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Original research article

Vitamin D Level Among Patients With Non-Specific Musculoskeletal Pain

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Abstract

The musculoskeletal system is involved in the adult sequelae of vitamin D insufficiency, which leads to proximal muscle weakness, bone pain, and osteomalacia, which is largely ignored by both physicians and patients. The purpose of the current study was to determine the prevalence of vitamin D deficiency (20ng/dl) among patients attending the orthopaedic outpatient department of a tertiary care hospital with complaints of non-specific symptoms of body pain and low back pain who did not have any other co morbid condition. This was done with the intention of determining the incidence of vitamin D deficiency.

Keywords: Vitamin D, non-specific pain, and low back discomfort are some of the keywords here

Introduction

The level of 25-hydroxyvitamin D in the serum is the most accurate representation of an individual's vitamin D status. If your serum 25OHD levels are less than 20 ng/mL, you are said to have a "deficiency." If your levels are between 20 ng/ml and 30 ng/mL, you are said to have a "insufficiency." If your levels are greater than 30 ng/mL, you are said to have "normal" levels. Vitamin D deficiency is a disorder that is relatively prevalent in the developed world as well as in the populous countries of Asia, the Middle East, and India with a low serum 25(OH) D, particularly in women. This is the case in all of these locations [1]. The skeletal and extra skeletal health benefits of vitamin D, as well as the great incidence of deficient levels of vitamin D, have been largely overlooked by both physicians and patients. This is despite the fact that inadequate levels of vitamin D are quite common [2]. It has been reported that healthy children, young adults, middle-aged adults, and elderly individuals all around the world have inadequate or low levels of 25-hydroxyvitamin D (25-OH D). The musculoskeletal system is affected by vitamin D deficiency in adults, which can result in proximal muscle weakness, bone discomfort, and osteomalacia [3]. The alterations in the lifestyle of the population, in terms of sociocultural practises that do not facilitate adequate sun exposure, in addition to the fact that the food that is consumed is rarely fortified with vitamin D, are all factors that contribute to the high prevalence of vitamin D in the Indian general population [4]. The current study was carried out with the intention of determining the prevalence of vitamin D deficiency (20ng/dl) among patients attending the orthopaedic outpatient department of a tertiary care hospital with complaints of non-specific symptoms of body pain and low back pain and no other co morbid condition. The study was designed with the intention of determining the prevalence of vitamin D deficiency among patients attending the orthopaedic outpatient department.

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Methodology

A cross-sectional study was carried out on 281 adult patients over the age of 20 years who were attending the orthopaedic department of a tertiary care hospital with non-specific complaints of general body pain/back pain/tiredness/weakness on working and walking. These patients had no other symptoms such as injury, fever, GIT problems, or known medical illness, and they had experienced no relief from their pain. Patients were screened for vitamin D levels when other routine tests such as complete blood count, ESR, The vitamin levels were evaluated in a laboratory that was accredited by the Clinical Laboratory Improvement Amendments (CLIA), and the Vitamin D Total test was performed on a Siemens ADVIA Centaur. The results of the test were standardised against ID-LC/MS/MS in accordance with the Vitamin D Standardization Program (VDSP). According to a recent consensus, patients were categorised as having a vitamin D deficiency if their levels of 25-OH vitamin D were below 20 ng/ml; an insufficiency if their levels were between 20 and 30 ng/ml; a sufficiency if their levels were above 30 ng/ml; and toxicity if their levels were above 100 ng/ml. These results were based on the results of the test [4, 5, 6]. The size of the sample was determined based on previous research showing that the prevalence of vitamin D deficiency in Indians ranges from 70 to 100 percent, depending on the age group [7]. A prevalence of vitamin D deficiency of 75% was used to compute the required sample within 5% of the true prevalence with 95% confidence. Taking into account 20% of patients who did not respond to the survey, the total number of patients who needed to be sampled was 244 people.

Results

Table 1: Age and sex distribution of the study participants

Age listribution	Male Number (%)	Female Number (%)	Total Number (%)
20-39 years	34 (34.0%)	65 (35.9%)	99 (35.2%)
40-59 years	42 (42.0%)	85 (47.0%)	127 (45.2%)
>60 years	24 (24.0%)	31 (17.1%)	55 (19.6%)
Total	100 (35.6%)	181 (64.4%)	281 (100.0%)

Table 2: Sex distribution and vitamin D level

Level of vitamin D (ng/mL)	Male	Female	Total	X^2 & p value
<20	46 (46.0%)	67 (37.0%)	113 (40.2%)	X^2 = 2.47 df = 2 p = 0.291
20-30	30 (30.0%)	58 (32.0%)	88 (31.3%)	
>30	24 (24.0%)	56 (30.9%)	80 (28.5%)	
Total	100 (35.6%)	181(64.4%)	281(100.0%)	

Table 3: Age distribution and vitamin D level

Age distribution	20-39 years	40-59 years	60 years	Total	X^2 & p value
Deficiency	49 (49.5%)	46 (36.2%)	18 (22.7%)	113 (40.2%)	X^2 = 12.8 df = 4 p= 0.012
Insufficient	34 (34.3%)	39 (30.7%)	15 (17.3%)	88 (31.3%)	
Sufficient	16	42 (33.1%)	22	80 (28.5%)	

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	16.2%)		0.0%)		
Total	99 35.2%)	127 45.2%)	55 9.6%)	281	00.0%)

Discussion

In the current study, the prevalence of vitamin D deficiency among adult patients attending the orthopaedic department of a tertiary care hospital with non-specific complaints of general body pain/back pain/tiredness/weakness on working was found to be 40.2%. The prevalence of vitamin D deficiency was higher among male patients (46%) than it was among female patients (37%). On the other hand, a higher proportion of those reported by other researchers According to Babita Ghai *et al*. [8] it was observed that 66% of the males and 73% of the women had levels of vitamin D that were insufficient. According to the findings of Halim Yilmaz *et al*. [9], vitamin deficiencies were present in 79.8% of premenopausal women. According to Chittari V. Harinarayan *et al*. [6], in rural areas, just 44% of males and 70% of women are literate. 62% of men and 75% of women living in urban areas tested positive for vitamin D deficiency. Reported 25(OH) D levels in South Indian respondents are considerably higher in comparison to those found in North Indian individuals. The present study found that the mean values of vitamin D were insufficient, ranging between 20 and 30 ng/ml, regardless of age or gender. These findings are consistent with those reported by Natasja M. [1] and Ritu *et al*. [4], who found that low serum levels of vitamin D were particularly prevalent among female participants. In his study in Kuwait, Khaled Al-Jarallah and colleagues reported that the mean values of vitamin D were insufficient for both the symptomatic participants who had musculoskeletal pain and the control participants who did not have this type of pain. David Arvold *et al*. [11] found that the mean values of 25-(OH) D were significantly lower in patients who complained of non-specific skeletal pain compared to controls. They also found that there was a positive association between defiance and skeletal pain such as leg pain, arthralgia, and widespread pain, with greater positive associations in women compared to men. The researchers Babita Ghai and colleagues [8] found that individuals with persistent low back pain had a mean vitamin level of 18.4 ng/mL, while the mean values for men were 17.3 ng/mL and the mean values for women were 19.6 ng/mL.

Conclusion

In conclusion, the mean value of the study group with musculoskeletal complaints was lower than the recommended level of 30 ng/mL, and several other studies had also proven that the level of vitamin D was low among symptomatic individuals who experienced musculoskeletal pain. When treating vitamin D deficiency in patients, it is imperative that sufficient quantities of vitamin D supplements be administered.

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