

Prevalence of Vitamin D Deficiency among Geriatric Patients

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Original

Article

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ABSTRACT

Background: Vitamin D deficiency is recognized as a global public health problem. In India Vitamin D Deficiency is prevalent, a finding that is unexpected in a tropical country with abundant sunshine. This study evaluated prevalence of vitamin D deficiency among geriatric patients. **Methods:** The present study was a hospitalized based cross sectional study conducted among geriatric patients attending the ortho. OPD of CIMS, Lucknow. Those elderly (>60 yrs) consenting to participate were including in this study. Patients who were on vitamin D3 & calcium supply (6 month) were excluded. **Results:** In this study we have taken 200 sample size. Geriatric patients who were not on vitamin D and calcium supplements for last 6 months were included for the study. Out of 200 participants, only 27(13.5%) participants had normal vitamin D levels and 173 (86.5%) study participants had low vitamin D levels among them 112 (56%) participants had vitamin D deficiency, 61(30.5%) participants had vitamin D insufficiency. **Conclusions:** Present study confirmed that Vitamin D deficiency is a major public health problem among geriatric age group.

Key words: Geriatric patients, vitamin D, deficiency, Prevalence

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INTRODUCTION

Vitamin D deficiency has re-emerged as a major public health problem worldwide.^[1,2] Currently, there is an ongoing debate as to what the optimal serum 25(OH)D concentration is for human health, but recent guidelines suggest that concentrations <50 and <75 nmol/l represent vitamin D deficiency and insufficiency, respectively. Low vitamin D status, particularly at levels below 25 nmol/l, is well recognized to have clinically adverse effects on musculoskeletal health in adults, including osteomalacia, proximal myopathy, secondary hyperparathyroidism and osteoporosis.^[3,4] A recent postmortem study that performed histomorphometric analysis of iliac crest bone biopsies from individuals diagnosed without skeletal disease also showed that a large number of patients with serum 25(OH)D levels between 25 and 50 nmol/l had histologically proven osteomalacia.^[5] Vitamin D was classified as a vitamin in the early 20th century and in the second half of the 20th century as a prohormone.^[6,7] Vitamin D has been traditionally known

as "anti-ricketic factor or sunshine vitamin". It is a unique nutrient because it can be synthesized endogenously (skin) and it functions as a hormone.^[8] Vitamin D deficiency is pandemic, yet it is the most under-diagnosed and undertreated nutritional deficiency in the world.^[9-11] Vitamin D deficiency is widespread in individuals irrespective of their age, gender, race and geography. It has been estimated that 1 billion people worldwide have Vitamin D deficiency or insufficiency.^[12] Vitamin D Deficiency (VDD) is prevalent in India, a finding that is unexpected in a tropical country with abundant sunshine.^[13] India is located between 8.4°N and 37.6°N latitude with the majority of its population living in regions experiencing optimum sunlight throughout the year. Despite its sunny environment, hypovitaminosis D is common in India. In a north Indian study prevalence of vitamin D deficiency among healthy Indians above 50 years of age was found to be 91.6 % and insufficiency 6.8%.^[14]

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Against this background present study was carried out to determine the prevalence of Vitamin D deficiency in vulnerable age group of geriatric.

METHODS

The present study was a hospitalized based cross sectional study conducted among geriatric patients attending the Medicine OPD of AFCME Delhi. Those elderly (>60 yrs) consisting to participate were including in this study. Patients who were on vitamin D₃ & calcium supply (6 month) were excluded.

The study was conducted over a period of one year. Considering prevalence of vitamin D₃ deficiency as 91.2% among adult population. The optimum sample size calculated was 129. However a total of 200 subjects were include during the study period.

A semi structure predesigned questionnaires was used to collect the basic socio-demographic detail. Blood sample was collected after overnight fasting (8 hrs.) for estimation of serum 25-Hydroxyvitamin D (Vitamin D₃). Blood sample collected were centrifuged and transport to central lab under appropriate condition and Vitamin D₃ level was estimated using blood test by concentration method.

The following guideline was used to categories vitamin D₃ deficiency:

Vitamin D Status	Adult Range ng/mL nmol/L	
Deficiency	<20	<15
Insufficiency	20 to <30	50 to <75
Sufficiency	30–100	75–250

RESULTS

Table 1 shows age wise distribution of geriatric patients. Majority of participants i.e. 116 (58 %) belonged to the age group of 60 – 69 years, while 67 (33.5 %) participants were in the age group of 70 – 79 years. Only 17 (8.5 %) participants belonged to age group of 80 above years.

Table 1: Age wise distribution of geriatric patients

Age group (in years)	Number of Participants		Total N=200
	Male	Female	
60-69	47 (58.7%)	69 (57.5%)	116 (58%)
70-79	24 (30%)	43 (35.8%)	67 (33.5%)
Above 80	9 (11.2%)	8 (6.6%)	17 (8.5%)
TOTAL	80 (40%)	120 (60%)	200 (100%)

Table 2 shows distribution of geriatric patients had according to serum Vitamin D₃ levels. Majority of participants i.e. 112 (56%) belonged to deficiency, while 61(30.5 %) participants were suffer from Insufficiency. Only 27 (13.5%) participants were normal.

DISCUSSION

In our study, Majority of participants i.e. 116 (58%) belonged to the age group of 60 – 69 years, while 67 (33.5 %) participants were in the age group of 70 – 79 years. Only 17 (8.5 %) participants belonged to age group of 80 above years and according to serum vitamin D₃ levels majority of participants i.e. 112 (56%) belonged to deficiency, while 61 (30.5%) participants suffered from insufficiency. Only 27 (13.5%) participants were normal.

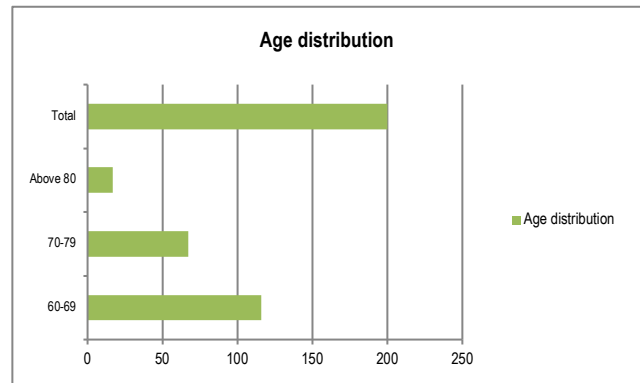


Fig 1:- Age wise distribution of geriatric patients

Table 2: Distribution of geriatric patients according to serum Vitamin D₃ levels

Age	Deficiency	Insufficiency	Normal
60-69	63 (56.2%)	36 (59.1%)	17 (62.9%)
70-79	38 (33.9%)	21 (34.4%)	8 (29.6%)
Above 80	11 (9.8%)	4 (6.5%)	2 (7.4%)
TOTAL	112 (56%)	61 (30.5)	27 (13.5%)

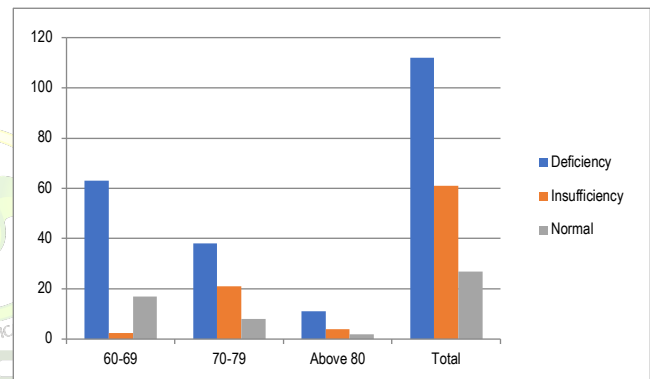


Fig 2: Distribution of geriatric patients according to serum Vitamin D₃ levels

RK Marwaha et al (2011) conducted a cross sectional study in Delhi to know the prevalence of Vitamin D deficiency, they selected age group of study participants from 50 to 84 years. Present^[16] study age group is similar to this study. Arti Muley et al (2014) conducted a cross sectional study at Vadodara among 141 adults in the age group 30 to 60 years. Maria I Lapid et al (2013)^[17] conducted a cross sectional study to find association of Vitamin D status with depression. There were 1618 patients with age group above 65 years.

A H Zargar et al (2007)^[18] conducted a study to assess the vitamin D status among healthy adults of Kashmir, they selected 92 healthy adults in the age group of 18 to 40 years. RK Marwaha et al (2011) conducted a cross sectional study in Delhi to know the prevalence of Vitamin D deficiency. There were 643 (47.77%) males and 703 (52.22%) females. A H Zargar et al (2007) conducted a study to assess the Vitamin D status among healthy adults of Kashmir, they selected 92 healthy adults including 64 men and 28 women. Jawed Altaf Baig et al (2013)^[19] conducted a study to assess Vitamin D deficiency, they have observed out of 176 participants there were 89 (50.57%) males and 87 (49.43%) females. Present study finding are consistent with above mentioned study.

Dr. Elham Sharif Et al (2010) conducted a cross sectional study at Qatar to assess the Vitamin D status, (53.5%)

participants were having severe Vitamin D deficiency, V (44.5%) participants were having Vitamin D insufficiency and 3% participants were having normal Vitamin D levels.^[20,21] Shajee Ahmed Siddique et al (2011) conducted a study among 243 patients of lower backache of age ranged from 13-74 years. Out of these 81 % had suboptimal vitamin D levels which comprised of 83.3% females and 16.7% males. RK Marwaha et al (2011) conducted a cross sectional study among 1346 subjects. They found that that Vitamin D deficiency [VDD, Serum 25(OH) D levels < 20 ng/ml] was present in 91.2% and Vitamin D insufficiency [VDI, serum 25(OH) D levels 20-<30 ng/ml] in 6.8% of study participants.

CONCLUSION

This study conducted in Career Institute of Medical Sciences, Lucknow, among geriatric patients highlighted important facts about Vitamin D status of a vulnerable geriatric age group. Present study confirmed that Vitamin D deficiency is a major public health problem among geriatric age group. Thus according to data analyzed in this study and available in the literature indicate need for public health planner to think of preventive strategies like food fortification with Vitamin D and availability of Vitamin D supplements at primary health and promote research to find out different factors associated with Vitamin D deficiency.

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