Eur J Nutr

. 2022 Feb;61(1):197-209.

 doi: 10.1007/s00394-021-02636-7. Epub 2021 Jul 12.

**Prevalence of vitamin A deficiency and dietary inadequacy in Indian school-age children and adolescents**

[Geereddy Bhanuprakash Reddy](https://pubmed.ncbi.nlm.nih.gov/?term=Reddy+GB&cauthor_id=34251518)[1](https://pubmed.ncbi.nlm.nih.gov/34251518/#full-view-affiliation-1), [Tattari Shalini](https://pubmed.ncbi.nlm.nih.gov/?term=Shalini+T&cauthor_id=34251518)[1](https://pubmed.ncbi.nlm.nih.gov/34251518/#full-view-affiliation-1), [Santu Ghosh](https://pubmed.ncbi.nlm.nih.gov/?term=Ghosh+S&cauthor_id=34251518)[2](https://pubmed.ncbi.nlm.nih.gov/34251518/#full-view-affiliation-2), [Raghu Pullakhandam](https://pubmed.ncbi.nlm.nih.gov/?term=Pullakhandam+R&cauthor_id=34251518)[1](https://pubmed.ncbi.nlm.nih.gov/34251518/#full-view-affiliation-1), [Boiroju Naveen Kumar](https://pubmed.ncbi.nlm.nih.gov/?term=Kumar+BN&cauthor_id=34251518)[1](https://pubmed.ncbi.nlm.nih.gov/34251518/#full-view-affiliation-1), [Bharati Kulkarni](https://pubmed.ncbi.nlm.nih.gov/?term=Kulkarni+B&cauthor_id=34251518)[1](https://pubmed.ncbi.nlm.nih.gov/34251518/#full-view-affiliation-1), [Avula Laxmaiah](https://pubmed.ncbi.nlm.nih.gov/?term=Laxmaiah+A&cauthor_id=34251518)[1](https://pubmed.ncbi.nlm.nih.gov/34251518/#full-view-affiliation-1), [Umesh Kapil](https://pubmed.ncbi.nlm.nih.gov/?term=Kapil+U&cauthor_id=34251518)[3](https://pubmed.ncbi.nlm.nih.gov/34251518/#full-view-affiliation-3), [Sila Deb](https://pubmed.ncbi.nlm.nih.gov/?term=Deb+S&cauthor_id=34251518)[4](https://pubmed.ncbi.nlm.nih.gov/34251518/#full-view-affiliation-4), [Rajkumar Hemalatha](https://pubmed.ncbi.nlm.nih.gov/?term=Hemalatha+R&cauthor_id=34251518)[1](https://pubmed.ncbi.nlm.nih.gov/34251518/#full-view-affiliation-1), [Anura V Kurpad](https://pubmed.ncbi.nlm.nih.gov/?term=Kurpad+AV&cauthor_id=34251518)[5](https://pubmed.ncbi.nlm.nih.gov/34251518/#full-view-affiliation-5), [Harshpal S Sachdev](https://pubmed.ncbi.nlm.nih.gov/?term=Sachdev+HS&cauthor_id=34251518)[6](https://pubmed.ncbi.nlm.nih.gov/34251518/#full-view-affiliation-6)

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* PMID: 34251518

* DOI: [10.1007/s00394-021-02636-7](https://doi.org/10.1007/s00394-021-02636-7)

**Abstract**

**Purpose:**There are no representative estimates of vitamin A deficiency (VAD) and risk of vitamin A (VA) dietary inadequacy in Indian children and adolescents. To evaluate, from national surveys, the prevalence of VAD measured by serum retinol concentrations (< 0.7 µmol/L or < 20 µg/dL), and the risk of VA dietary inadequacy and excess intake beyond the tolerable upper limit (TUL).

**Methods:**National and state-level VAD prevalence adjusted for inflammation was estimated in school-age children (5-9 years: 10,298) and adolescents (10-19 years: 9824) from the Comprehensive National Nutrition Survey (CNNS 2016-18). The risk of dietary inadequacy against age-specific average VA requirements, and excess intake against the TUL, was assessed from the National Sample Survey Office (NSSO 2014) data.

**Results:**Serum retinol concentrations increased with age (5-19 years) in both genders and were significantly lower in school-age children (1.02 µmol/L, CI: 1.01-1.03) compared to adolescents (1.13 µmol/L, CI 1.12-1.15). The inflammation-adjusted prevalence of VAD in school-age children and adolescents was 19.3% (CI 18.8-19.9) and 14.4% (CI 13.9-14.9) respectively, and this was > 20% in seven and four states for children and adolescents, respectively. The prevalence of VAD was significantly higher among children with lower socio-economic status. The risk of dietary VA inadequacy, from the NSSO survey, was 69 and 78% in children and adolescents, respectively. This risk reduced to 6 and 17% with VA fortified oil and milk intake, while the proportion of intakes exceeding the TUL became 6 and 0.5% in children and adolescents, respectively.

**Conclusions:**The national prevalence of VAD in school-age children and adolescents in India was just less than 20%. The risk of dietary VA deficiency is likely to decline substantially with VA fortified food intake, but a risk of excessive intake also begins to appear; therefore, a careful assessment of the risk of hypervitaminosis A is required at these ages.

**Keywords:**Adolescents; CNNS; India; NSSO; School-age children; Vitamin A deficiency.

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