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Original Research

Assessment of vitamin A deficiency among children- A clinical study

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***ABSTRACT*:**

Background: Vitamin A deficiency is common among children and child bearing mothers. The present study was conducted to assess prevalence of vitamin A deficiency among children. **Materials & Methods:** The present study was conducted on 48 children of age ranged 4-10 years. In all children, history of vitamin A supplementation, socio-economic status, frequency of consumption of vitamin A rich food etc. was recorded. Serum retinol levels were measured. **Results:** Out of 48 patients, boys were 18 and girls were 30. Out of 18 boys, 4 boys (22.2%) and out of 30 girls, 8 (26.7%) girls had vitamin A deficiency. 32 children had low SES, 6 had medium and 10 had high. The difference was significant (P< 0.05). **Conclusion:** Authors found that prevalence of vitamin A deficiency was found 22.2% in boys and 26.7% in girls.

Key words: Serum retinol, Socio-economic status, Vitamin A.

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INTRODUCTION

Vitamin A deficiency is common among children and child bearing mothers.[1] 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.[2]

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.[3] When liver retinol stores are very high, however, an individual may go for months without vitamin A and not suffer serious consequences.[4] 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.[5] The present study was conducted to assess prevalence of vitamin A deficiency among children.

MATERIALS & METHODS

The present study was conducted in the department of Pediatrics. It comprised of 48 children of age ranged 4-10 years and their mothers of both genders. The study was approved from the ethical committee. All were informed regarding the study and written consent was obtained.

Data such as name, age, gender etc. was recorded. In all children, history of vitamin A supplementation, socio-economic status, frequency of consumption of vitamin A rich food etc. was recorded. Serum retinol levels were measured. Results were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Gender	Boys	Girls
Number	18	30

Table I shows that out of 48 patients, boys were 18 and girls were 30.

Graph I Distribution of patients

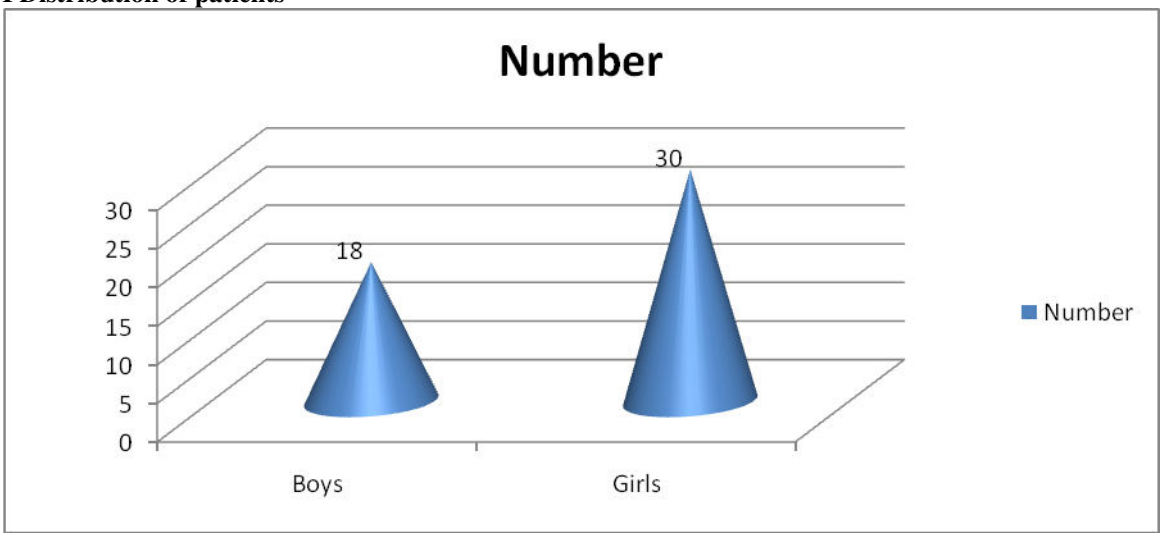


Table II Prevalence of vitamin A deficiency

Genders	Prevalence	Percentage
Boys	4	22.2
Girls	8	26.7

Table II, graph II shows that out of 18 boys, 4 boys (22.2%) and out of 30 girls, 8 (26.7%) girls had vitamin A deficiency.

Graph II Prevalence of vitamin A deficiency

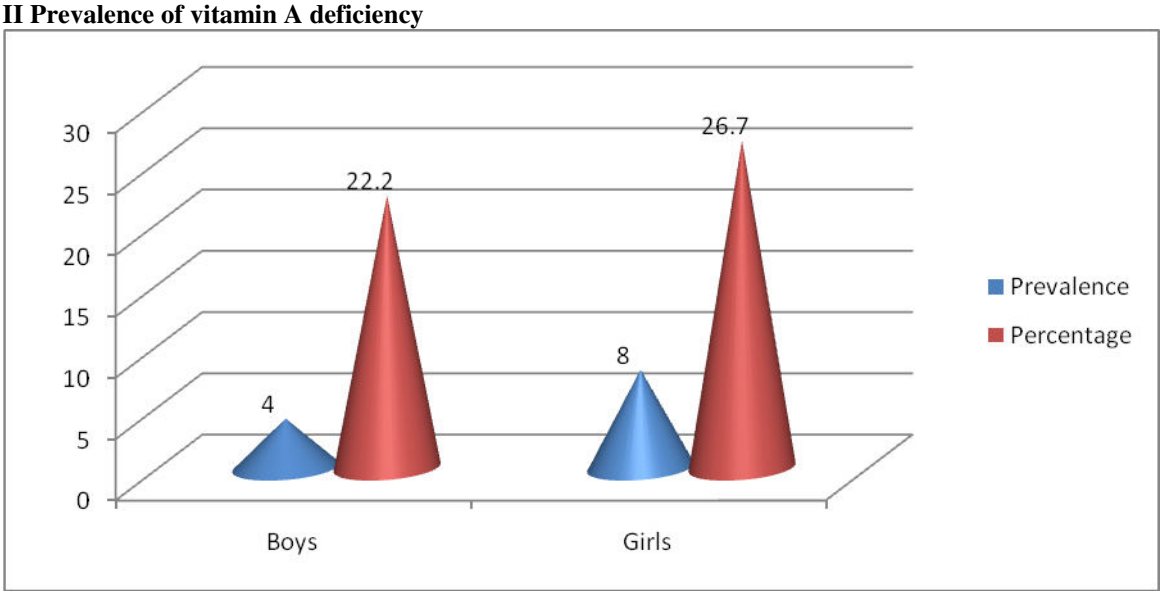
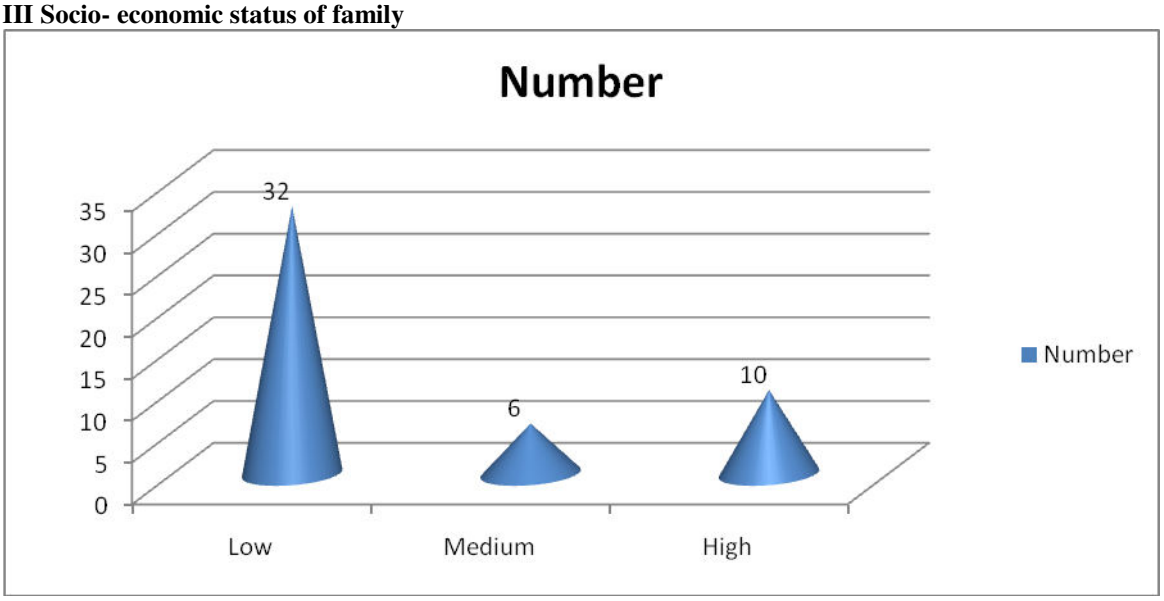


Table III Socio- economic status of family

Risk factors	Number	P value
Low	32	0.01
Medium	6	
High	10	

Table III, graph III shows that 32 children had low SES, 6 had medium and 10 had high. The difference was significant (P< 0.05).

Graph III Socio- economic status of family



DISCUSSION

Vitamin A deficiency is a common form of micronutrient malnutrition affecting 21.1% of preschool-age children and 5.6% of pregnant women worldwide. Vitamin A is an essential nutrient required for maintaining immune function, eye health, vision, growth and survival in human beings. Over the years, numerous studies have been conducted to identify the biological functions of vitamin A, the health consequences associated with deficiency, and the mechanisms that explain these relationships.[6,7] The present study was conducted to assess prevalence of vitamin A deficiency among children.

In this study, out of 48 patients, boys were 18 and girls were 30. Samba et al[8] in their study sample of 2,696 preschool children was examined to determine the rates of vitamin A deficiency. Ninety clusters of 30 children, aged six months to six years, were selected, using a randomized two-level cluster-sampling method. Vitamin A deficiency was determined by assessing the prevalence of active xerophthalmia (night blindness and/or Bitot spots) in the cross-over sample of 2,696 individuals. A semi-quantitative seven-day dietary questionnaire was concurrently applied to the mothers of children enrolled to estimate the latter's consumption of vitamin A-rich food. Vitamin A status was assessed by performing the modified relative dose-response test (MRDR) on dried blood spots (DBS) from a subsample of 207 children aged less than six years and the impression cytology with transfer (ICT) test on a subsample of 1,162 children. Of the children enrolled, 5.2% suffered from night blindness, 8.0% had Bitot spots, and 2.5% had other vitamin A deficiency sequelae. Fifty-three percent of the ICT tests showed the presence of vitamin A deficiency. The biochemical MRDR test showed that the vitamin A status of 30% of the study children was critical. Twenty-seven of them had retinol levels of <10 µg/dL and 50% had retinol levels of 10-20 µg/dL. The poor health status and low rates of consumption of vitamin A-rich food are the main factors determining critical status. Vitamin A deficiency, reflecting poor nutrition and health, is a serious public-health issue among children aged less than six years.

We found that out of 18 boys, 4 boys (22.2%) and out of 30 girls, 8 (26.7%) girls had vitamin A deficiency. 32 children had low SES, 6 had medium and 10 had high. The difference was significant (P< 0.05). 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).[9] 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.[10]

CONCLUSION

Authors found that prevalence of vitamin A deficiency was found 22.2% in boys and 26.7% in girls.

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