

# The Study of Vitamin D deficiency in Peri and Postmenopausal Women of Jamshedpur, Jharkhand

Anita Kumari<sup>1</sup>, Vinita Kumari<sup>2</sup>

## ABSTRACT

**Introduction:** Vitamin D deficiency is a well-recognized epidemic problem worldwide. It is also common in older adult especially in women. The aim of this study was to determine serum Vitamin D level and factors which lead to vitamin D deficiency in peri and postmenopausal women.

**Material and Methods:** This cross sectional study was conducted on women of age group 40-70 years in department of physiology, M.G.M Medical College, Jamshedpur.

**Result:** The majority of participant 89.01% had vitamin D deficiency. In our study prevalence of vitamin D deficiency increased with age and more common in post-menopausal women than peri menopausal women.

**Conclusion:** Our study concluded that high prevalence of vitamin D deficiency in peri and postmenopausal women of Jamshedpur Jharkhand. Adequate vitamin D and calcium intake is the cornerstone of osteoporosis prevention.

**Keyword:** Vitamin D Deficiency, Peri and Postmenopausal Women

## INTRODUCTION

Vitamin D popularly known as sunshine vitamin is both vital and indispensable for human beings. It plays a pivotal role in calcium and mineral metabolism. Vitamin D is also recognized to influence wide range of fundamental biological functions such as cell differentiation, and immunomodulation that could potentially explain epidemiological and observational data linking it to variety of clinical disorders such as diabetes, hypertension autoimmune disorders and malignancy.<sup>1</sup>

The “prohormones” vitamin D exists in two forms; the plant source (ergocalciferol) (vitamin D<sub>2</sub>) and animal sources (cholecalciferol) (vitamin D<sub>3</sub>). Vitamin D<sub>2</sub> and D<sub>3</sub> are ingested from the diet; however, the major source of vitamin D<sub>3</sub> synthesized in the skin upon exposure to ultraviolet – B (UVB) light.

Vitamin D deficiency result from several factors including inadequate sun exposure, poor nutrition and certain medication such as anticonvulsant. Penetration of ultraviolet rays into the skin is also impaired by various factors such as lassitude, season, skin pigmentation and protection of sun exposed areas by sunscreen or clothing. Agency has been shown to affect vitamin D synthesis primarily through a lesser capability of skin biosynthesis.<sup>2</sup>

Indian social and/or religious norms related to public modesty dictate that most parts of and individual's body irrespective of gender, be covered. Due to urbanization in big cities, a majority of people live in very high population density areas. They perform to live in overcrowded tenements, which are

closely packed and 3-4 stories high. Consequently direct sunlight not reach inside most parts of dwelling thereby disallowing any sun exposure to individuals. In addition, lack of space offers limited options for outdoor activities. A women life style depends on several daily life activities, such as nutrition and dietary habits, sunscreen applications vitamin D intake and physical activity. A desirable lifestyle contribute to levels of vitamin D within the normal range, while a lifestyle avoiding sunlight and low vitamin D intake has adverse effect on their health.<sup>1,3</sup>

Vitamin D levels decline earlier in women than men as age progresses, Vitamin D deficiency is a common problem in India due to several factors like food fads and food habits, high fiber diet containing phosphates and phytats which can deplete vitamin D stores, genetic factors, and preference for staying indoors has increased in the urban Indians. Increased pollution along with cultural and traditional habit prevalent in certain religious significantly contribute vitamin D deficiency.<sup>4</sup>

The objective of current study was to determine serum Vitamin D levels and factors which can leads to deficiency of vitamin D in peri and postmenopausal women.

The rationale of study was to identify factors which are responsible for vitamin D deficiency so the recommendation can be made to overcome this problem. Ultimately improvement can be made in the life style of peri and postmenopausal women.

## MATERIAL AND METHODS

This cross-sectional study was conducted women of age group 40 to 70 years at the department of physiology, M.G.M. Medical College, Jamshedpur, Jharkhand. The period of study was March 2016-March 2017. After taking consent, a questionnaire was filled which include age, physical activity level, duration of sun exposure, dietary intake of vitamin D and intake of supplements. After taking aseptic measure 3 ml of blood sample collected and sent to laboratory for vitamin D<sub>3</sub> assessment.

<sup>1</sup>Tutor, Physiology, RIMS, Ranchi, <sup>2</sup>Tutor, Pharmacology, M.G.M Medical College Jamshedpur, M.G.M Medical College, Jamshedpur, India

**Corresponding author:** Dr Anita Kumari, F/24, Cheshire Home Road, Dipatoli, Ranchi, Pin-834009, India

**How to cite this article:** Anita Kumari, Vinita Kumari. The study of vitamin D deficiency in peri and postmenopausal women of Jamshedpur, Jharkhand. International Journal of Contemporary Medical Research 2018;5(12):L4-L6.

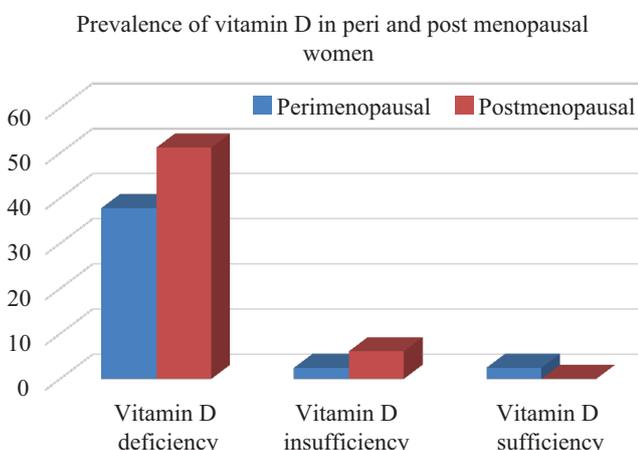
**DOI:** <http://dx.doi.org/10.21276/ijcmr.2018.5.12.30>

Variable Age	No. of Patient n=	% age
40 – 45	16	19.5%
46 – 50	19	23.17%
51 and above	47	57.31%
Perimenopausal	32	39.024%
Postmenopausal	50	60.97%

**Table-1:**

Serum 25 (OH) D levels	Cut off levels ng/mg	Group	No. of participant	Percentage
Vitamin D deficiency	L20	Perimenopause	n = 31	37.80%
		Postmenopausal	n = 42	51.21%
				Total 89.01
Vitamin D insufficiency	21 – 29	Perimenopause	n = 2	2.43%
		Postmenopausal	n = 5	6.097%
Vitamin D sufficiency	>30	Perimenopause	n = 2	2.43%
		Postmenopausal	n = 0	0
Vitamin D toxication	150	Perimenopause	00%	00%
		Postmenopausal		

**Table-2:** Serum 25(OH) levels



**Figure-1:** prevalence of vitamin D in peri and postmenopausal women

**Inclusion criteria** – peri and postmenopausal women who came as attendant along with patient in different department of MGM Medical College Jamshedpur.

**Exclusion criteria** – subject excluded from the study having any current or previous chronic diseases, history of thyroid, parathyroid diseases, renal diseases, metabolic bone diseases, history of malabsorption syndrome. Data management and statistical analysis was done by simple means and percentage.

**RESULT**

A total of 82 women of peri and postmenopausal age included in the study. Age range was 40 – 45 in 19.5% of women, 46-50 in 23.17% and 57.31% women were of 51 and more than 51 years of age. Perimenopause age was comprised of 39.03% while 60.97% women were of menopausal age group (table-1, figure-1).

Out of 82, 63% women were found to be not exposed in sun light, 27% of them were exposed to sunlight for at least 30 minutes or less per day and 10% of them were exposed for more than 30 minutes. In our study only 09% of women used

sunscreen.

Serum vitamin D levels are presented in table 2. Vitamin D deficiency were present in 37.80% of perimenopause and 51.21% of postmenopausal women, and vitamin D insufficiency was reported in 2.43% of peri and 6.09% of postmenopausal women. Only 2.43% of peri menopausal women was found sufficient for serum vitamin D level. Significant association of vitamin D level was found with body part exposed to sunlight. Significant association was also reported between socioeconomic status, education and duration of sun exposure.

Regarding summary of dietary intake out of 82 women 70% women has no intake of milk and milk product, 21% had at least 2 servings per week and only 9% had serving greater than two times, women had no fish, no egg intake as dietary source of vitamin D.

**DISUSSION**

The present study points towards a high prevalence of vitamin D deficiency in the peri and postmenopausal women. A total of 82 subjects (89.01%) (n=73%) were found deficient in vitamin D. Study conducted by S. Shukar-Udin et al also shows that about 63% of peri menopausal and 37% of the menopausal women had compromised vitamin D level.<sup>2</sup>

Study from different part of India have also reported deficiency of vitamin D in different age group.<sup>5,6</sup> Among the post-menopausal women, 90% of women showed decrease in vitamin D (84% deficient of vitamin D and 10% vitamin insufficiency).

The results of our study correlated with study of Hari Narayan et al<sup>7</sup> and Goswami et al.<sup>8</sup>

The low levels of vitamin D in elderly women may be due to inadequate exposure to sunlight and/or poor diet. In addition, aging decreased the skin’s capacity to produce vitamin D as reported by Mac Laughlin J, Holick M F.<sup>9</sup>

Also another cause of decrease in vitamin D may be decrease in hydroxylation of vitamin D and responsiveness of the

intestinal mucosa to circulating vitamin D levels in elderly individuals which was reported by Heaney R P.<sup>10</sup>

The institute of medicine recommended 200 IU/day of vitamin D for the adults younger than 51 year, 400 IU/day. 51- 70 years, and 600 IU/day for those older than 70 years. US food and Drug Administration recommends 400 IU/day regardless of age.<sup>11</sup>

Postmenopausal women are primary concern for vitamin D inadequacy, as these women already at risk of osteoporosis due to decrease estrogen levels. Supplementation could be helpful to increase bone mineral density in these women.

## CONCLUSION

Our study concluded that high prevalence of vitamin D deficiency in peri and postmenopausal women of Jamshedpur Jharkhand. Adequate vitamin D and calcium intake is the cornerstone of osteoporosis prevention.

There is need to create awareness in women and clinician about serum 25 (OH) D deficiency. There is also need to made recommendation for change in life style (avoidance of indoor confinement, proper sun exposure, optimal dietary intake of calcium and vitamin D and vitamin D supplementation as preventive and therapeutic measures in this age group.

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**Source of Support:** Nil; **Conflict of Interest:** None

**Submitted:** 21-11-2018; **Accepted:** 24-12-2018; **Published:** 01-01-2019