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RESEARCH ARTICLE
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PREVALENCE OF VITAMIN D DEFICIENCY IN FEMALES OF CHILDBEARING AGE; A CROSS-SECTIONAL STUDY FROM MEKRAN DIVISION, BALOCHISTAN

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ABSTRACT

Background: Vitamin D is crucial for young adult females it is involved in Calcium absorption and bone mineralization. It prevents osteoporosis and fractures as well as maintains bone density. The objective of the current study is to determine the Prevalence of Vitamin D deficiency in young adult females of childbearing age in the Mekran division, Balochistan.

Methodology: A cross-sectional study was conducted from June 2020 to Dec 2020 For a period of Six Months. A total of 243 females aged between 18-40 were included in this study after getting informed consent. After collecting sociodemographic data, 3cc blood was collected to analyse Vitamin D levels.

Results: The mean age of the study participants was 26.97 $\pm$ 4.82 years. The mean Vitamin D level of the study participant was 30.01 $\pm$ 31.90. 39.1% (n = 95) of the study participants were living in Rural areas while 60.9% (n = 148) were living in urban areas. Only 25.5% (n = 62) of the study participants had sufficient levels of Vitamin D. 18.9% (n = 46) had insufficient while 55.6% (n = 135) had deficient levels of Vitamin D. No significant difference was found in Vitamin D level among rural and urban residents (p = 0.79).

Conclusion: A significant number of young adult females are suffering from Vitamin D deficiency and insufficiency. Policymakers should take considerable steps to spread awareness.

Keywords: Vitamin D, Deficiency, Prevalence, Insufficiency.

INTRODUCTION

Among various fat-soluble vitamins, an important one is vitamin D. Foods high in vitamin D are found in nature including liver, mushrooms, salmon, organ meats, and egg yolks.[1] Plants are the source of ergocalciferol, or vitamin D2, whereas animal products may be used to make cholecalciferol or vitamin D3. When exposed to UV radiation, which has a wavelength range of 290-315 nm, skin cells in the epidermis start the process of converting a cholesterol precursor into pre-vitamin D. After

this precursor vitamin D undergoes isomerisation, it becomes vitamin D3. Enzymatic involvement is necessary for the active state acquisition of both vitamin D2 and vitamin D3.[2]. The process of vitamin D3 activation is carried out by certain regulatory variables and mediators, including parathyroid hormone (PTH), growth hormone, and hypophosphatemia. The activation conversion process is adjusted and completed by the combined actions of factors.

Evaluation of the 25-hydroxyvitamin D (25(OH)D) level in blood is one of the most typical ways to find out how much vitamin D a person has. It is the gold standard for estimating the body's vitamin D stores.[3]
One way to establish vitamin D status is to compare blood vitamin D levels measured in ng/ml and nmol/L. A vitamin D deficiency is defined as a blood level of Vitamin D below the reference threshold of 20 ng/ml or 30 nmol/L. It is considered that a person has a vitamin D deficiency when their serum 25(OH)D level is between 30 and 50 nmol/L, or 20 and 29 ng/ml. After reaching 30 ng/ml or 50 nmol/L, the serum 25(OH)D level is considered sufficient.
Any blood 25(OH) vitamin D level below 20 ng/dL should be considered deficient, and any value between 20 and 30 ng/dL should be considered insufficient, according to the Endocrine Society's clinical practice recommendations. Adults, adolescents, and children should be considered to have sufficient serum concentrations when these levels exceed 30 ng/dL.

Low vitamin D levels are the most common kind of micronutrient deficiency.[4] One of the most pressing problems of the modern era is vitamin D inadequacy, which affects over a billion people globally.[5-6] Vitamin D deficiency is the dietary disorder that receives the least attention and treatment despite its prevalence. Vitamin D insufficiency is an enormous issue that impacts individuals from all walks of life, regardless of age, gender, race, or location. When exposed to UVB light, the skin engages in photosynthetic processes that lead to the production of vitamin D. Assuming enough sun exposure, vitamin D levels should be constant.[7] Tropical nations like India and Bangladesh have a disproportionately high rate of vitamin D inadequacy, despite the availability of sunlight.[8-9]
Studies conducted on the prevalence of Vitamin D deficiency in young adult females are very limited, especially in the Mekran region of Balochistan. The current study aims to find out the Prevalence of Vitamin D deficiency in young adult females of childbearing age in the Mekran division, Balochistan

METHODOLOGY

This cross-sectional study was conducted from June 2020 to Dec 2020 For a period of Six Months. Using a convenient Purposive sampling technique a total of 243 females aged between 18-40 were included in this study after getting informed consent. Females who did not give consent, on medications for vitamin D deficiency were excluded from the study. After collecting sociodemographic data, 3cc blood was collected to analyse Vitamin D levels. All the collected data was entered in SPSS version 21. Qualitative data was presented in terms of frequencies. An Independent Sample t-test was used to measure the difference in Vit D levels among Rural and Urban study participants. The P-value of 0.05 was considered significant.

RESULTS

The mean age of the study participants was 26.97 $\pm$ 4.82 years. The mean Vitamin D level of the study participant was 30.01 $\pm$ 31.90. 39.1% (n = 95) of the study participants were living in Rural areas while 60.9% (n = 148) were living in urban areas. Only 25.5% (n = 62) of the study participants had sufficient levels of Vitamin D. 18.9% (n = 46) had insufficient while 55.6% (n = 135) had deficient levels of Vitamin D. The mean level of Vitamin D in participants with sufficient Vitamin D level was 71.66 $\pm$ 39.63 ng/ml. The mean level of Vitamin D in participants with insufficient Vitamin D levels was 23.64 $\pm$ 2.88 ng/ml. The mean level of Vitamin D in participants with Deficient Vitamin D levels was 13.04 $\pm$ 3.82 ng/ml. No significant difference was found in Vitamin D levels among rural and

urban residents (p = 0.79). The sociodemographic parameters of study participants are given in Table I.

Table I: Sociodemographic Data and Vitamin D Level of Study Participants.

Age in years (Mean ± SD)	26.97 + 4.82 (N = 243)
Residence	
Rural	95 (39.1%)
Urban	148 (60.9%)
Vitamin D Level	
Sufficient	62 (25.5%)
Insufficient	46 (18.9%)
Deficient	135 (55.6%)

DISCUSSION

Vitamin D has a crucial role in maintaining human health. Damage to the skeleton and other organs may result from insufficient vitamin D. Vitamin B12 is essential for many bodily functions, including immune system regulation, cell differentiation and proliferation, and the development and maintenance of strong bones and muscles. Insufficiencies in this vitamin may contribute to serious disorders including cancer and diabetes. Recent years have seen a flurry of international investigation on this vitamin's potential effects on health beyond bone. Multiple studies have shown that this vitamin is crucial for reaching reproductive maturity; in fact, a lack of it has been associated with endometriosis, PCOS, and reduced fertility.[10-11]

Vitamin D is mostly acquired by humans via exposure to sunshine and, to a lesser degree, from diet, especially dairy products. Multiple studies have shown that vitamin D insufficiency is prevalent in regions with abundant sunshine, which goes against the theoretical expectation. This might be due to several things, including a lack of vitamin D in the diet, different skin tones, and personal style choices.[12]

According to much research, vitamin D insufficiency is common in regions with enough sunshine. Prevalence estimates range from 30% to 93% in the last 20 years in countries like China, Iran, India, and Saudi Arabia.[13] Further research found that older men and women in the US and Europe who live independently and do not get any kind of care from nursing homes had a vitamin D deficit ranging from 40 to 100%.[14] Furthermore, 25-hydroxy vitamin D levels are inadequate in about 50% of postmenopausal women who are undergoing osteoporosis medication.

Low vitamin D levels are common worldwide and affect people of all ages.[15] This is the prevalence that developed nations have reported using representative data: Korea 68%, Europe 42%, Iran 35%, Mexico 9%, Saudi Arabia 81%, and the US 33%.[16] It has been shown that the frequency is above 70% in the Asian area.[17] An estimated 91% of Indian adolescents are affected, according to data from 2014.[16]

A study conducted by Taimoor et al in Quetta, Balochistan found that only 41.1% of females had a sufficient level of Vitamin D levels.[18] Our study showed that only 25.5% of females had sufficient Vitamin D levels. The findings of our study are in line with the study conducted by Uzma et al who showed that 24.5% of females aged 35-55 years had sufficient Vitamin D levels.[19] A similar study was conducted by Faryal et al who showed that 32.6% of females aged 18-27 years residing in Nawabshah Sindh had sufficient levels of Vitamin D.[20]

CONCLUSION

Vitamin D insufficiency and shortage affect a significant proportion of young adult females. Both urban and rural population females have a deficiency of Vitamin D. The policy decision-makers should make significant efforts to raise awareness.

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