



Assessment of serum vitamin d level in third trimester of multiparous women of sargodha region with relation to sun exposure and age group.

Abdul Haseeb Khan¹, Farzana Islam², Abdul Rehman³

1. MBBS, DCP, M. Phill (Histo)
Professor Pathology
Sargodha Medical College,
Sargodha.
2. M.Phil (Human Pathology)
Lecturer
Islamia University of Bahawalpur.
3. MBBS, Ph.D
Assistant Professor Pathology
RAK College of Medicine
RAK Medical and Health Science
University,
Ras-al-Khaimah, UAE.

Correspondence Address:

Dr. Abdul Haseeb Khan
Department of Pathology
Sargodha Medical College, Sargodha.
drabdulhksmc@gmail.com

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ABSTRACT... Objectives: To assess serum vitamin D level in third trimester multiparous pregnant females and correlate them with different parameters (sun exposure and age). **Study Design:** Cross Sectional study. **Setting:** Department of Pathology, SMC, UOS, Sargodha. **Period:** April 17th to September 17th, 2017. **Material & Methods:** A total of fifty multiparous pregnant women in 3rd trimester were included in this study. On the basis of their 25 hydroxy vitamin D (25OHD) levels, pregnant women were categorized into 2 groups: normal (>30ng/ml) and deficient (<20ng/ml). Vitamin D level was measured by CLIA (chemiluminescence immunoassay analyzer). Data related to sun exposure and age groups was recorded on self structured questionnaire. **Results:** We found that 47 multiparous women (94%) were vitamin D deficient and 3 (6%) had normal vitamin D levels. Based on associated findings, results showed significance between vitamin D and day time of sun exposure ($p = 0.02$), vitamin D and duration of sun exposure ($p = 0.01$). A significant difference between vitamin D and different age groups ($p = 0.03$) was also observed in multiparous pregnant females. **Conclusion:** My study suggested that multiparous pregnant women are more susceptible to vitamin D deficiency. A significant association exists between vitamin D and day time of sun exposure, duration of sun exposure and age groups among multiparous pregnant women.

Key words: Multiparous, Third Trimester, Vitamin D.

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INTRODUCTION

VIT D is known as a “sunshine” vitamin which is essential for growth and development of the body.¹ There are two sources for human beings to obtain vitamin D, one is endogenous source and the other is exogenous source.² The endogenous source of vitamin D is sunlight exposure and the lack of sunlight is a major cause of vitamin D deficiency (VDD).³ Exogenous sources of vitamin D include foods naturally enriched vitamin D such as oily fish and fish liver oil.⁴ Its minor quantities are available in egg yolks and meat.⁵ It is also available in sun exposed yeast, mushrooms and vitamin D fortified foods.⁶

Normal VIT D level falls in between 30-100 ng/ml 30ng/ml of 25OHD is normal serum level. VIT D insufficiency level falls in between 20-30 ng/ml while less than 20 ng/ml is considered as VDD.⁷ VDD causes hyperparathyroidism, rickets in

children and osteomalacia in adults.⁸ Rickets and osteomalacia are two disorders characterized by defective bone and cartilage mineralization.⁹

VDD is supposed to be a major public health crisis in many areas of the world¹⁰ and in Pakistan VDD is more prevalent.¹¹ In majority of communities, VDD or VDI is most common in pregnancy.¹² In Pakistan, a number of studies have shown vitamin D deficiency in pregnant women.¹³

An important risk factor for VDD is maternal parity due to depletion of vitamin D reserves in the body particularly when there is lack of vitamin D fortified foods, supplements or imbalanced diet during pregnancy.¹⁴ Most common etiological factor involved in VDD is insufficient sun exposure because those individuals who spend their most of time in sunlight have normal level of VIT D status.¹⁵ The synthesis of VIT D is also decreased

due to aging and decreased functional capacity of skin.¹⁶ Keeping all the above facts in view, present study is carried out to assess serum vitamin D level in 3rd trimester multiparous pregnant females and to find out an association with sun exposure and age groups.

MATERIAL & METHODS

A cross sectional study was conducted on third trimester pregnant women reporting in government and private health sectors in Sargodha district, Punjab, Pakistan. This research work was completed in six months from 17th April to September 17th, 2017. Fifty 3rd trimester pregnant multiparous women were included in this study. No probability purposive sampling technique had been used. Females included in this study having age of 20-35years, 3rd trimester, multiparous and no medication history known to affect endocrinal parameters were included in my research work. Females having less than 20 and more than 35 years of age, 1st and 2nd trimester and having history of DM, CVD, chronic renal failure, chronic hepatic disorders, autoimmune diseases and chronic infections were excluded.

I took consent on Performa I from selected and agreed subjects while history and questions related to associate risk factors had been noted down on Performa II. I collected 5ml venous blood into blood collection tube, centrifuged and separated serum part. Serum vitamin D levels were estimated by fully automated chemiluminiscence immunoassay analyzer (CLIA) Maglumi 1000. Data was analyzed statistically by SPSS Version 20. Frequencies of Various groups of subjects according to vitamin D status were determined. Correlations of vitamin D to different age groups, day time of sun exposure, duration of sun exposure were carried out by Chi square test.

RESULTS

During the study period, 50 third trimester multiparous pregnant women had been involved. 47 (94%) were vitamin D deficient and 3 (6%) had normal serum vitamin D levels.

Patient's Distribution		Frequency	Percent
Valid	Vitamin D deficient	47	94.0
	Normal vitamin D level	3	6.0
	Total	50	100.0

Table-I. Vitamin D status in 3rd trimester multiparous pregnant females.

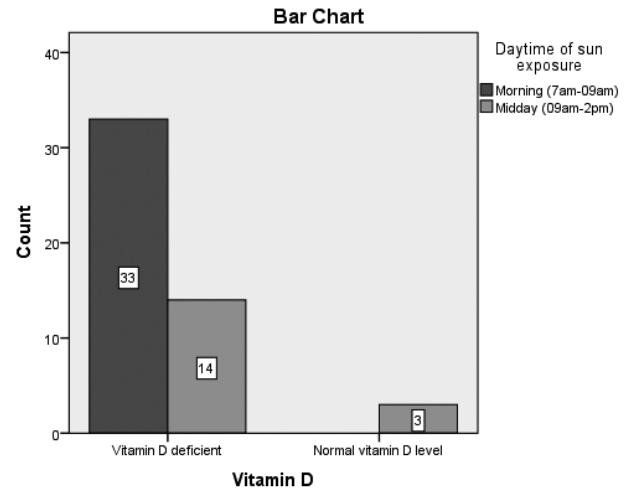


Figure-1. Vitamin D and daytime of sun exposure.

In this study 33 females got sun exposure in morning time (7am-9 am) and all were vitamin D deficient. 17 females were those who took sunlight in midday (9 am-2pm) out of them 3 (17%) had normal vitamin D levels. There was statistically significant association between vitamin D levels and daytime of sun exposure (P=0.02).

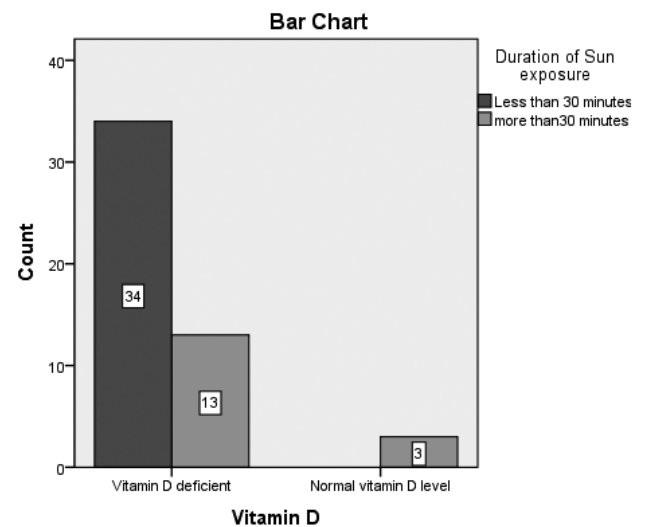


Figure-2. Vitamin D and duration of sun exposure.

This figure shows thirty four women's duration of sun exposure was less than 30 minutes and all were vitamin D deficient. Sixteen women's duration of sun exposure was more than 30 minutes and among them 3 women had normal serum vitamin D levels. A strong correlation was found between serum Vitamin D and duration of sun exposure ($P=0.01$).

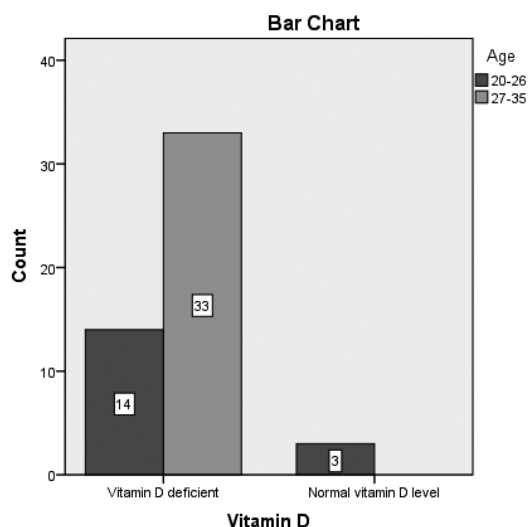


Figure-3. Serum vitamin D levels and age groups.

In present study there were two age groups: group A (20-26) and group B (27-35). 17 women reported in group A and among them 3 women's vitamin D status was normal. 33 females presented in group B and all were vitamin D deficient. There was statistically significant association between vitamin D levels and age groups ($P=0.03$).

DISCUSSION

The present study was carried out to assess serum vitamin D level in third trimester of 50 multiparous women of Sargodha district with relation to age groups and sun exposure. Our results showed that out of 50 multiparous females, 47 (96%) were VDD and 3 (6%) had normal VIT D levels. This is in accordance with other studies which reported VDD in 3rd trimester of pregnant females.¹³ A study from Pakistan involved 50 pregnant females at term to assess VIT D levels. They found 23(46%) were VDD, 16(32%) as VDI and 11 (22%) had normal vitamin D levels.¹⁷ Another study from Pakistan reported low vitamin D levels in 87.7 % of pregnant females of last trimester and normal

serum vitamin D levels in 12.03% females.¹⁸ Gharaibeh and Stoecker, (2009) suggested from their study that serum vitamin D deficiency is more prevalent in grand multiparous as compared to primiparous females. Dratva et al., 2006 have shown that multiparous females should take supplements regularly during pregnancy and lactation because multiparity has been strongly linked to vitamin D deficiency.¹⁹

As it is clearly evident from previous researches, vitamin D is endogenously synthesized in human skin and aging reduce the capability of human skin to produce vitamin D.²⁰ In present study age was divided into age groups; 20-26 and 27 -35 years respectively. In 1st age group 82% females were vitamin D deficient and 18% females had normal vitamin D levels. Meanwhile in 2nd age group all females were vitamin D deficient. There was a strong correlation between VDD and age groups ($p=0.03$).

In another study, researchers estimated vitamin D capacity in young and older subjects. After comparative assessment of vitamin D levels in both groups (young and old) they concluded that human skin capability is decreased more than two folds with aging.²¹

Results indicate that vitamin D is necessary for the improvement and maintenance of a healthy skeleton in humans, because it is proved that after age of 20 years skin thickness decreased gradually with age and vitamin D synthesis is also decreased. Therefore, fortification of vitamin D with food is necessary to avoid complications occurring due to vitamin D deficiency e.g. osteoporotic bone fractures, osteomalacia and physiological stress during pregnancy.

Vitamin D is endogenously synthesized in sunlight exposure and deficiency of sunlight is a major cause of vitamin D deficiency. Our results showed, vitamin D deficiency was more common in those pregnant females who get sunlight exposure in morning time when plentiful sunshine had not been available and whose duration of sunlight exposure was less than 30 minutes. Our results showed a strong association) of serum vitamin

D levels with daytime of sunlight exposure ($p = <.02$) and duration of sun exposure ($p = 0.01$).

Binkley et al., (2007) had done a research work and involved 93 participants (63 males and 30 females). They observed that serum vitamin D level of sun exposed people was 60 ng/ml.²² This was the first study in district Sargodha, Punjab, Pakistan in which vitamin D status was estimated in 3rd trimester of multiparous women in different age groups with relation to sun exposure.

CONCLUSION

Data in current study indicate that VIT D level decreases with parity status. A significant association exists between vitamin D status and age groups. Day time and duration of sun exposure were also found associated with VDD.



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AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Abdul Haseeb Khan	Conceptualization of study design, lab analysis.	
2	Farzana Islam	Data collection, write up, data analysis.	
3	Abdul Rehman	Literature search, proof reading.	