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**PREVALENCE OF VITAMIN-D  
DEFICIENCY AMONG OUTDOOR  
PATIENTS**

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**ABSTRACT:**

Vitamin D is a group of fat-soluble secosteroids responsible for increasing intestinal absorption of calcium, magnesium, and phosphate, and many other biological effects. In humans, the most important compounds in this group are vitamin D3 (also known as cholecalciferol) and vitamin D2 (ergocalciferol). This cross-sectional study was conducted among outdoor patients presenting in different hospitals. The sign, symptoms, disease duration and levels of vitamin D were noted after taking reports from the Lab. All the data was entered and analyzed with SPSS Ver. 23.0. There were 100 patients that were included in this study. The mean age of the patients was  $38.56 \pm 3.43$  years. There were 50 (50%) males and 50 (50%) females included in this study. Out of 100 patients, 23 patients had vitamin D levels less than 20 ng/ml, 25 patients had insufficient levels of vitamin D i.e., between 20 to 30 ng/ml.

**KEYWORDS: VITAMIN D DEFICIENCY**



## **INTRODUCTION:**

Vitamin D is a group of fat-soluble secosteroids responsible for increasing intestinal absorption of calcium, magnesium, and phosphate, and many other biological effects. In humans, the most important compounds in this group are vitamin D3 (also known as cholecalciferol) and vitamin D2 (ergocalciferol). The major natural source of the vitamin is synthesis of cholecalciferol in the lower layers of skin epidermis through a chemical reaction that is dependent on sun exposure (specifically UVB radiation). Cholecalciferol and ergocalciferol can be ingested from the diet and from supplements. Only a few foods, such as the flesh of fatty fish, naturally contain significant amounts of vitamin D. In the U.S. and other countries, cow's milk and plant-derived milk substitutes are fortified with vitamin D, as are many breakfast cereals. Mushrooms exposed to ultraviolet light contribute useful amounts of vitamin D. Dietary

recommendations typically assume that all of a person's vitamin D is taken by mouth, as sun exposure in the population is variable and recommendations about the amount of sun exposure that is safe are uncertain in view of the skin cancer risk.

Vitamin D from the diet, or from skin synthesis, is biologically inactive. It is activated by two protein enzyme hydroxylation steps, the first in the liver and the second in the kidneys. As vitamin D can be synthesized in adequate amounts by most mammals if exposed to sufficient sunlight, it is not essential, so technically not a vitamin. Instead, it can be considered a hormone, with activation of the vitamin D pro-hormone resulting in the active form, calcitriol, which then produces effects via a nuclear receptor in multiple locations.

Cholecalciferol is converted in the liver to calcifediol (25-hydroxycholecalciferol);

ergocalciferol is converted to 25-hydroxyergocalciferol. These two vitamin D metabolites (called 25-hydroxyvitamin D or 25(OH)D) are measured in serum to determine a person's vitamin D status. Calcifediol is further hydroxylated by the kidneys to form calcitriol (also known as 1,25-dihydroxycholecalciferol), the biologically active form of vitamin D. Calcitriol circulates as a hormone in the blood, having a major role regulating the concentration of calcium and phosphate, and promoting the healthy growth and remodeling of bone. Calcitriol also has other effects, including some on-cell growth, neuromuscular and immune functions, and reduction of inflammation. Vitamin D has a significant role in calcium homeostasis and metabolism. Its discovery was due to effort to find the dietary substance lacking in children with rickets (the childhood form of osteomalacia). Vitamin D supplements are given to treat or to prevent osteomalacia and rickets.

The evidence for other health effects of vitamin D supplementation in the general population is inconsistent. The effect of vitamin D supplementation on mortality is not clear, with one meta-analysis finding a small decrease in mortality in elderly people, and another concluding no clear justification exists for recommending supplementation for preventing many diseases, and that further research of similar design is not needed in these areas (1-3). The objective of this study is to see the prevalence of vitamin D deficiency among outdoor patients.

#### **MATERIAL OF METHODS:**

This cross-sectional study was conducted among outdoor patients presenting in different hospitals. The sign, symptoms, disease duration and levels of vitamin D were noted after taking reports from the Lab. All the data was entered and analyzed with SPSS Ver. 23.0. The quantitative variables were presented



as mean and standard deviation. The qualitative variables were presented as frequency and percentages.

### **RESULTS:**

There were 100 patients that were included in this study. The mean age of the patients was  $38.56 \pm 3.43$  years. There were 50 (50%) males and 50 (50%) females included in this study. Out of 100 patients, 23 patients had vitamin D levels less than 20 ng/ml, 25 patients had insufficient levels of vitamin D i.e., between 20 to 30 ng/ml.

### **DISCUSSION:**

Various institutions have proposed different recommendations for the amount of daily intake of vitamin D. These vary according to precise definition, age, pregnancy or lactation, and the extent assumptions are made regarding skin synthesis of vitamin D. Conversion: 1  $\mu$ g (microgram) = 40 IU (international unit). The dietary reference intake for vitamin D issued

in 2010 by the Institute of Medicine (IoM) (renamed National Academy of Medicine in 2015), superseded previous recommendations which were expressed in terms of Adequate Intake. The recommendations were formed assuming the individual has no skin synthesis of vitamin D because of inadequate sun exposure. The reference intake for vitamin D refers to total intake from food, beverages and supplements, and assumes that calcium requirements are being met.<sup>5</sup> The tolerable upper intake level (UL) is defined as "the highest average daily intake of a nutrient that is likely to pose no risk of adverse health effects for nearly all persons in the general population."<sup>403</sup> Although ULs are believed to be safe, information on the long-term effects is incomplete and these levels of intake are not recommended for long-term consumption.

For U.S food and dietary supplement labeling purposes, the amount in a serving is expressed as a percent of



Daily Value (%DV). For vitamin D labeling purposes, 100% of the Daily Value was 400 IU (10 µg), but on May 27, 2016, it was revised to 800 IU (20 µg) to bring it into agreement with the RDA (4-6).

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