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Prevalence of Vitamin D deficiency in orthopaedic patients

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Abstract

Background: Besides calcium absorption, Vitamin D is involved in various physiological and pathological processes. Previous research has found a high prevalence of vitamin D deficiency.

Materials and Method: A study was conducted among all the patients coming to orthopedic outdoor. A total of 100 patients were included in the study to know the prevalence of vitamin D deficiency. Biochemical profile Blood samples for vitamin D levels were done using standard laboratory procedures (auto analyzers). Serum ((25OH) D) levels of 30 ng/ml and above, 20–29 ng/ml, and <20 ng/ml were classified as sufficient, insufficient, and deficient, respectively.

Results: A total of 100 patients were included, (46 males; 54 females) aged more than 18 years. 38 %, 32 %, and 30% of subjects belonged to the upper, middle, and lower Socio-Economic Strata, respectively. Subjects belonging to upper SES had a higher deficiency of Vitamin D, followed by those from middle and lower SES. Symptoms of Vit D deficiency were prevalent higher in subjects who had vitamin D deficiency. Subjects with a sedentary lifestyle had a higher prevalence of VDD (85%). It was found that those who were exposed to sunlight for less than 2 hours daily had a higher prevalence of VDD. It was found that the subjects with sufficient (30 ng/ml and above), insufficient (20–29 ng/ml), and deficient Vitamin D levels were 2%, 8%, and 90%, respectively.

Conclusion: Our study revealed a high prevalence of VDD in the study population.

Keywords: vitamin d deficiency, prevalence.

1. Introduction

Vitamin D is essential for bone health ^[1]. Besides calcium absorption, Vitamin D is involved in various physiological and pathological processes ^[2]. It performs a variety of functions, including immune, cardiovascular, endocrine, neuropsychological, neuromuscular performance, cellular differentiation, and anticancer actions ^[3,4]. Previous research has found a high prevalence of vitamin D deficiency (85–98%) ^[5-7]. Common risk factors associated with VDD are low exposure to sunlight, air pollution, dark skin, no exercise, and an indoor lifestyle ^[8].

The present study was conducted to assess the prevalence of VDD and associated risk factors among orthopaedics outdoor patients.

Methodology

A study was conducted among all the patients coming to orthopedic outdoor. A total of 100 patients were included in the study to know the prevalence of vitamin D deficiency. The subjects below 18 years were not included in assessing socio-economic status (SES), physical activity, sunlight exposure, and dietary pattern. A questionnaire was administered to gather socio-demographic information based on Kuppaswamy's SES scale ^[9]. Physical activity assessment, average daily exposure to sunshine, and type of diet consumed was done by administering a detailed questionnaire. The activities were then categorized as light, moderate, or heavy. ^[10] Biochemical profile Blood samples for vitamin D levels were done using standard laboratory procedures (auto analyzers). The biochemical estimation of serum 25-hydroxy Vitamin D ((25OH) D) was done using chemiluminescence immunoassay using kits. Serum ((25OH) D) levels of 30 ng/ml and above, 20–29 ng/ml, and <20 ng/ml were classified as sufficient, insufficient, and deficient, respectively ^[11].

Results

A total of 100 patients were included, (46 males; 54 females) aged more than 18 years. 38 %, 32 %, and 30% of subjects belonged to the upper, middle, and lower Socio-Economic Strata, respectively. Subjects belonging to upper SES had a higher deficiency of Vitamin D, followed by those from middle and lower SES. Symptoms of Vit D deficiency were prevalent higher in subjects who had vitamin D deficiency. Subjects with a sedentary lifestyle had a higher prevalence of VDD (85%). It was found that those who were exposed to sunlight for less than 2 hours daily had a higher prevalence of VDD. It was found that the subjects with sufficient (30 ng/ml and above), insufficient (20–29 ng/ml), and deficient Vitamin D levels were 2%, 8%, and 90%, respectively.

Discussion

VDD is now recognized as a pandemic. The leading cause of VDD is a lack of exposure to adequate sunlight. Sunlight is the primary source of vitamin D for most people. Very few foods naturally contain natural Vitamin D, and similar foods available in our country are fortified with vitamin D^[12].

VDD reduces bone collagen matrix mineralization, causing bone deformities^[13].

In this study, we found that 90% of subjects had VDD (<20 ng/ml).

We noticed that subjects had low sun exposure. A previous study conducted among adults 18–40 years residing in Kashmir reported that 83% of the subjects had VDD^[14].

The Indian subcontinent, with a prevalence of 70-100% in the general population. Even though the majority of the Indian population resides in the areas receiving ample sunlight throughout the year, still vitamin D deficiency is a problem of growing concern^[15, 16].

Men had higher mean serum ((25OH) D) levels. This was possibly due to higher sun exposure among them due to more outdoor lifestyle and activities.

Results similar to our study have been found in another study in which 91.9% of the subjects from upper SES and 89.6% from lower SES had VDD^[17]. Daytime outdoor physical activity is a proxy for sun exposure. However, exercise in itself may contribute to the maintenance of Vitamin D status, other than merely by increasing skin exposure to sunlight^[18]. Physical activity increases local bone mass, reduces calcium excretion, and raises absorption efficiency^[19]. Thus increasing serum calcium which results in sparing serum Vitamin D. In this study, it was found that adults with a sedentary lifestyle had a higher prevalence of VDD compared to those with a higher physical activity lifestyle.

Conclusion

Our study revealed a high prevalence of VDD in the study population.

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Conflicts of interest: There are no conflicts of interest.

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