufficient levels of Vitamin D. Only 3 (2.6%) were found to have appropriate levels of vitamin D.

According to the table, we found in our study population 66 out of 69 females were having vitamin D levels below 30ng/ml whereas 46 males were found vitamin D level <30ng/ml, so females are more likely to have vitamin D deficiency.

Vitamin D level relation with Gender

Gender	Vitamin D level(mg/ml)				Total
	>30	>21-29	11-21	<10	
Male	0	11	27	8	46
Female	3	5	28	33	69
Total	3	16	55	43	115

DISCUSSION

Our results are comparable to that study conducted in a different region of India that indicate 60-80% of South Asian population suffering from vitamin D level below 20ng.ml^{8,9}. Another study conducted in Pakistan by Adil Sheikh and colleagues also revealed same results like our research, that their general population around84.3% was affected by vitamin D deficiency¹⁰.

(8)Shaw N Et.al found Asian women are suffering more with vitamin D deficiency as compared to non-Asian ladies. In our study we also noted females are at more risk of facing vitamin D deficiency then men.

As far as limitation of this study is concerned, we were not able to control several factors that impact Vitamin D serum levels. Among them are full nutritional habits and life style patterns including sunlight exposure. Moreover, this study performed in a single center with limited number of patients. Study can be replicated by increasing number of patient and involving multiple centers.

CONCLUSION

Deficiency of Vitamin D is a common health problem worldwide. It is still underestimated and under diagnosed in Pakistani population especially in those who are suffering with chronic diseases like Diabetes and Hypertension. This deficiency leads not only to difficulty in managing these diseases but cause other issues like psychiatric complications and musculoskeletal complaints which aggravate the problem.

Those who are at risk of Vitamin D deficiency should be considered for annual intramuscular injection of large single dose of vitamin D3.

There should be mass awareness campaign on electronic and social media on impact of vitamin D deficiency and its clinical implications with suggestions to improve its level like food supplementation and the importance of sunlight exposure for at least 30-40 minutes /day.

Governments in these regions should implement vitamin D food supplementation.

ETHICAL APPROVAL:

The study was approved by the Ethical Review Committee of Bahria International Hospitals, Lahore, Pakistan. IRB Reference No. 2018-31, dated 05/02/2018.

REFERENCES

1. Mitchell D, Henao M, Finkelstein J, Burnett-Bowie S-A. Prevalence and predictors of vitamin D deficiency in healthy adults. *Endocrine Practice*. 2012;18(6):914-923.
2. Terrie YC. The Important Role of Vitamin D-Vitamin D, which aids the body's immune and skeletal systems in various ways, is available in many foods and in many OTC nutritional supplements. *Pharmacy Times*. 2010;76(2):26.
3. Holick MF. Vitamin D deficiency. *New England Journal of Medicine*. 2007;357(3):266-281.
4. Shipton EE, Shipton EA. Vitamin D deficiency and pain: clinical evidence of low levels of vitamin D and supplementation in chronic pain states. *Pain and therapy*. 2015;4(1):67-87.
5. Masood SH, Iqbal MP. Prevalence of vitamin D deficiency in South Asia. *angiogenesis*. 2008;1(11):12.
6. Abreu E, Mow VC, Huiskes R: basic Orthopaedic biomechanics and Mechano-biology. *BioMed Central*; 2005.
7. Bodnar LM, Simhan HN, Powers RW, Frank MP, Cooperstein E, Roberts JM. High prevalence of vitamin D insufficiency in black and white pregnant women residing in the northern United States and their neonates. *The Journal of nutrition*. 2007;137(2):447-452.
8. Shaw N, Pal B. Vitamin D deficiency in UK Asian families: activating a new concern. *Archives of Disease in Childhood*. 2002;86(3):147-149.
9. Harinarayan C. Prevalence of vitamin D insufficiency in postmenopausal south Indian women. *Osteoporosis International*. 2005;16(4):397-402.
10. Sheikh A, Saeed Z, Jafri SAD, Yazdani I, Hussain SA. Vitamin D levels in asymptomatic adults-a population survey in Karachi, Pakistan. *PloS one*. 2012;7(3):e33452.

AUTHORS' CONTRIBUTION:

MAA: Perceived idea, planned study, collected data

MJ: Planned study, manuscript editing

SZ: Reviewed manuscript, literature search

AC: Data Collection, drafted Initial manuscript