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PREVALENCE OF VITAMIN D DEFICIENCY IN PATIENTS REFFERED TO A TERTIARY CARE HOSPITAL IN PUNJAB-A PILOT STUDY

Brinder Chopra*, Sukhpreet Singh, Vaneet Kaur, Minni Verma, Shalini Gupta, Amandeep Kaur and Kamaljit Singh
Department Of Biochemistry, Department of Surgery, Gian Sagar Medical College & Hospital, Ramnagar, Patiala, Punjab, India

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Abstract: Majority of population of India lives in areas receiving ample sunshine throughout the year. Despite this fact various studies have shown wide prevalence of vitamin D deficiency in our country in all ages and both sexes. The present pilot study was aimed at studying the prevalence of deficiency of this vitamin in the population of Punjab. Levels of vitamin D were analysed on a chemiluminiscent auto analyser in serum samples randomly collected from patients who visited the OPD of our hospital with nonspecific complaints like fatigue & body aches. A total of 209 patients were included in this study out of which there were 188 female and 21 male patients. Out of the total 188 female patients 56.9% had insufficient levels of vitamin D, 36.2% had frank deficiency & only 6.9% had sufficient levels. Vitamin D deficiency was present in 28.6% of the males, while 57.1% had insufficient levels & 14% had sufficient levels. The present study gives us a preliminary estimate of the wide extent of prevalence of vitamin D deficiency in this Punjab belt especially in the female population. This study will act as a guideline for conducting further studies on a larger scale to get a wider picture of prevalence of vitamin D deficiency in our country.

Key Words: Vitamin D, Deficiency, Punjab, India

INTRODUCTION

Vitamin D deficiency is not expected to be common in a country like India where majority of the population lives in areas that receive ample sunshine throughout the year. It is common knowledge that sunlight is the most important factor responsible for the synthesis of vitamin D and it takes just thirty minutes of exposure to ultraviolet radiation of the sun in a day on only arms & face to avoid vitamin D deficiency [1].

Despite these facts various studies have reported wide prevalence of vitamin D deficiency in our country in all ages, both sexes & in urban as well as rural India[1]. Lack of exposure to sunlight is the leading cause of vitamin D deficiency as exemplified by a high prevalence of deficiency in housebound & elderly patients [2,3,4].

There can be many other factors responsible for vitamin D deficiency in our country. Increased urbanisation & migration have changed man's relationship to the sun. Outdoor activity with abundant unfiltered sunlight has been replaced by long indoor hours[1]. Other factors maybe malnourishment, changing food habits, high fibre diet, use of sunscreens, increased pollution & skin pigmentation[1,5,6, 7].

The clinical syndrome of vitamin D deficiency consists of osteomalacia & rickets but a subclinical state also exists in individuals, characterized by nonspecific musculoskeletal symptoms like backache, joint pains, generalized body aches & muscle weakness[8,9,10].

Consequences of vitamin D deficiency are many, apart from rickets & osteomalacia. Deficiency of this vitamin has now been associated with a host of disorders like diabetes[11,12,13], cardiovascular diseases[14], tuberculosis[15,16], chronic infections, irritable bowel syndrome[17] & multiple sclerosis[14,17] etc. It has also been shown to be associated with cancers of breast, colon, prostate, ovary & lung [14,18, 19,20]. The present study was aimed as a preliminary pilot study to see the prevalence of vitamin D deficiency in the population of Punjab suffering from subclinical state of vitamin D deficiency.

MATERIALS AND METHODS

After obtaining approval from institutional ethics committee samples were collected from adult patients visiting various outdoor departments of Gian Sagar Medical College & Hospital. Inclusion criteria were patients who presented with complaints of nonspecific bodyaches, joint pains & generalized fatigue. Pediatric and elderly patients were not included in the study. The samples were analysed for vitamin D levels on a chemiluminiscence analyzer (Diasorin). The reference ranges of vitamin D are as follows:

Deficiency	-	< 10 ng/ml
Insufficiency	-	10-30 ng/ml
Sufficiency	-	30-100 ng/ml
Toxicity	-	> 100 ng/ml

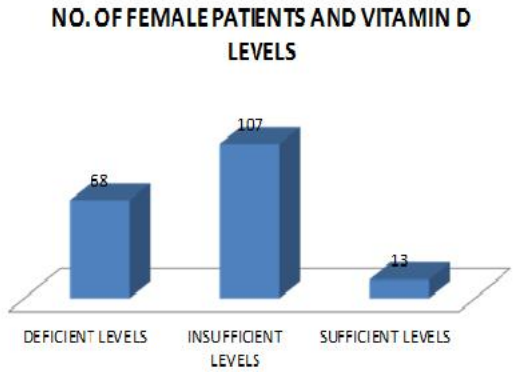
***Corresponding Author:**
Dr. Brinder Chopra,
Associate Professor, Department of Biochemistry,
Gian Sagar Medical College & Hospital,
Ramnagar, Patiala, Punjab, India.

RESULTS

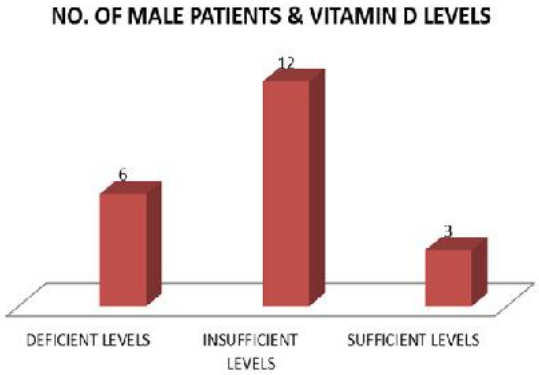
A total of 209 patients were included in this study. Out of these patients 89.9% were females. Age range of female patients varied from 18-72 years & 44% of females were in the age group of 21-30 years ie. 83 patients.

Out of the total 188 female patients 56.9% had insufficient levels of vitamin D, 36.2% had frank deficiency & only 6.9% had sufficient levels (Graph 1). There were only 21 male patients out of the total 209 patients. Vitamin D deficiency was present in 28.6% of the males, while 57.1% had insufficient levels & 14% had sufficient levels (Graph 2).

Graph 1: Graph Showing Number Of Female Patients And Levels Of Vitamin D



Graph 2: Graph Showing Number of Male Patients and Levels of Vitamin D



DISCUSSION

In our study 89.9% of patients presenting with complaints of nonspecific symptoms of body aches, joint pains, generalized fatigue were females. Out of these 93% women had low levels of vitamin D which is higher than the findings of Amar Kanekar *et al.*, [8]who reported lower levels in 87% of females.

In our study 44% of females were in the younger age group of 21 years to 30 years as compared to Amar Kanekar *et al.*, [8]who reported 38% female patients in age group of 31 to 40 years. Only 6.9% females in our study had sufficient levels of vitamin D whereas 56.9% had insufficient levels & 36.2% had frank deficiency.

This shows that females are more prone to develop vitamin D deficiency. The reason maybe the increasing modernization of Indian society because of which number of hours spent indoors have increased as also use of sunscreens. The rapidly increasing pollution levels also hamper synthesis of vitamin D. Widespread commercialization & advertisement has lead to increased consciousness among women to stay on the lower side of the weighing scale resulting in deleterious changes in dietary habits which is another important factor for rapidly increasing vitamin D deficiency in our country [1].

There were only 21 male patients in our study out of which 14% had sufficient levels of vitamin D, whereas 57.1% had insufficient levels & 28.6% had frank deficiency. Although number of male patients with sufficient levels were higher than females the total number of male patients as compared to females was lesser signifying that vitamin D deficiency is more prevalent in females.

It has been shown in other Indian studies that there is widespread vitamin D deficiency in Indians of all age groups including toddlers, pregnant women, adult males & females[21,22,23,24,25]. Overall results of various studies conducted in urban & rural India indicate that widely prevalent vitamin D deficiency is relevant in view of associated increase in serum Parathyroid hormone & low Bone marrow density(BMD)[26,27].

CONCLUSION

The present pilot study gives us a preliminary estimate of the widespread prevalence of vitamin D deficiency in this belt of Punjab especially in women of both rural & urban background and stresses the need for further studies on larger populations in this sunshine state. There is an urgent need to make the population aware of the importance of proper sun exposure & dietary supplementation with vitamin D.

Further studies are required on a larger scale on a larger population to get a better estimate of actual prevalence & causes of vitamin D deficiency in our country so that this rapidly increasing epidemic can be prevented. Studies are also needed to evaluate the effects of this deficiency by estimating other parameters like parathyroid hormone levels & BMD.

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