Vitamin D and assisted reproduction technologies: Vitamin D levels and frozen embryo transfer (FET).

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Background: Vitamin D status influences female reproductive and pregnancy outcomes. Vitamin D deficiency is more common in younger women and higher BMI. There is some evidence that in addition to sex steroid hormones, the classic regulators of human reproduction, vitamin D also modulates reproductive processes in women and men. Human and animal data suggest that low vitamin D status is associated with impaired fertility, endometriosis and polycystic ovary syndrome. Many investigators in The US and Europe now have demonstrated higher IVF pregnancy rates in vitamin D replete women in comparison with deficiency and insufficiency women. The association of vitamin D insufficiency and the prevalence of pregnancy. However, in the US there is an inverse relationship between vitamin D levels and clinical pregnancy rates among Asian women. The object of this study is to compare the outcomes of frozen- thawed embryo transfer cycle, in a diverse groupe of Asian patients who live in Asian region , classified into three groupe, based on plasma vitamin D level.

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Methods: Prospective cohort study. Setting: Public Hospital in HochiMinh City, Vietnam. Patients: 124 infertile women undergoing frozen embryo transfer in Ho Chi Minh city, Vietnam. Interventions: Serum was collected on the second day of frozen-thawed embryo transfer cycle and was tested for vitamin D 25(OH- D). Main outcome measured: Pregnancy rates and implantation rates.

Fig. Influence of race on the relationship between recipient vitamin D levels and pregnancy rates. NP not pregnant; P pregnant. - Rudick B.J et als, 2013.

Results: In 24 months, 124 patients were recruited into the study with no characteristic differences. There were no differences in clinical pregnancy rates (43.48; 49.18 and 31.58) and implantation rates (20.83; 22.13; and 16.67) ($p>0.05$) between the deficiency, insufficiency and replete vitamin D. Our results are in concordance with those of the US studies, in which there is not an increased pregnancy and implantation rate with the increased of vitamin D level (in Asian population who are living in the US).

Summary of study population characteristics.

	Deficiency <20ng/mL	Insufficiency 20-30ng/mL	Replete > 30ng/mL	P
N	46	61	19	
Age	31.24	30.41	31.21	0.511
BMI (kg/m ²)	21.2	20.67	21.59	0.138
Endometrial thickness (mm)	9.22	9.21	9.21	1
Number of embryos	2.46	2.41	2.58	0.648
Quality embryos transferred				
Number of cells in embryo	7.07	7.18	7.04	0.720
Fragmentation rate (%)	8.62	7.17	6.31	0.097

Vitamin D levels and ART outcomes.

	Deficiency < 20ng/mL	Insufficiency 20-30ng/mL	Replete > 30ng/mL	P
Clinical Pregnancy rates (%)	43.48	49.18	31.58	0.404
Implantation rates (%)	20.83	22.13	16.67	0.732
Live Birth rates (%)	26.09	37.70	31.58	0.520

Conclusion: The limitations of the study, research design, insufficient sample size, assessing the pregnancy rate is influenced by multifaceted and multiple confounding variables. The current studies on Vitamin D are available in the population of Western Countries. Further research is needed, which in turn can find meaningful differences among Asians in general and Vietnamese in particular.

Reference:

- AFLATOONIAN, A., ARABJAHVANI, F., EFTEKHAR, M. & SAYADI, M. 2014. Effect of vitamin D insufficiency treatment on fertility outcomes in frozen-thawed embryo transfer cycles: A randomized clinical trial. *Iranian Journal of Reproductive Medicine*, 12, 595-600.
- GARBEDIAN, K., BOGGILD, M., MOODY, J. & LIU, K. E. 2013. Effect of vitamin D status on clinical pregnancy rates following in vitro fertilization. *CMAJ Open*, 1, E77-82.
- RUDICK, B. J., INGLES, S. A., CHUNG, K., STANCZYK, F. Z., PAULSON, R. J. & BENDIKSON, K. A. 2013. Influence of vitamin D levels on in vitro fertilization outcomes in donor-recipient cycles. *Fertil Steril*, 101.