

## Prevalence of Vitamin D Deficiency Among Newborns

We observed that 760 (92.1%) out of 825 healthy newborns at our institution had vitamin D deficiency (VDD) at birth. These observations highlight the importance of regular screening and supplementation of vitamin D in the early years of life.

**Keywords:** Neonate, Nutrition, Tandem Mass spectroscopy.

Despite the majority of Indian population receiving adequate sunlight throughout the year, the prevalence of vitamin D deficiency (VDD) in India is estimated to be between 40% and 90%, irrespective of age, gender, and geography [1]. It is also highly prevalent among pregnant women, lactating mothers, neonates, and/or exclusively breastfed infants [1]. Apart from skeletal manifestation, VDD has been reported to be associated with type 2 diabetes, cardiovascular dysfunction, and autoimmune diseases during later life [1-3].

Vitamin D levels of newborns are primarily dependent on maternal vitamin D levels; hence, infants born to vitamin D deficient mothers are at a higher risk of developing VDD at birth [4-6]. The objective of this study was to assess the prevalence of VDD among infants born at a single hospital to healthy mothers in Bengaluru, a cosmopolitan city in Southern India.

This study was approved by the management of our hospital. Written informed consent was obtained from the mothers of the participants. This study was performed for a duration of three months between March, 2018 and June, 2018 at Cloudnine Hospitals, Bengaluru, India. All full-term, healthy, singleton infants born during the study period were included. Preterm infants, low birthweight infants, and infants with congenital disorders, sepsis, and jaundice were excluded from the study.

At 36-48 h of life, a venous blood sample (0.5 mL) was drawn from each participant, and 25-OH vitamin D values were measured by Tandem Mass Spectroscopy (TMS). The vitamin D level was calculated by adding the measurements of vitamin D2 and vitamin D3 levels. To facilitate the comparison, we divided the measured values of vitamin D levels into three diagnostic categories, modified from the values suggested by Indian Academy of Pediatrics (IAP) [7]: Vitamin D deficiency,  $\leq 10$  ng/mL;

vitamin D insufficiency, 10–20 ng/mL; and vitamin D sufficiency,  $\geq 20$  ng/mL.

Vitamin D status were compared using the Chi-square test. Statistical analysis was performed using Microsoft Excel (Microsoft Office 2016, Microsoft Corporation, USA). Statistical significance was considered at  $P < 0.05$ .

A total of 920 children were born during the study period, of which 825 newborns were included in the study. In all, 786 (95.3%) participants had vitamin D2 levels of  $< 1$  ng/mL. The mean (SD) of D3 level and total vitamin D levels were 8.1 (7.6) ng/mL and 8.3 (7.9) ng/mL, respectively. Only 65 (7.9%) infants had normal vitamin D levels (**Table I**).

This study provides the prevalence of VDD based on the blood samples drawn from newborns, and not from the cord blood [8,9]. Our findings are in line with previously published studies, suggesting a higher prevalence of VDD among Indian newborns [1,8,9]. Although data on maternal vitamin D levels was not collected, most mothers had received antenatal supplementation of vitamin D, suggesting that this was insufficient to prevent neonatal VDD. Additionally, initiatives related to public health including food fortification, public awareness, *etc.* may be warranted to reduce burden of VDD.

This study further highlights the need for vitamin D supplementation in neonates.

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**Table I Prevalence of Vitamin D Deficiency Among Newborns\***

Vitamin D status	Male (n=444)	Female (n=366)
Deficient ( $< 10$ ng/mL)	313 (70.5)	258 (70.5)
Insufficient (10-20 ng/mL)	103 (23.2)	73 (20)
Sufficient ( $> 20$ ng/mL)	28 (6.3)	35 (9.6)

\*Gender details were missing for 15 newborns; all values in n (%).

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## Prophylactic Vitamin D Supplementation Practices for Infants: A Survey of Pediatricians From Delhi

This survey was conducted among 125 pediatricians working in public and private child care facilities of Delhi. Prescription rates of routine vitamin D supplementation varied between 70-100% for various groups of infants, despite non-availability of government guidelines. Pediatricians in private practice more frequently prescribed vitamin D supplementation to term healthy infants as compared to government pediatrician (91.4% vs 71.6%;  $P=0.005$ ).

**Keywords:** *Guidelines, Hypovitaminosis D, Prescription, Rickets.*

The global pandemic of Vitamin D deficiency is equally affecting Indian term-born, healthy and exclusively breastfed infants [1,2-5]. Various global associations and Indian Academy of Pediatrics (IAP) recommend daily supplementation of 400 IU to all infants [6-8]. We conducted this study to document the prescription practices of pediatricians in Delhi regarding prophylactic vitamin D supplementation at birth.

This cross-sectional survey was conducted among 125 pediatricians from selected public and private healthcare facilities in Delhi between December, 2017 and

February, 2018. A structured questionnaire was administered to a convenience sample of all available pediatricians with either Doctor of Medicine (MD) or Diploma (DCH) in pediatrics qualifications, and having more than six months of experience, stationed in the out-patient department of Medical colleges and associated hospitals, Delhi Government hospitals, Corporate hospitals, Private hospital / Nursing Home / Trust or Non-Government Organization - funded hospitals on the day of visit, and Private clinics of Delhi.

From 67 healthcare facilities located all over Delhi, we enrolled 125 pediatricians; 102 (81.6%) were working in hospitals while rest were practicing in the clinics. Pediatricians from public and private facilities were comparable for their gender, postgraduate qualification, and awareness of IAP guidelines for vitamin D supplementation. A higher number of participants from private sector had been practicing for more than 10 years ( $P<0.001$ ).

The overall prescription rates for routine supplementation at birth were 80.8%, 94.4%, and 97.6% for term appropriate for gestational age (AGA), term low birthweight (LBW), and preterm infants, respectively. Routine supplementation to term healthy (AGA) infants was prescribed more often by those working in private set-up (53/58, 91.4%) as compared to pediatricians working in government facilities (48/67, 71.6%) ( $P=0.005$ ). All pediatricians in private practice were prescribing vitamin D to term born LBW infants.