

## PREVALENCE OF VITAMIN-D DEFICIENCY IN MEDICAL STUDENTS

Faryal Adnan<sup>1</sup>, Naheed Qadir Memon<sup>2</sup>, Adnan Sami<sup>3</sup>, Munazzah Meraj<sup>4</sup>, Rehnaz Shaikh<sup>5</sup>, Syed Zahid Ali<sup>6</sup>

1. Lecturer, Bio-Chemistry Department, PUMHS

2. Dean PUMHS

3. Senior Lecturer, PMI

4. Associate Professor, Biochemistry Department, PUMHS

5. Lecturer physiology department PUMHSW

6. Medical officer, Pathology Department, children Hospital Multan

Correspondence Address:  
Faryal Adnan  
faryal\_adnan@hotmail.com,  
Mob #+923337006520

**ABSTRACT...Objectives:** The main purpose of this study was to evaluate the prevalence of vitamin D status in medical students and to evaluate the risk factor of vitamin-D deficiency which will be helpful for their physical and mental health. It was cross sectional study conducted in PUMHS. **Material and Methods:** Sample was collected from PUMHS (SBA). To collect data written consent was taken. Permission was sought from in-charge of ethical committee of PUMHS. Student's age was from 18 to 27 years. Students who were suffer from any endocrinal disorder and who were on drug therapy, which affect calcium and vitamin-D metabolism like corticosteroids, rifampicin and phenytoin was excluded. Sample size was 282. The two main factors were included in this study Sun exposure and Diet. **Results:** In this study 4.9% (n =14) students had exposure to sunlight <15minutes/day with mean vitamin D values 14.71±3.75.

66. 9%(n=188) have exposure to sun light 15-30 minutes with mean vitamin D values 15.45±9.32 and 28.2%(n= 80) have exposure to sun light > 30 minutes/ day with mean vitamin D values 35.80±7.79. p value was 0.001. 7.7%(n=22) medical students taken poor diet with mean vitamin D values 13.23 ± 7.61, 89.4%(n=252) taken good diet with mean vitamin D values 31.81±8.88 and only 2.8% (n=8) taken extraordinary diet with mean vitamin D values 34.57±3.23. p value was 0.000.

**Conclusion:** it was concluded that both factors plays a crucial role in vitamin D synthesis.

**Keywords:** Work-related, Low back pain, General surgeons

**Article Citation:** Adnan F, Memon NQ, Sami A, Meraj M, Shaikh R, Ali SZ. prevalence of vitamin-D deficiency in medical students. Med J South Punjab. 2021;2(1):3-6.

### INTRODUCTION

The vitamin D deficiency is a pandemic health issue. In most developed and modernized northern countries Vitamin D deficiency is common. The deficiency of vitamin D is now identified all over the globe.<sup>1</sup> The deficiency of Vitamin D is wide spread in people of all ages, gender, race and geography. Hypovitaminosis D is highly prevalent among healthy subjects in Pakistan.. A recent research in Pakistan recorded that 90 per cent of pre menopause females had Vitamin D levels < 20ng / ml<sup>2</sup>.. In Pakistan Vitamin D deficiency affects 53.5% of peoples<sup>3</sup>. A study conducted in China showed the

deficiency of Vitamin D and insufficiency, 55.9% and 38.7% respectively<sup>4</sup>. Several studies have shown that in Asian women Vitamin D deficiency is already a serious health problem<sup>5</sup>. Vitamin D deficiency is highly prevalent throughout the Europe<sup>6</sup>. In Pakistan a research conducted at Liaquat University of medical and health sciences, observed 53% of students had Vitamin D deficiency<sup>7</sup>.

A research in Saudi Arabia among Saudi medical students showed the majority of Saudi medical students (75.2 percent) had Vitamin-D levels < 30nm / ml. The proportion of Vitamin D deficiency in

Pakistan is more or less in the same domain, but international studies shown low values. The disparity could be due to different genes and fortification of food with Vitamin D in developed countries and good medical regular follow-up<sup>8</sup>.

The main purpose of this study is to evaluate the prevalence vitamin D status in medical students and to evaluate the risk factors of vitamin D deficiency which will be helpful for their physical and mental health.

**Methodology**

It was a cross sectional study conducted at Peoples University of Medical and Health Sciences forwomen Nawabshah. Vitamin D status was determined by kit method. The sample size was calculated on 282 students. To collect data written consent was taken. Permission was sought from in- charge of ethical committee of PUMHS. Student’s age from 18 to 27 years was included in this study. Subjects with existing metabolic, endocrinal disorder and who was on drug therapy, which affects the calcium and vitamin-D metabolism like corticosteroids; rifampicin and phenytoin were excluded from this study. The two main factors were included in this study sun exposure and diet.

**RESULTS:**

A total of 4. 9% medical students have exposure to sunlight <15minutes/day with mean vitamin D values 14.71±3.75. 66. 9% have exposure to sun light 15-30 minutes with mean vitamin D values 15.45±9.32 and 28.2% have exposure to sun light > 30 minutes/ day with mean vitamin D values35.80±7.79. P value was significant (0.001).Results is described in detail in table below. Among them 7.7% medical students taken poor diet with mean vitamin D values 13.23 ± 7.61. 89.4%taken good diet with mean vitamin D values 31.81±8.88 and

only 2.8% taken extraordinary diet with mean vitamin D values34.57±3.23.pvalue is significant (0.000) . Results are mentioned in table below.

**Table 1: Vitamin D2 level of medical students vs exposure to sunlight**

Category			Vitamin D <sub>2</sub> Levels			Total
			< 20 ng/ml	21-29 ng/ml	> 30 ng/ml	
Exposure To Sunlight	Less than 15 min	Number of students	14 (4.9%)	0 (0.0%)	0 (0.0%)	14 (4.9%)
	15-30 Min	Number of students	146 (52.1%)	26 (9.2%)	16 (5.6%)	188 (66.9%)
	More than 30 min	Number of students	0(0.0%)	4 (1.4%)	76 (26.8%)	80(28.2%)
		Total	160	30	92	282
		% of Total	57.0%	10.6%	32.4%	100.0%

**Table 2 Vitamin D<sub>2</sub> level of medical student’s vs Quality of food**

			Vitamin D <sub>2</sub> Levels			Total
			less than 20 ng/ml	21-29 ng/ml	more than 30 ng/ml	
Quality of Food	Poor	Number of students	18 (6.3%)	4(1.4%)	0 (0.0)	22(7.7%)
	good	Number of students	18 (6.3%)	24(8.5%)	210(74.6%)	252 (89.4%)
	Extraordinary	Number of students	0 (0.0%)	2 (0.7%)	6 (2.1%)	8 (2.8%)
		Total	36	30	216	282
		% of Total	12.7%	10.6%	76.8%	100.0%

**DISCUSSION:**

The significance of this study is to evaluate the prevalence of vitamin-D status in study subjects as well as awareness about importance of balance diet and exposure to sun light. The dearth of vitamin D appears to be not openly acknowledged in many communities worldwide. It has been recorded to be widespread among both males as well as females among healthy children, teenagers, middle aged and elderly people<sup>9</sup>. Vitamin D deficiency is common all over the world but it is more prevalent in Pakistan<sup>10</sup>. Present study has identified two factors sun exposure and quality of food. In the present study there was significant difference of vitamin D status (<20ng/ml) among the medical students in terms of exposure to sunlight (Pvalue=0.001). In the study conducted by Chodhary et al<sup>11</sup> revealed that medical doctors who were exposed to sunlight for 30-40 minutes and 1 hour had mild deficiency as compared to the medical students who were exposed to sunlight for less than 20 minutes and the difference was statistically significant (pvalue<0.05). In our research exposure to sun observed as major risk factor for hypo vitaminosis D. Findings in present study are in agreement with preceding studies in Saudi Arabia<sup>12</sup> and elsewhere in the Middle East that establish a positive association between a person's 25(OH) D values and sunlight exposure.<sup>13</sup> The high prevalence of vitamin D deficiency among Middle Eastern women has previously been associated with inadequate exposure of their skin to sunlight because of their countries' conservative clothing customs, which specify that when outside they should wear it e.g niqab, hijab that cover most of their bodies.<sup>14,15</sup> A research conducted in UAE, in which DAWODU A, et al revealed that the mean serum 25(OH) D

was 8.6 ng/mL among Emiratis, 12.6 ng/mL among non-Gulf Arabs and 64.3 ng/mL among European women<sup>16</sup>. This research reported the variable of wearing a veil as an independent predictor of hypovitaminosis D.

In present study 7.7% medical students had poor diet and they had severe vitamin D deficiency (<20ng/ml) (Table 2). Khushdil A et al<sup>17</sup> findings were in consistent with our study. The same association between high intakes of vitamin D supplements and higher serum vitamin D was noticed by Mahmood K et al in Pakistan<sup>18</sup>. Other research showed no such correlation<sup>19</sup>. The results were comparable to earlier studies undertaken in Saudi Arabia<sup>20</sup> and in the wide ranging Middle East area<sup>21</sup> consequently, a strategic challenge for the government is the development to effective policies to support intakes that support a healthy vitamin D status.

**Conclusion:** it was concluded that both factors play a crucial role in vitamin D synthesis.

**REFERENCES:**

- 1- Ritu G, Gupta A. Vitamin D deficiency in India: Prevalence, causalities and interventions. *Nutrients*. 2014;6(2):729-75.
- 2- Khan AH, Naureen G, Iqbal R, Dar FJ. Assessing the effect of dietary calcium intake and 25 OHD status on bone turnover in women in Pakistan. *Arch Osteoporos*. 2013;8(1-2)
- 3- Riaz H, Finlayson AE, Bashir S, Hussain S, Mahmood S, Malik F, et al. Prevalence of Vitamin D deficiency in Pakistan and implications for the future. *Expert Rev Clin Pharmacol*. 2016 Feb;9(2):329-38
- 4- Yu S, Fang H, Han J, Cheng X, Xia L,

- Li S, et al. The high prevalence of hypovitaminosis D in China : A multicenter Vitamin D status survey. *Med (United States)*. 2015;94(8):e585.
- 5- Huang CH, Huang YTA, Lai YC, Sun CK. Prevalence and predictors of hypovitaminosis D among the elderly in subtropical region. *PLoS One*. 2017 Jul;12(7).
- 6- Cashman KD, journal of ... KGD-... A, 2016 U. Vitamin D deficiency in Europe: pandemic? *academic.oup.com*.2016;103(4):1033-44.
- 7- Baloch S, Devrajani B, Ghani S, Sami Z, Baig M. Assessment of Vitamin D Deficiency in Medical Students and Employees of Liaquat University of Medical and Health Sciences, Jamshoro. *Bothalia J*. 2014;44(8):99-104.
- 8- Bin Saeed AA, Torchyian AA, of ... BNA- EJ, 2015 U. Determinants of vitamin D deficiency among undergraduate medical students in Saudi Arabia. *Eur J Clin Nutr*. 2015;69:1151- 5.
- 9- Al-Elq A. The status of Vitamin D in medical students in the preclerkship years of a Saudi medical school. *J Fam Community Med*. 2012;19(2):100.
- 10- Chodhary I, Mala TA, Arif T. Prevalence of vitamin D deficiency among doctors in a tertiary care centre in north India. *Int J Res Med Sci*. 2019 May 29;7(6):2362.
- 11- Naeem Z, Almohaimeed A, Sharaf FK, Ismail H, Shaukat F, Inam SB. Vitamin D status among population of Qassim Region, Saudi Arabia. *Int J Health Sci (Qassim)*. 2011 Jul;5(2):116-24.
- 12- Bener A, Al-Ali M, Hoffmann GF. Vitamin D deficiency in healthy children in a sunny country: Associated factors. *Int J Food Sci Nutr*. 2009 Jan 21;60(SUPPL. 5):60-70.
- 13- Khushdil A, Ullah S, Ali S, Khan I, Awan T. Hypovitaminosis D in healthy students of a medical college. *Khyber Med Univ J*. 2016 Feb 14;7(4 SE-Original Articles).
- 14- Mahmood K, Akhtar S, Talib A, Haider I. Vitamin-D status in a population of healthy adults in Pakistan. *Pakistan J Med Sci*. 2009 Jul 1;25.
- 15- Allali F, El Aichaoui S, Khazani H, Benyahia B, Saoud B, El Kabbaj S, et al. High Prevalence of Hypovitaminosis D in Morocco: Relationship to Lifestyle, Physical Performance, Bone Markers, and Bone Mineral Density. *Semin Arthritis Rheum*. 2009 Jun;38(6):444-51.
- 16- Dawodu A, Absood G, Patel M, Agarwal M, Ezimokhai M, Abdulrazzaq y, et al. Biosocial factors affecting vitamin d status of women of childbearing age in the united arab emirates. *J Biosoc Sci*. 1998 Oct 1;30(4):431-7.
- 17- Khushdil A, Ullah S, Ali S, Khan I, Awan T. Hypovitaminosis D in healthy students of a medical college. *Khyber Med Univ J*. 2016 Feb 14;7(4 SE-Original Articles).
- 18- Mahmood K, Akhtar S, Talib A, Haider I. Vitamin-D status in a population of healthy adults in Pakistan. *Pakistan J Med Sci*. 2009 Jul 1;25.
- 19- Zargar AH, Ahmad S, Masoodi SR, Wani AI, Bashir MI, Laway BA, et al. Vitamin D status in apparently healthy adults in Kashmir Valley of Indian subcontinent. *Postgrad Med J*. 2007 Nov 1;83(985):713-6.
- 20- Al-Faris N. High Prevalence of Vitamin D Deficiency among Pregnant Saudi Women. *Nutrients*. 2016 Feb 4;8(2):77.
- 21- Saadi HF, Nagelkerke N, Benedict S, Qazaq HS, Zilahi E, Mohamadiyah MK, et al. Predictors and relationships of serum 25 hydroxyvitamin D concentration with bone turnover markers, bone mineral density, and vitamin D receptor genotype in Emirati women. *Bone*. 2006 Nov;39(5):1136-43.