



# Prevalence of Vitamin A Deficiency is a Greater Concern in Children in India



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**Abbreviations:** VAD: Vitamin A deficiency

## Introduction

Vitamin A deficiency (VAD) is an important cause of nutritional blindness in young children [1] and VAD causes more than 250,000 children to go blind in Asia each year; 52,500 such cases per year are from India [2]. Vitamin A deficiency also leads to retarded growth and development, decreased resistance to infection, and increased child morbidity and mortality [3]. VAD in preschool children is a proxy indicator of maternal VAD and it affects school children. Little attention has been paid to the prevalence of VAD in the preschool age group in India. Hence, this short review was undertaken.

## Methods

We reviewed findings related to xerophthalmia and VAD in preschool, school-aged children, pregnant mothers and lactating mothers from published, unpublished, web-based sources, professional society newsletters and reports published by governmental and nongovernmental organizations. Vitamin A deficiency status was primarily defined as a serum [or plasma] retinol concentration  $<0.7\mu\text{mol/l}$  (equivalent to  $<20\mu\text{g/dl}$ ). Xerophthalmia was diagnosed on the basis of ocular signs and symptoms according to WHO recommendations [4].

## Findings

One hospital based study reported that prevalence of VAD in pregnant mothers was 4% (serum retinol values  $<20\mu\text{g/dl}$ ) in West Bengal [5], India. A survey conducted on children aged 5-15 years in a rural area of Maharashtra assessed the prevalence of VAD was 9.8% [6]. One study carried out in 5135 school children ranging between 6-16 years in Jodhpur indicated that the prevalence of xerophthalmia was 9.89% [7]. A cross-sectional study conducted in 1094 preschool children from 2 randomly selected urban areas of western India revealed that the prevalence of xerophthalmia was 8.7% [2]. Another regional (southern state) study showed that the maximum [72%] number of VAD cases are seen in low birth weight ( $<5$  years of age) in poor families [8]. A survey in five northeastern

states (Assam, Bihar, Orissa, West Bengal and Tripura) showed the prevalence of Bitot spots to be 0.7-2.2 percent and of night blindness to be 1.2-4.0 percent, indicating a public health problem in all five states [9]. The community studies carried out in Andhra Pradesh [10], Tamilnadu [11] and Uttar Pradesh [12] indicated that 30-50 percent of children have retinol levels below  $0.7\mu\text{mol/l}$ . A multi center study in the slum area of Chandigarh revealed that the prevalence rate of VAD was 24.6% in preschool children [13]. Another multi center study has found that VAD was still responsible for 26.4% cases of childhood blindness [14]. Khamgaonakar et al. [15] reported that the prevalence of VAD in rural children was 23-34.8% [15]. It is also evident that the prevalence of VAD was much higher in malnourished (15.7%) than well nourished (1.8%) preschool children [16] in Jaipur city. A study, conducted in different parts of India reported that prevalence of VAD (serum retinol  $<0.7\mu\text{mol/l}$ ) was 77.0% in Mumbai, 30.0-80.1% in Hyderabad, 17.0-70.8% in Tamil Nadu, 26.3% in New Delhi, 63.8% in Orissa and 52.3% in Andhra Pradesh [17]. A clinical trial reported that the proportion of infants with serum retinol  $\leq 0.7\mu\text{mol/l}$  was 81.1% in Indian urban slum area [18]. The overall prevalence of VAD in India was much higher in preschool children than school children. The prevalence of xerophthalmia in school children was little higher than preschool children [19,20].

## Conclusion

The existing scientific data revealed that the incidence of severe VAD is shown in the preschool age group in India. There were marked variations by state and also between urban and rural locations. The possible reason to the peak of incidence of VAD is probably due to maternal VAD, decreased breast feeding and related to poor weaning practices [8]. High prevalence of VAD among preschool children is also due to lack of awareness and knowledge regarding their food requirements and absence of a responsible adult care giver. To prevent the prevalence of VAD in young children, mother should be advised to breast feed

for as long as possible. From the age of 6 months it is crucial to introduce semisolid foods containing vitamin A such as dark green and yellow leafy vegetables and fruits and to ensure adequate intake of synthetic vitamin A by preschool children, pregnant and lactating women.

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