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VITAMIN D LEVELS AMONG OUTDOOR PATIENTS IN DIFFERENT HOSPITALS

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Abstract:

Vitamin D is a fat-soluble vitamin that is naturally present in very few foods, added to others, and available as a dietary supplement. It is also produced endogenously when ultraviolet rays from sunlight strike the skin and trigger vitamin D synthesis. A total of 90 patients was included in the study. The mean age of the patients was 31.45±2.78 years, mean age of the females was 29.73±3.56 years and mean age of males was 34.67±3.91 years. There were 40 [44%] females and 50 [56%] males in the study. The mean Vit. D level of patients was 39.23±2.33nmol/L and the mean Vit. D level of female patients was 33.45±2.33 nmol/L and the mean Vit. D level of male patients was 41.23±2.3 nmol/L.

Keywords: *Vitamin D, Outdoor Patients*

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INTRODUCTION:

Vitamin D is a fat-soluble vitamin that is naturally present in very few foods, added to others, and available as a dietary supplement. It is also produced endogenously when ultraviolet rays from sunlight strike the skin and trigger vitamin D synthesis. Vitamin D obtained from sun exposure, food, and supplements is biologically inert and must undergo two hydroxylations in the body for activation. The first occurs in the liver and converts vitamin D to 25-hydroxyvitamin D [25[OH]D], also known as calcidiol. The second occurs primarily in the kidney and forms the physiologically active 1,25-dihydroxyvitamin D [1,25[OH]2D], also known as calcitriol [1].

Vitamin D promotes calcium absorption in the gut and maintains adequate serum calcium and phosphate concentrations to enable normal mineralization of bone and to prevent hypocalcemic tetany. It is also needed for bone growth and bone remodeling by osteoblasts and osteoclasts. Without sufficient vitamin D, bones can become thin, brittle, or misshapen. Vitamin D sufficiency prevents rickets in children and osteomalacia in adults. Together with calcium, vitamin D also helps protect older adults from osteoporosis.

Vitamin D has other roles in the body, including modulation of cell growth, neuromuscular and immune function, and reduction of inflammation. Many genes encoding proteins that regulate cell proliferation, differentiation, and apoptosis are modulated in part by vitamin D. Many cells have vitamin D receptors, and some convert 25[OH]D to 1,25[OH]2D [2,3].

Serum concentration of 25[OH]D is the best indicator of vitamin D status. It reflects vitamin D produced cutaneously and that obtained from food and supplements and has a fairly long circulating half-life of 15 days. 25[OH]D functions as a biomarker of exposure, but it is not clear to what extent 25[OH]D levels also serve as a biomarker of effect [i.e., relating to health status or outcomes]. Serum 25[OH]D levels do not indicate the amount of vitamin D stored in body tissues.

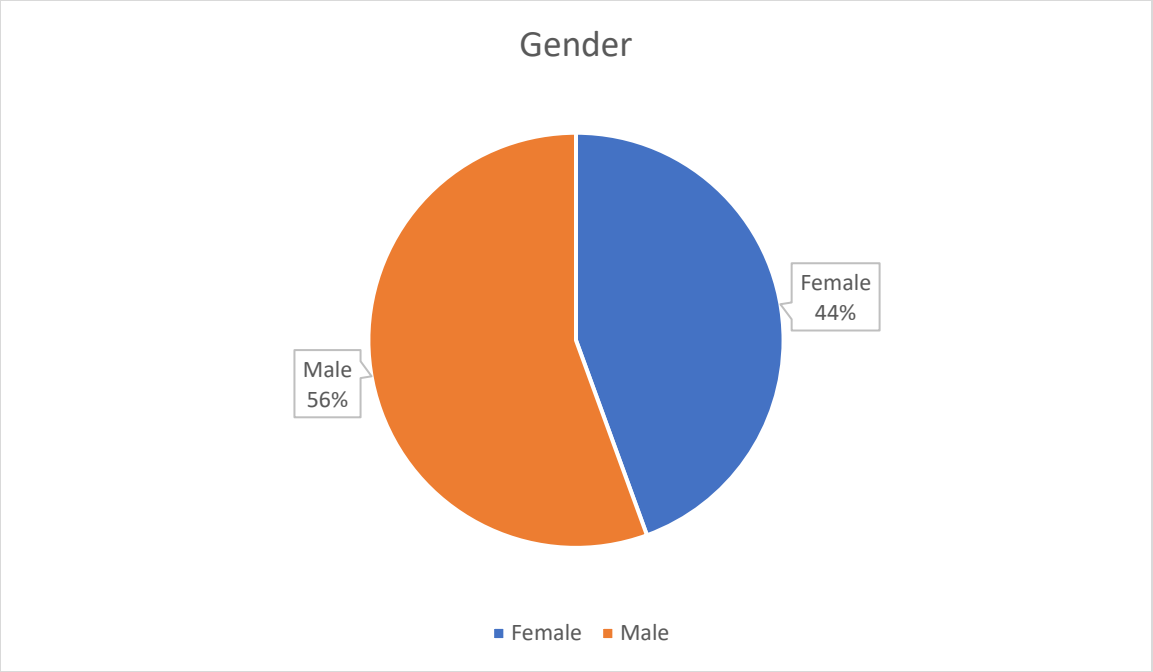
In contrast to 25[OH]D, circulating 1,25[OH]2D is generally not a good indicator of vitamin D status because it has a short half-life of 15 hours and serum concentrations are closely regulated by parathyroid hormone, calcium, and phosphate. Levels of 1,25[OH]2D do not typically decrease until vitamin D deficiency is severe.

MATERIAL AND METHODS:

This study was conducted in outdoor department. All the patients presenting in the medical outdoor were included in this study. Brief history, demographic data, lab report was collected on a predefined proforma. All the data was entered and analyzed in SPSS Ver. 25.0. The qualitative variables were presented as frequency and percentages. The quantitative variables were presented as mean and standard deviation. Relevant statistical analysis was performed.

RESULTS:

A total of 90 patients was included in the study. The mean age of the patients was 31.45±2.78 years, mean age of the females was 29.73±3.56 years and mean age of males was 34.67±3.91 years. There were 40 [44%] females and 50 [56%] males in the study. The mean Vit. D level of patients was 39.23±2.33nmol/L and the mean Vit. D level of female patients was 33.45±2.33 nmol/L and the mean Vit. D level of male patients was 41.23±2.3 nmol/L.



DISCUSSION:

Vitamin D is a group of fat-soluble secosteroids responsible for increasing intestinal absorption of calcium, magnesium, and phosphate, and multiple 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 [4,5]. 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 [6-8]. 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 [9,10].

Conflicts of interest: There were no conflicts of interest.

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