

# Prevalence and Risk Factors of Vitamin A Deficiency in Children and Women of Child Bearing Age

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## ABSTRACT

**Background:** Vitamin A also plays a role in the morphology and physiology of the eyeball. The present study was conducted to assess prevalence and risk factors of vitamin A deficiency among children and women. **Methods:** The present study was conducted on 96 children of age ranged 5-12 years and their mothers of both genders. Parents of toddlers were asked for symptoms, suggesting that the child may have poor vision in dim light. The body mass index (BMI) was calculated. Serum retinol levels were measured for all participants high-performance liquid. **Results:** Out of 96 patients, boys were 54 and girls were 42. Out of 54 boys, 7 boys and out of 42 girls, 4 girls had vitamin A deficiency. 56 mothers had low SES, 28 had medium and 12 had high. Mother education was upto college level in 28 and upto high school in 78. Number of children in family was >2 seen in 52 and 2 in 44 parents. The difference was significant (P< 0.05). **Conclusion:** The prevalence of vitamin A deficiency was found to be 11.45%. Risk factors were low socio- economic status, >2 children in family and low education level of mothers.

**Keywords:** Children, Risk, Vitamin A.

## INTRODUCTION

Vitamin A, or retinol, is a fat-soluble substance found in liver (particularly fish liver) and in egg yolk and dairy products Carotenoids — potential provitamin A precursors that can be converted to retinol in the wall of the gut — are present in green leafy vegetables, red palm oil, yellow fruits, and the like The relative biological values of these various substances were formerly expressed in international units (IU) of vitamin A activity.<sup>[1]</sup>

Vitamin A also plays a role in the morphology and physiology of the eyeball, by acting on cell differentiation and by guaranteeing the tissue integrity of the eyeball complex formation, particularly in its anterior segment (sclera and cornea) and the fundus of the eye (retina) with its singular functions of cones and rods.<sup>[2]</sup> VAD encompasses a set of eye signs and signals, with xerophthalmia being used as an umbrella term for the clinical spectrum of its ocular manifestations. VAD is still considered the principal cause of avoidable blindness in the world.<sup>[3]</sup> Moreover, VAD is a predisposing and aggravating

factor for comorbidities such as diarrhea, respiratory infections, measles, whooping cough, moderate and severe forms of malnutrition in children, and different dermatological lesions. Attention has been increasingly drawn to the interaction between infections.<sup>[4]</sup>

Vitamin A deficiency (VAD) causes night blindness, xerophthalmia, and preventable childhood morbidity. A survey conducted by the National Nutrition Monitoring Bureau (NNMB) reported a prevalence of 61% of subclinical VAD at the national level.<sup>[5]</sup> The present study was conducted to assess prevalence and risk factors of vitamin A deficiency among children and women.

## MATERIALS AND METHODS

The present study was conducted in the department of Pediatrics. It comprised of 96 children of age ranged 5-12 years and their mothers of both genders. The study was approved from the institutional ethical committee. All were informed regarding the study and written consent was obtained.

Data such as name, age, gender etc. was recorded. Socio-economic status, frequency of consumption of vitamin A rich food, history of vitamin A supplementation was recorded. Parents of toddlers were asked for symptoms, suggesting that the child

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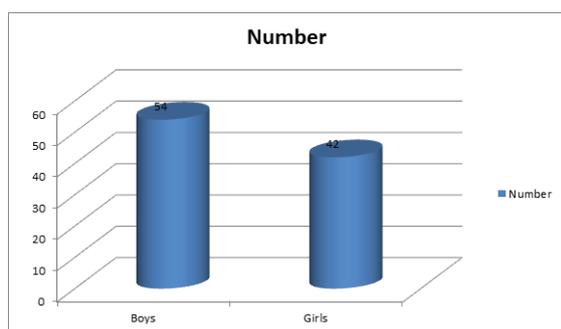
may have poor vision in dim light. The body mass index (BMI) was calculated. Serum retinol levels were measured for all participants high-performance liquid. Results were subjected to statistical analysis. P value less than 0.05 was considered significant.

## RESULTS

**Table 1: Distribution of patients**

Gender	Boys	Girls
Number	54	42

[Table 1] shows that out of 96 patients, boys were 54 and girls were 42.

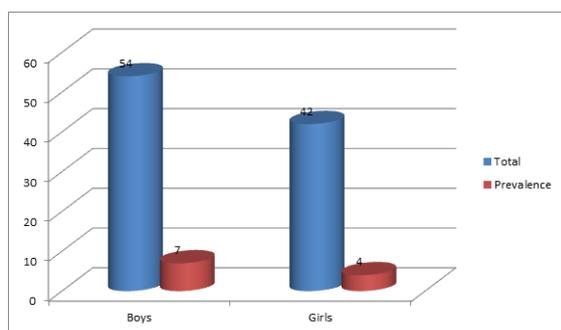


**Figure 1: Distribution of patients**

**Table 2: Prevalence of vitamin A deficiency**

Genders	Total	Prevalence
Boys	54	7
Girls	42	4

[Table 2, Figure 2] shows that out of 54 boys, 7 boys and out of 42 girls, 4 girls had vitamin A deficiency.

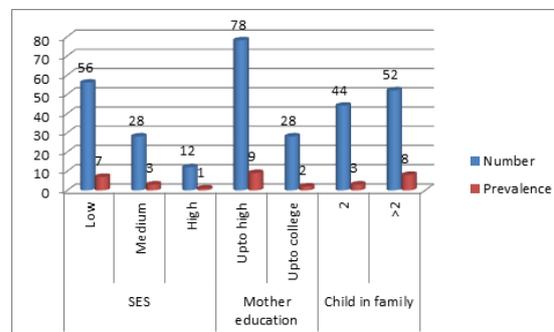


**Figure 2: Prevalence of vitamin A deficiency**

**Table 3: Risk factors**

Risk factors		Number	Prevalence	P value
SES	Low	56	7	0.01
	Medium	28	3	
	High	12	1	
Mother education	Upto high	78	9	0.04
	Upto college	28	2	
Child in family	2	44	3	0.05
	>2	52	8	

[Table 3, Figure 3] shows that 56 mothers had low SES, 28 had medium and 12 had high. Mother education was upto college level in 28 and upto high school in 78. Number of children in family was >2 seen in 52 and 2 in 44 parents. The difference was significant ( $P < 0.05$ ).



**Figure 3: Risk factors**

## DISCUSSION

A child with borderline, marginal intake to begin with will have very limited stores. Any sudden drop in intake, either as a result of a change in diet or because of impaired absorption (as in gastroenteritis), or a sudden increase in metabolic demand will cause rapid depletion of limited reserves.<sup>[6]</sup> This can precipitate blinding xerophthalmia (even in a child whose eyes had previously appeared entirely normal) or overwhelming sepsis and death. When liver retinol stores are very high, however, an individual may go for months without vitamin A and not suffer serious consequences.<sup>[7]</sup> The availability of stored vitamin A also depends on a child's general nutritional status. Severely malnourished, protein-deficient children synthesize RBP at a much reduced rate. Serum retinol levels may therefore be subnormal, even if liver stores are high. Moreover, a diseased liver cannot store as much retinol, or make as much RBP, as a normal one.<sup>[8]</sup> The present study was conducted to assess prevalence and risk factors of vitamin A deficiency among children and women.

In this study, out of 96 patients, boys were 54 and girls were 42. Out of 54 boys, 7 boys and out of 42 girls, 4 girls had vitamin A deficiency. Hadi et al,<sup>[9]</sup> in their cross-sectional study children aged 1–8 years and women aged 15–45 years were recruited. Participants were randomly selected by cluster sampling. Their sociodemographic characteristics and frequency of consumption of Vitamin A rich food were collected through a structured questionnaire. Anthropometric measures and serum retinol levels, using high-performance liquid chromatography, were estimated for all participants. A total of 166 children and 211 women participated in this study. The prevalence of VAD among the children (1–8 years) was 10.2%

and among women of the reproductive age group was 3.8%. Dietary intake was not associated with serum retinol levels. Low educational status of the head of the household and pregnancy was significantly associated with an increased risk of VAD among children and women, respectively.

We found that out of 54 boys, 7 boys and out of 42 girls, 4 girls had vitamin A deficiency. The percentage was 11.45%. 56 mothers had low SES, 28 had medium and 12 had high. Mother education was upto college level in 28 and upto high school in 78. Number of children in family was >2 seen in 52 and 2 in 44 parents. Kazemi et al,<sup>[10]</sup> found that the prevalence of vitamin A and D deficiency was 73.1% and 60.7% respectively. Children in Gaza were 1.34 and 1.96 times more likely to be deficient in vitamin A and D respectively compared to children in the West Bank. Anaemic children were 1.5 times more likely to be deficient in vitamin A. Older children (> 1 year-old) were more likely to be deficient in vitamin D, and females were 2.72 times more likely to be deficient than males. Results suggest no association between maternal education levels, feeding practices such as breastfeeding and complementary feeding and vitamin A and D deficiency.

Night blindness is generally the earliest manifestation of vitamin A deficiency. When mild, it may become apparent only after photic stress resulting from being in bright light, such as flying a kite on a sunny day. Affected children no longer move about the house or neighbourhood after dusk, but prefer to sit in a secure corner, often unable to find their food or toys.<sup>[11]</sup>

Night blindness of recent onset in a preschool child is typical of vitamin A deficiency. Other causes of the condition are relatively rare and almost never present in this age group. Some societies or cultures, particularly those in which vitamin A deficiency is endemic, use specific terms to describe the condition, such as “chicken eyes” (chickens lack rods and are thus night-blind).<sup>[12]</sup>

## CONCLUSION

Authors found that prevalence of vitamin A deficiency was found to be 11.45%. Risk factors were low socio- economic status, >2 children in family and low education level of mothers.

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