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## A study of prevalence of Vitamin D deficiency in Indian women

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### Abstract

Vitamin D deficiency is prevalent in India, although it often goes undetected and untreated. Currently, there is a significant amount of research being conducted on the topic of vitamin D deficiency due to its involvement in many illnesses.

**Keywords:** Prevalence, vitamin D, Indian women

### Introduction

Vitamin D deficiency is a prevalent nutritional insufficiency in India, yet it often goes undetected and untreated. The insufficiency had an impact on individuals regardless of their gender, age, sex, ethnicity, or locality. Currently, there is significant research being conducted on vitamin D deficiency due to its involvement in different illnesses, in addition to its well-known effects on the skeletal system. In adults, a long-term lack of vitamin D leads to the development of osteomalacia, osteoporosis, and muscle weakness. The range from [1, 7]. Recent studies have also established a connection between vitamin D insufficiency and an elevated risk of acquiring tuberculosis, otitis media, upper respiratory tract infections, influenza, and various other illnesses. The range is from [8, 12]. The deficit of this substance has also been associated with an elevated chance of developing hypertension, diabetes, obesity, and high triglyceride levels, ultimately leading to an increased risk of cardiovascular mortality [13]. Scientists have demonstrated an epidemiological link between vitamin D deficiency and type 1 diabetes [14]. A meta-analysis of observational studies revealed a significant 30% decrease in the likelihood of infants developing type 1 diabetes mellitus when they were administered vitamin D supplementation [15]. The lifestyle of persons in India is influenced by cultural and social taboos. The majority of the population in the country adheres to a vegetarian diet, while the remaining individuals belong to poor communities.

These two causes impact the nutritional status, resulting in vitamin deficiency in individuals. In addition, the attire worn by individuals will restrict sun exposure, hence exacerbating the vitamin D shortage. Furthermore, there are pills available to address vitamin D insufficiency, but, a significant number of Indians remain uninformed of their need for vitamin D. Plasma 25 (OH) D, also known as calcidiol, is the most accurate indicator of an individual's vitamin D level, as it combines both D3 and D2 forms. Immunoassays, including radioimmunoassay (RIA), enzyme linked immunosorbent assay (ELISA), chemiluminescence immunoassay, and protein binding assays, are commonly employed in clinical laboratories for the routine assessment of 25 (OH) D. LCTMS, or liquid chromatography tandem mass spectrometry, is the universally recognised standard method for measuring 25 (OH) D. Nevertheless, LCTMS is characterised by its laborious nature, high cost, and time-consuming process, which therefore limits its commercial utilisation.

Due to the predominantly asymptomatic and subclinical nature of vitamin D deficiency, there is ongoing debate on the necessity of testing. Currently, the 25(OH) D test is the most frequently requested test in the United States. A parallel pattern has recently emerged within the higher socioeconomic class in India as well.

### Materials and Methods

To investigate the frequency of vitamin D deficiency in our study, we measured the vitamin D levels in 172 women who visited the Gynae clinic between January 2019 and June 2019. This was done regardless of their clinical symptoms, using the electrochemiluminescence method.

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## Results

**Table 1:** Mean age of the subjects

Total	Mean age	Std. deviation
172	27.94	4.66

**Table 2:** Mean Vitamin D Levels

Total	Mean level	Std. deviation
172	18.49 ng/dl	4.34

**Table 3:** Frequency

Vitamin D levels	Frequency	Percent
<20 ng/dl	124	72.09
20 – 30 ng/dl	38	22.09
>30 ng/dl	09	5.23

## Discussions

Tandon *et al.* demonstrates that the average vitamin D levels in the study population were 26.86 ng/ml, whereas the average fasting blood glucose levels were 134.52±17.56 mg%. During the assessment of the study population's vitamin D status, it was found that 53.35% of the population had a deficiency of vitamin D, 19.48% had an insufficiency, and 26.83% had sufficient levels of vitamin D. The user's text is <sup>[18]</sup>. Sachan *et al.* conducted a study on 207 pregnant women at Queen Mary Hospital, King George Medical University Lucknow. The study aimed to examine the levels of maternal vitamin 25 (OH) D and cord blood vitamin 25 (OH) D in the neonates. The study found that 42.5% of the women had a vitamin D level below 10 ng/ml, while approximately 66.7% of the women had a vitamin D level below 15 ng/ml. Subsequent investigation revealed that the levels of cord blood 25(OH)D were substantially lower (5.2±3 and 11.8±5 ng/ml) in women with a 25(OH)D concentration of less than 10 ng/ml compared to mothers with a 25 (OH) D concentration greater than 10 ng/ml <sup>[16]</sup>.

Goswami *et al.* demonstrated that, despite the presence of ample sunlight, individuals in Delhi who were in good health still experienced a deficiency in vitamin D. This could be attributed to factors such as variations in skin pigmentation, insufficient direct sunshine exposure, as well as diets low in calcium and rich in phytate. Additionally, pregnancy and less solar exposure during winter months may also impact vitamin D levels. The user's text is <sup>[17]</sup>.

The utilisation of sunscreen may be one of the contributing aspects that impact the level of vitamin D. Some writers have found that sunscreens hinder the absorption of UV-B radiation by the skin, so preventing sunburn and subsequently reducing vitamin D levels <sup>[18]</sup>.

Matsuka *et al.* demonstrated a potential correlation between prolonged sunscreen usage and reduced levels of vitamin D in certain individuals. The user's text is <sup>[19]</sup>.

## Conclusion

The prevalence of vitamin D deficiency in India may be attributed to factors such as inadequate dietary consumption, excessive intake of fibre and phytate, which can lead to decreased levels of vitamin D.

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