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ORIGINAL ARTICLE

Prevalence of Vitamin D deficiency among patients visiting outpatients department.

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ABSTRACT… Objective: To determine the prevalence of vitamin D deficiency among patients visited out-patients department. **Study Design:** Cross Sectional study. **Setting:** Department of Medicine, Avicenna Medical & Dental College, Lahore. **Period:** January 2020 to June 2020. **Material & Methods:** One hundred and fifty patients were enrolled in this study. Patients visited the outpatient department with ages above 18 years were enrolled. Patient detailed demographics were recorded. Patients with any chronic disease or risk factor, diagnosed with rickets, osteoporosis, and 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. **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.

Key words: Mild, Moderate, Severity, Vitamin D Deficiency.

INTRODUCTION

Vitamin D is an essential nutrient that plays a major role in human health from birth to death. Two major forms of vitamin D important for humans are vitamin D3, so called cholecalciferol and vitamin D2, also known as ergocalciferol.[1] The major role of vitamin D in the body is maintaining calcium, iron, magnesium, phosphate and zinc levels by regulating intestinal absorption, and its deficiency results in rickets, osteomalacia and osteoporosis and it is thought that the risk of developing cardiovascular, auto-immune and endocrine diseases and cancer increase in case of deficiency.[2-4] The most accurate method of evaluating a person's vitamin D status is to measure the level of serum 25-hydroxyvitamin D [25(OH)D].

Vitamin D levels below normal levels were also related to developing tuberculosis and could develop a more severe form of this infection due to VDD. Vitamin D has an important role as an antimicrobial; studies showed that vitamin D inhibits the growth of mycobacteria in vivo. That explained why vitamin D supplementation was considered for treatment and prevention of Mycobacterium Tuberculosis.[5,6] Vitamin D mediates its actions through a nuclear receptor in cells. Recent studies show that most cells in the human body express vitamin D receptors, with some expressing the enzyme D-1-a-hydroxylase. Allegedly, 1,25(OH)D controls more than 200 genes. Thereby, it seems to be involved in cellular proliferation, differentiation, apoptosis, angiogenesis, insulin and renin production, and in stimulating macrophage cathelicidin production.[7-11]

Due to illiteracy and poor quality of food, people in Pakistan are suffering from poor nutrition, one of the main reasons of vitamin D deficiency in our country. We conducted this study to find out the deficiency of vitamin D among men and women in urban conditions. This study was done in a tertiary care hospital of a central city of Punjab, Lahore.

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MATERIAL & METHODS

This cross-sectional study was carried out in the Department of Medicine at Avicenna Medical & Dental College, Lahore from 1st January 2020 to 30th June 2020 with Ethical approval letter No.432/Adn-II dated 28-9-2021 and comprised of total 150 patients of both genders were enrolled. Patient's detailed demographics were recorded after taking written informed consent 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, and those whom were not willing to participate in this study 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/m^2. 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 2.2-105 ng/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-I & II).

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-I. Levels of Vitamin D according to gender.

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

Table-II. Levels of Vitamin D according to stages.

DISCUSSION

Now-a-days vitamin D deficiency is common in our society. It results in deficiency of calcium. The same results showed by previous studies by Yao et al[12] and Larsen et al.[13] In our study we concluded that vitamin D deficiency is severe in patients attending outpatients department. In this study presented that 27.33% patients had severe vitamin D deficiency with value less than 12ng/dl of vitamin D out of 150 patients. Similar results has been presented by Bossé et al.[14]

In this study, we assessed the different levels of vitamin D depending on many variables and these were similar to the previous study in Middle East counties by Bassil et al.[15] All these factors collectively are resulting in an ever increasing problem of vitamin D deficiency. 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 6.5-97 ng/ml. In the present study 43 (28.67) patients had normal vitamin D levels but in prevalence of vitamin D (22-28 ng/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 (<12 ngml). These results showed resemblance to the results of Ning et al[16] found the prevalence of 75% (<20 ng/mL) found in the present retrospective study was similar to the prevalence.

A study performed by Meyer et al[17] reported that age was not related with vitamin D levels in Sri Lankans and native of Norway while Laktasic-Zerjavic et al[18] in their study in Croatia and Alfawaz et al[19] in their study in Saudi Arabia reported that the rate of vitamin D deficiency increase with increasing age; however Heidari et al[20] in their study performed in North Iran reported that serum vitamin D levels increase with increasing age.

Our study results showed that prevalence is high among the younger population as compared to older population. This can be due to over protection of sun exposed body parts and due to poor quality of food and less fortification of food with vitamin D and calcium.

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.

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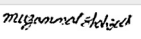
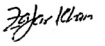
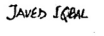
AUTHORSHIP AND CONTRIBUTION DECLARATION

No.	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Muzamul Shahzad	Data collection.	
2	Altaf Ahmad Yar	Writing of manuscript.	
3	Munaza Javed	Statistical analysis.	
4	Zafar Ahmad Khan	Guidance in writing the manuscript.	
5	Javed Iqbal	Review of article.	
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