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Research Article

**VITAMIN D STATUS IN MOTHERS AND THEIR NEWBORNS
AND ITS RELATION WITH PREGNANCY CONSEQUENCES:
EXPERIENCE FROM A TERTIARY CARE CENTER NISHTER
HOSPITAL MULTAN IN PAKISTAN**¹Muhammad Mubeen Yaseen, ²Maimoona Shabbir, ³Muhammad Zulqarnain¹District Headquarter Hospital Jauharbad Khusab, Mubin.y62@gmail.com, ²Multan Institute of Kidney Diseases, Multan, Maimoonashabbir92@gmail.com, ³Basic Health Unit Nari Shumali, District Dera Ghazi Khan, Muhammadzulqarnain900@gmail.com**Article Received:** November 2019 **Accepted:** December 2019 **Published:** January 2020**Abstract:**

Aim- Aim of this study is to measure the quantity of D vitamin in maternal and newborns and the consequences due to the deficiency of vitamin D in mothers and their newly born babies.

Design of Study- In this study around 200 women were selected and their blood samples were taken and all the outcomes were noted.

Result- In pregnant women high occurrence of hypo vitaminosis D was found. According to this study around 86% of pregnant women had the deficiency of vitamin D, 9% had insufficient quantity of vitamin D and only 4% had the enough level of vitamin D. Women who had hypertension also had the deficiency and insufficiency of Vitamin D where as those who had normal BP also had the sufficient level of vitamin D. Patients who had the deficiency and insufficiency of vitamin D had higher rate of Cesarean section. Maternal serum 25 (OH) D levels is strongly correlated with Cord blood 25(OH) D levels.

Conclusion- In pregnant women high occurrence of hypo vitaminosis D was found and this had strong relation with maternal and fetal 25 (OH) D level. Deficiency and insufficiency of vitamin D had a strong relation with hypertension, higher rate of cesarean and result in the lower weight of newly born babies.

Keywords: Pregnancy outcomes Newborn, Hypovitaminosis D.

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INTRODUCTION:

In born metabolism vitamin D is involved and known as one of the more complex hormone. Vitamin D has a lot of implications on the metabolism, immune system and vascular function. During the sun rays vitamin D can be synthesized by our skin. As Pakistan is situated geographically at that location that is suitable for sun rays, but despite the favorable nature condition there are many other reason of the deficiency and in sufficiency of Vitamin D for example no policy of fortification of food items with vitamin D, wearing of more covered clothes and less activities in outdoor. In pregnancy the consensus of deficiency and insufficiency of vitamin D and range of cut off serum 10 to 32ng/ml is nowhere. According to a study to avoid the deficiency of vitamin D in newly born babies serum 25 (OH) is used. Concentration less than 10 ng/ml is used in case of deficiency in vitamin D level and concentration between 10 to 30ng/ml is used to in case of insufficiency of vitamin.

This study deals with the need of vitamin D in pregnant women and fetal consequences due to the deficiency and insufficiency of vitamin D during pregnancy. Many studies diagnose that D had a strong relation with hypertension, higher rate of cesarean, infectious disease and result in the lower weight of newly born babies. If a women had the deficiency of vitamin D during pregnancy then the newly born baby will surely be deficient for vitamin D as babies are completely dependent on their mothers for the supply of vitamin D. Patients who had the deficiency and insufficiency of vitamin D had higher rate of Cesarean section. Maternal serum 25 (OH) D levels is strongly

correlated with Cord blood 25(OH) D levels. This study is planned to measure the quantity of D vitamin in maternal and newborns and the consequences due to the deficiency of vitamin D in mothers and their newly born babies.

METHODOLOGY:

In this study around 200 women were selected from the labor ward and their newly born babies were also included in this study. All those women were excluded who any kind of disease had related to pregnancy, diabetes, adrenal diseases, malabsorption and those were not selected who did not want to participate. In this detailed information was recorded related to the age, previous medical history, dieting history, antenatal history and any complication during delivery etc. The number of doses of the supplements for vitamin and duration between these doses was also recorded. All the delivery details were also noted and their blood samples of mother and newborns were taken at the time of delivery and all the outcomes were noted. If a pregnant women had the deficiency of vitamin D then the newly born baby also had the deficiency of vitamin D as babies are completely dependent on their mothers for the supply of vitamin D. Patients with the deficiency and insufficiency of vitamin D had higher rate of Cesarean section. Maternal serum 25 (OH) D levels is strongly correlated with Cord blood 25(OH) D levels. This study is planned to measure the quantity of D vitamin in maternal and newborns and the consequences due to the deficiency of vitamin D in mothers and their newly born babies.

Table 1. Relation between maternal and cord blood vitamin D levels

Cord blood vitamin D	Maternal vitamin D			p value
	Deficient	Insufficient	Sufficient	
Deficient (n = 170)	168 (97.7%)	2 (10.5%)	0	\ 0.001
Insufficient (n = 23)	4 (2.3%)	17 (89.5%)	2	
Sufficient (n = 7)	0	0	7	

Due to the deficiency, many complications arises for example pre mature birth, induction rate, low weight babies, small pregnancy age.

RESULT:

In pregnant women high occurrence of hypo vitaminosis D was found. All the delivery details were also noted and their blood samples of mother and newborns were taken at the time of delivery and all the outcomes were noted. For brief analysis all the mothers were subdivided into three groups one is

insufficient with 25(OH) D levels 20–32 ng/ml, second one is deficient group with 25(OH) D levels < 20 ng/ml and third one is sufficient group with 25(OH) D levels ≥ 32 ng/ml.

It was found out that around 4% had the sufficient level of vitamin D, 86% of pregnant women had the deficiency of vitamin D and 9% had insufficient quantity of vitamin D. Patients who had the deficiency and insufficiency of vitamin D had higher rate of Cesarean section. Maternal serum 25 (OH) D levels is strongly correlated with Cord blood 25(OH) D levels. Women who had hypertension also had the deficiency and insufficiency of Vitamin D where as those who

had normal BP also had the sufficient level of vitamin D. In mothers mean value of vitamin D was 12.6 ± 6.8 ng/ml. parity of pregnant women, BMI, urban versus rural population, religion, age did not found to affect the level of vitamin D. To intake the supplements of vitamin D did not completely normalize the deficient level and also less exposure of sun on face and hand for very small time. It was also found that preeclampsia is related with the vitamin D, 26% of women were found having preeclampsia due to the deficiency of vitamin D. But in this study no relation was found between the level of vitamin D and hypertension likewise with vitamin D and anemia, abortion, premature birth no relation was found.

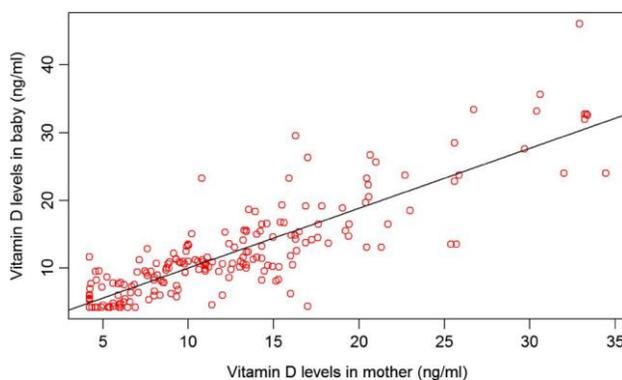


Fig. 1 Level of vitamin D in women

In this study it was found that due to various reasons 43% had induction of labor, 48% out of 200 underwent labor spontaneous onset and 9% had high rate of cesarean, patients who had cesarean 92% of them were deficient in vitamin D and 6% of them had insufficient vitamin D. From fig. 1 it is clear that if a

pregnant woman had the deficiency of vitamin D then the newly born baby also had the deficiency of vitamin D as babies are completely dependent on their mothers for the supply of vitamin D. In 85% of cord deficiency were seen, 11% had insufficient vitamin D and only 3% had sufficient vitamin D level.

Table 2 Vitamin D levels in mother (n = number) and Fetal birth weight

Fetal birth Wt. (kg)	Deficient	Insufficient	Sufficient	p value
2.5 (n = 77)	73 (94.7%)	4(5.3%)	0	0.01
2.5 (n = 123)	99 (80.5%)	15(12.2%)	9 (7.3%)	

This above table shows that there is a strong relation in deficiency of vitamin D and low weight of babies.

DISCUSSION:

In pregnant women high occurrence of hypovitaminosis D was found. According to this study around 86% of pregnant women had the deficiency of

vitamin D, 9% had insufficient quantity of vitamin D and only 4% had the enough level of vitamin D. From previous study it was concluded that women who had hypertension also had the deficiency and insufficiency

of Vitamin D where as those who had normal BP also had the sufficient level of vitamin D. Patients who had the deficiency and insufficiency of vitamin D had higher rate of Cesarean section. Maternal serum 25 (OH) D levels is strongly correlated with Cord blood 25(OH) D levels as studied in previous studies. Clinical examinations setting up a relationship between nutrient D levels and unfriendly pregnancy results, for example, preeclampsia, gestational diabetes, low birth weight, pre-term work, Cesarean conveyance, and irresistible sicknesses have clashing outcomes. Generally, the majority of the examinations were led in the created nations with inadequate information from the developing country like Pakistan. Our investigation uncovered that maternal hypovitaminosis D was altogether connected with preeclampsia ($p = 0.04$). Among the pregnant ladies in our investigation who had preeclampsia, 96.2% had nutrient D inadequacy, 3.8% had nutrient D deficiency, and none had adequate nutrient D levels. This is as per different examinations whereby lower maternal serum nutrient D fixations were found in ladies with preeclampsia when contrasted with normotensive uncomplicated ladies. In any case, late examination done by Fernandez-Alonso *et al.* discovered no distinction in mean early pregnancy maternal 25(OH) nutrient D in the individuals who created preeclampsia contrasted with those with ordinary pregnancies, yet the quantity of cases selected was too less.

In this study it was found that due to various reasons 43% had induction of labor, 48% out of 200 underwent labor spontaneous onset and 9% had high rate of cesarean, patients who had cesarean 92% of them were deficient in vitamin D and 6% of them had insufficient vitamin D. Frm fig. 1 it is clear that if a pregnant women had the deficiency of vitamin D then the newly born baby also had the deficiency of vitamin D as babies are completely dependent on their mothers for the supply of vitamin D. In 85% of cord deficiency were seen, 11% had insufficient vitamin D and only 3% had sufficient vitamin D level.

In mothers mean value of vitamin D was 12.6 ± 6.8 ng/ml. parity of pregnant women, BMI, urban versus rural population, religion, age did not found to affect the level of vitamin D. To intake the supplements of vitamin D did not completely normalize the deficient level and also less exposure of sun on face and hand for very small time.

No factually noteworthy affiliation was found in our investigation, of nutrient D levels with other unfriendly antenatal difficulties like suddenness,

diabetes mellitus, premature birth and labor, PROM, cholestasis, and gestational hypertension. Maternal serum 25 (OH) D levels is strongly correlated with Cord blood 25(OH) D levels. It was also found that preeclampsia is related with the vitamin D, 26% of women were found having preeclampsia due to the deficiency of vitamin D. But in this study no relation was found between the level of vitamin D and hypertension likewise with vitamin D and anemia, abortion, premature birth no relation was found.

CONCLUSION:

In pregnant ladies high event of hypo vitaminosis D was found and this had solid connection with maternal and fetal 25 (OH) D level. Lack and inadequacy of nutrient D had a solid connection with preeclampsia, higher pace of cesarean and result in the lower weight of recently conceived children.

REFERENCE:

1. Sachan A, Gupta R, Das V, *et al.* High prevalence of vitamin D deficiency among pregnant women and their newborns in northern India. *Am J Clin Nutr.* 2005;81:1060–4.
2. Jain V, Gupta N, Kalaivani M, *et al.* Vitamin D deficiency in healthy breastfed term infants at 3 months & their mothers in India: Seasonal variation & determinants. *Indian J Med Res.* 2011;3:267–73.
3. Marwaha RK, Tandon N, Chopra S, *et al.* Vitamin D status in pregnant Indian women across trimesters and different seasons and its correlation with neonatal serum 25-hydroxyvitamin D levels. *Br J Nutr.* 2011;106:1383–9.
4. Committee ACOG. Vitamin D: screening and supplementation during pregnancy. *Obstet Gynecol.* 2011;118:197–8.
5. Lips P. Vitamin D physiology. *Prog Biophys Mol Biol.* 2006;92:4–8.
6. Institute of Medicine. Dietary reference intakes for calcium and vitamin D. Washington, DC: The National Academies Press; 2011.
7. Zhila M, Arash HN, Ali RS, *et al.* Vitamin D status in mothers and their newborns in Iran. *BMC Pregnancy Childbirth.* 2007;7:1–7.
8. Sahu M, Bhatia V, Agarwal A, *et al.* Vitamin D deficiency in rural girls and pregnant women despite abundant sunshine in northern India. *Clin Endocrinol.* 2009;70:680.
9. Bodnar LM, Catov JM, Simhan HN. Maternal vitamin D deficiency increases the risk of preeclampsia. *J Clin Endocrinol Metab.* 2007;92:3517–22.

10. Baker AM, Haeri S, Camargo CA Jr. A nested case-control study of midgestation vitamin D deficiency and risk of severe preeclampsia. *J Clin Endocrinol Metab.* 2010;95:5105
11. Robinson CJ, Alanis MC, Wagner CL. Plasma 25-hydroxyvitamin D levels in early-onset severe preeclampsia. *Am J Obstet Gynecol.* 2010;203:361–6.
12. Fernandez AM, Dionis SEC, Chedraui P, et al. First-trimester maternal serum 25-hydroxyvitamin D(3) status and pregnancy outcome. *Int J Gynaecol Obstet.* 2012;116:6–9.
13. Merewood A, Mehta SD, Chen TC. Association between vitamin D deficiency and primary cesarean section. *J Clin Endocrinol Metab.* 2009;94:940–5.
14. Agarwal N, Arya SC. Vitamin D3 levels in pregnant women and newborns at a private tertiary care hospital in Delhi, India. *Int J Gynaecol Obstet.* 2011;113:240–1.
15. Amirlak I, Ezimokhai M, Dawodu A, et al. Current maternal infant micronutrient status and the effects on birth weight in the United Arab Emirates. *East Mediterr Health J.* 2009;15:1399–406.
16. Bowyer L, Catling PC, Diamond T, et al. Vitamin D, PTH and calcium levels in pregnant women and their neonates. *Clin Endocrinol (Oxf).* 2009;70:372–7.
17. Leffelaar ER, Vrijkotte TG, Van EM. Maternal early pregnancy vitamin D status in relation to fetal and neonatal growth. *Br J Nutr.* 2010;104:108–17.
18. Farrant HJW, Krishnaveni GV, Hill JC, et al. Vitamin D insufficiency is common in Indian mothers but is not associated with gestational diabetes or variation in newborn size. *Eur J Clin Nutr.* 2009;63:646–52.
19. Ardawi M, Nasra HA, Ba'aqueel HS, et al. A cross-sectional study showing Vitamin D status and calcium-regulating hormones in Saudi pregnant females and their babies. *Saudi Med J.* 1997;18:15–24.
20. Sabour H, Hossein NA, Maghbooli Z, et al. Relationship between pregnancy outcomes and maternal vitamin D and calcium intake. *Gynecol Endocrinol.* 2006;22:585–9.
21. Maghbooli Z, Hossein NA, Shafaei AR, et al. Vitamin D status in mothers and their newborns in Iran. *BMC Pregnancy Childbirth.* 2007;7(1):1.