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PREVALENCE OF VITAMIN D DEFICIENCY IN APPARENTLY HEALTHY POPULATION: A HOSPITAL BASED RETROSPECTIVE STUDY.

Orthopedics

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ABSTRACT

Vitamin D deficiency is pandemic, yet it is the most under-diagnosed and under-treated nutritional deficiency in the world. It is a serious public health problem, particularly in the Indian sub-continent. Aims and objective: This study was done to evaluate the prevalence of vitamin D deficiency in apparently healthy individuals. Materials and methods: The data of 25-hydroxy(OH) vitamin D assay of 540 healthy individuals, enrolled under executive health checkup at Guwahati Neurology Research Centre and hospital, Guwahati, over a period of two years, were extracted from the hospital information system and was reviewed. 25(OH) vitamin D deficiency was defined as 25(OH) vitamin D< 20 ng/ml, insufficiency as 25(OH) vitamin D between 20 and 29 ng/ml and 25(OH) vitamin D sufficiency (VDS) as 30-100 ng/ml, Potential toxicity>100 ng/ml. Results: A total of 540 healthy individuals were included in this study. There were 300 females and 240 males.365 healthy adults were found to be Vitamin D deficient. Prevelance of Vitamin D deficiency was found to be 67.5%. 225 females and 140 males were found to be Vitamin D deficient, prevalence being 75% in female and 58.3% in male. Conclusion: Our study demonstrates a high prevalence of vitamin D deficiency in apparently healthy individuals.

KEYWORDS

Vitamin D deficiency, prevalence, healthy individuals.

Introduction:
Vitamin D deficiency is pandemic, yet it is the most under-diagnosed and under-treated nutritional deficiency in the world .1Vitamin D deficiency is widespread in individuals irrespective of their age, gender, race and geography. Vitamin D deficiency prevails in epidemic proportions all over the Indian subcontinent, with a prevalence of 70%–100% in the general population. In India, widely consumed food items such as dairy products are rarely fortified with vitamin D. Indian socioreligious and cultural practices do not facilitate adequate sun exposure, thereby negating potential benefits of plentiful sunshine. Consequently, subclinical vitamin D deficiency is highly prevalent in both urban and rural settings, and across all socioeconomic and geographic strata.2 Vitamin D deficiency can be associated with rickets in children, and secondary hyperparathyroidism in adults. Recent studies have established a link between low circulating vitamin D levels and an increasing risk of diabetes, cardiovascular or autoimmune diseases as well as various form of cancer.3,4,5,6 Vitamin D deficiency is highly prevalent in high-risk patient populations, but the prevalence among otherwise healthy adults is less well-defined.

Aims and objective: The goal of this study was to determine the prevalence of vitamin D deficiency in apparently healthy younger individuals.

Materials and methods: The data of 25(OH) vitamin D assay of 540 healthy individuals, enrolled under executive health checkup at Guwahati Neurology Research Centre and hospital, Guwahati, over a period of two years, were extracted from the hospital information system and was reviewed. Individuals having significant cardiac, hepatic, oncologic, gastic disease, or disorders affecting bone mineral metabolism including hyperthyroidism, hyperparathyroidism, osteomalacia, or Paget's disease were excluded. Subjects using medications affecting either vitamin D or bone were also excluded. Serum 25(OH)D levels were measured using VIDAS 25 OH Vitamin D Total(VITD) which is an automated quantitative test for the determination of 25-hydroxyvitamin D Total in human serum or plasma using the ELFA technique(Enzyme Linked Fluorescent Assay).The assay principle combines an enzyme immunoassay competition method with a final fluorescent detection. All the assay steps are performed automatically by the instrument. The VIDAS 25 OH Vitamin D Total measurement range extends from 8.1 ng/ml up to 126.0 ng/ml.25(OH) vitamin D deficiency was defined as 25(OH) vitamin D< 20 ng/ml, insufficiency as 25(OH) vitamin D between 20 and 29 ng/ml and 25(OH) vitamin D sufficiency as 30-100 ng/ml, Potential toxicity>100 ng/ml .

Results and observations: A total of 540 healthy individuals were included in this study. There were 300 females and 240 males.365 healthy adults were found to be Vitamin D deficient. Prevalence of Vitamin D deficiency was found to be 67.5%. Maximum number of the subjects belonged to the age group of 41–60 years. 225 females and 140 males were found to be Vitamin D deficient, prevalence being 75% in female and 58.3% in male as shown as in Table 1.

TABLE – 1 AGE AND SEX DISTRIBUTION OF SUBJECTS

AGE	FEMALE	MALE
11-20 Years	15	12
21-30 Years	34	20
31-40 Years	46	32
41-50Years	58	45
51-60Years	42	12
61-70 Years	22	10
71-80 Years	06	05
81-90 Years	02	04
TOTAL	225	140

Discussion: Many previous studies of vitamin D deficiency have been conducted in populations thought to be at unusually high risk. [7]Fewer studies have examined rates of deficiency in apparently healthy individuals.25(OH) vitamin D deficiency was observed in 67.5 % of the subject population in our study which was in accordance to the study done by Kirtikar Shukla et al where Vitamin D deficiency was found in 93% of cases.[8] In our study prevalence of Vitamin D deficiency was higher in females than in males which was in accordance with the study done by Looer AC et al.9 The 2001 to 2004 National Health and Nutrition Examination survey however showed no difference in 25(OH)D levels by sex.[10]

Conclusion: Undiagnosed vitamin D deficiency is not uncommon and 25-hydroxy vitamin D is the barometer for vitamin D status. Our data demonstrate a high prevalence of vitamin D deficiency in otherwise healthy individuals.

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