



## Vitamin A Deficiency in Pregnant Women of Specific Ethnicities

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### ABOUT THE STUDY

Vitamin A, an essential micronutrient, plays an essential role in vision, the immune system, cell growth and differentiation, as well as in the development of several organs, including lungs, heart, eyes and kidneys. Since vitamin A is an essential micronutrient, limited access to foods or supplements rich in vitamin A will severely affect vitamin A levels in tissues and blood in humans. While the current prevalence of vitamin A deficiency (VAD) defined as a lower serum retinol level is estimated to be less than 1% in the United States (CDC Second Nutrition Report), there are the opinion that this rate may vary among different ethnicities and races. Interestingly, an epidemiological study based on the NHANES dataset, collected between 2003 and 2006, and demonstrated that non-Hispanic black women of childbearing age had a higher rate of higher VAD. However, this dataset was collected almost two decades ago. In addition, in general, population studies of vitamin A are not up-to-date in developed countries, including the United States [1-3].

A much higher prevalence of vitamin A deficiency in the Bronx than in white women in the same age group has recently been reported. Since Hispanics (56%) and non-Hispanic blacks (29%) are the major racial and ethnic groups in the Bronx, our results prompted us to re-analyze disparity in VAD status between Hispanic and non-Hispanic black pregnant women in the Bronx study. Here, we use Student's t-test for continuous variables, Fisher's exact test for categorical variables and permutation test to evaluate the significance of allele frequency deviations of polymorphisms [4]. Vitamin A-related genetic pattern was previously reported among ethnic groups against ambient noise. Alpha 0.05 was used as the significance level.

Analyses were performed using R version 4.0.2. In the Bronx dataset, women who planned to breastfeed with a single child with and without a history of episiotomy (or RouxenY or gastrostomy tube) were recruited. Demographic data include race / ethnicity, education, preparation and supply of body mass index, weight gain and parity. Pregnancy results include

gestational age when delivery, delivery mode and neonatal weight [5].

While people do not recommend supplementing common vitamins for pregnant women, they recommend supplementing vitamin A for pregnant women in a certain geographic area if  $\geq 20\%$  of pregnant women have concentrations Retinol in serum [6]. The renovation of our Bronx research shows that more than 40% of pregnant women suffer from serum retinol, showing strongly that the emergency action should be made to reduce VAD, especially in group's unusual nation, to reduce the risk of adverse maternal diseases and children's diseases later in life [7].

While VAD in developed countries will be a rare condition, there are a significant proportion of pregnant women VAD in some ethnic groups, even in developed countries and developed countries. Furthermore, I suggest that genetic polymorphisms may contribute to differences in VAD status across ethnic groups, at least in pregnant women. A better understanding of this association will eventually allow an adequate dietary intervention based on genetic information that may be important to improve maternal vitamin A status during pregnancy in these groups is at high risk [8-10].

### REFERENCES

1. Vogel S, Piantedosi R, O'Byrne SM, Kako Y, Quadro L, Gottesman ME, et al. Retinol-binding protein-deficient mice: biochemical basis for impaired vision. *Biochemistry*. 2002;41(51):15360-15368.
2. Quadro L, Blaner WS, Salchow DJ, Vogel S, Piantedosi R, Gouras P, et al. Impaired retinal function and vitamin A availability in mice lacking retinol-binding protein. *EMBO J*. 1999;18(17):4633-4644.
3. Liu X, Cui T, Li Y, Wang Y, Wang Q, Li X, et al. Vitamin A supplementation in early life enhances the intestinal immune response of rats with gestational vitamin A deficiency by increasing the number of immune cells. *PLoS One*. 2014;9(12):114934.
4. Sirisinha S. The pleiotropic role of vitamin A in regulating mucosal immunity. *Asian Pac J Allergy Immunol*. 2015;33(2):71-89.
5. Williams JB, Napoli JL. Metabolism of retinoic acid and retinol during differentiation of F9 embryonal carcinoma cells. *Proc Natl Acad Sci*. 1985;82(14):4658-4662.

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6. Lee TF, Mak KM, Rackovsky O, Lin YL, Kwong AJ, Loke JC, et al. Downregulation of hepatic stellate cell activation by retinol and palmitate mediated by adipose differentiation-related protein (ADRP). *J Cell Physiol.* 2010;223(3):648-657.
7. Cammas L, Romand R, Fraulob V, Mura C, Dollé P. Expression of the murine retinol dehydrogenase 10 (Rdh10) gene correlates with many sites of retinoid signalling during embryogenesis and organ differentiation. *Dev Dyn.* 2007;236(10):2899-2908.
8. Janick-Buckner D, Barua AB, Olson JA. Induction of HL-60 cell differentiation by water-soluble and nitrogen-containing conjugates of retinoic acid and retinol. *FASEB J.* 1991;5(3):320-325.
9. Marx J, Naudé H, Pretorius E. The Effects of Hypo-and Hypervitaminosis a and Its Involvement in Foetal Nervous System Development and Post-Natal Sensorimotor Functioning–A Review. *Br J Dev Disabil.* 2006;52(102):47-64.
10. Zile MH. Vitamin A and embryonic development: an overview. *J Nutr.* 1998;128(2):455-458.