# DEMOGRAPHIC STUDIES ON VITAMINS DEFICIENCY IN INFANTS OF SAMSTIPUR DISTRICT (BIHAR)

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**ABSTRACT :**

Hypovitaminosis D is most common in various developing country of the world. Due to specific culture and geographic condition cholecalciferol synthesis turns out to be different when comparing one region to another. In this study 1150 blood samples were collected from different region of samastipur for the evaluation of 25 (OH) D by Liaism 25(OH) D assay kit. The demographic results suggest that about 20% of infants were suffering from Hypovitaminosis D.

**INTRODUCTION:**

Vitamin D is a fat soluble vitamin responsible for absorption for metal ions such as Calcium, Magnasium, Iron and Zinc *etc.,* from the digested food. In human the most important group of Vitamins D includes Cholecalciferol and Ergocalciferol (Holic, *et al.,* 2006). The body synthesizes the vitamin D as skin pigmentation. In pregnant women the lower level of vitamin D is associated with gestational diabetes, preeclampsia, and small infant (Aghajafari, *et al.,* 2013). Hypovitaminosis D causes increased risk of viral infection (Beared, *et al.,* 2011) influnzal infection (Spedor, *et al.,* 2011) along with tuberculosis (Nnoahm, *et al.,* 2008). Samastipur district covers area of 2904km and according to the census 2011 the population density is1465 per sq. Km and total population of  is 2.45 million. Samastipur has 20 different population density blocks and having different economic status. The feeding behavior of infants generally depends upon the economic status and the health of mother. The primary source of food of infant is mother's milk. Thus, infant is more or less dependent upon the mother's food. steroid components of vitamins D is synthesised  in the skin after the exposure of sun shine. Therefore the study entitled "Demographic studies on Vtamins deficiency in infants of Samastipur District (Bihar) was done for knowing the actual facts.

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Date of Acceptance : 24.02.2014

Date of Publication : 20.04.2014

## MATERIALS AND METHODS:

In order to the demographic study of Vitamin D deficiency in infants, 1150 blood samples were collected from cephalic vein of 1 to 5 years old aged children's from different blocks of Samastipur district, Bihar. Serum was isolated by clotting and centrifuging at 1500rpm for 10 minutes. In the present study, commercially available kit LIAISON 25(OH)D was used for Vitamin D estimation from blood serum. This method was used for quantitative determination of 25(OH)D as a direct competitive chemiluminescence immunoassay. Specific antibody to vitamin D was used for coating magnetic particles and vitamin D was linked to an iso-luminol derivative (Yael, *et al.,* 2010).

## RESULTS AND DISCUSSION:

Specific antibody to vitamin D is used for coating magnetic particles (solid phase) and vitamin D is linked to an isoluminol derivative. During the incubation, 25(OH)D is dissociated from its binding protein and competes with labeled vitamin D for binding sites on the antibody. After the incubation, the unbound material is removed with a wash cycle. Subsequently, the starter reagents are added and a flash chemiluminescent reaction is initiated. The light signal is measured by a photomultiplier as relative light units (RLU) and is inversely proportional to the concentration of 25(OH) D present in calibrators, controls, or samples. As different investigators defined the normal lower limit in the serum as 25(OH)D levels below 12ng/ml (30nmol/l) or below 20ng/ml (50nmol/l) (Holick, 2007; and Levis, *et al.,* 2005). In the present study we defined vitamin D deficiency as levels of 25(OH)D below 15 ng/ml. Vitamin D insufficiency was defined as levels below 30 ng/ml (75 nmol/l). The vast majority of those subjects were women (86.3%), with the mean age of $58.61 \pm 0.37$ years; mean age for men was $54.93 \pm 1.09$ years. Subjects' distribution according to their age and place of residence is presented in Tables 1.

**Table: 1 Blood samples were collected from different blocks of Samastipur district (Mean value of Vitamins represent six replicates)**

| Name of Block | Total samples tested | Mean value of Vitamins D (nmol/ml) | % of infants with Hypovitaminosis D | Name of Block | Total samples tested | Mean value of Vitamins D | % of infants with Hypovitaminosis D |
|---|---|---|---|---|---|---|---|
| Vidiyapati Nagar | 52 | 18 ±0.22 | 13 | Singhia | 60 | 16±0.24 | 10 |
| Patori | 50 | **21±0.23** | 2 | Hasanpur | 52 | 18±0.22 | 14 |
| Mohiuddi Nagar | 58 | 17±0.22 | 16 | Khanpur | 60 | 17±0.23 | 15 |
| Mohan Pur | 50 | 19±0.23 | 8 | Tajpur | 64 | **20±0.24** | 1.2 |
| Waris Nagar | 60 | **20±0.22** | 1 | Morwa | 62 | 17±0.22 | 14 |
| Samastipur | 62 | 16±0.22 | 11 | Shivaji Nagar | 62 | **21±0.26** | 0.5 |
| Pusa | 54 | 18±0.24 | 12 | Btthan | 52 | 20±0.22 | 1 |
| Dalsinsarai | 57 | **20±0.22** | 1 | Ujiyarpur | 58 | 18±0.24 | 13 |
| Bibhutipur | 61 | **22±0.22** | .5 | Kalyanpur | 55 | 16±0.25 | 9 |
| Rosara | 55 | 16±0.22 | 10 | Sarairanjan | 56 | 17±0.22 | 12 |

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