Prevalence and Correlates of Vitamin A Insufficiency Among 12–18-Month-Old Children Living in Slums of Mumbai, India

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Objectives: We aimed to determine the prevalence of baseline vitamin A insufficiency (VAI; serum retinol (SR) < 1.05μmol/L) and to identify potential correlates of SR and VAI in a population of 12–18-month-old children participating in a randomized controlled trial in urban slums in Mumbai, India.

Methods: In this cross-sectional analysis, we determined SR concentrations in archived serum samples (N = 118) that were collected from 12–18-month-old children in urban slum communities of Western Mumbai in March–October 2017. We adjusted SR measurements using the BRINDA adjustment method for C-reactive protein.[1] Child, maternal and household characteristics were assessed as potential correlates. Linear [β(SE)] and binomial [RR (95% CI)] regressions were used to identify correlates of SR and VAI, respectively. Age and sex were retained in all models.

Results: The children in this population had a median (IQR) age of 14.5 (12.4, 16.7) months, and 46.6% were girls. Almost a third (27.1%) were underweight (weight-for-age Z-score <-2) and 9.3% were wasted (weight-for-length Z-score <-2). One third (30.5%) were anemic (hemoglobin < 11g/dL) and 19.5% of children were zinc-deficient (Zn < 70μg/dL). Median (IQR) unadjusted SR was 1.1 (0.9, 1.4) μmol/L and VAI was present among 50 (42.4%) of the population. After adjusting for inflammation, SR was 1.2 (1.0, 1.5) μmol/L and VAI was present in 38 (32.2%) of children. In multivariate regressions, each nmol/L increase in vitamin D [25(OH)D] was associated with a 0.01 μmol/L increase in SR [β (SE) 0.01 (0.004), p = 0.004], and each additional child under 5 years living in the household was associated with lower SR [−0.13 (0.04), p = 0.003].

Conclusions: In these 12–18-month-old children, VAI was prevalent in nearly two out of every five children.

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