

Original article:

Assessment of Vitamin Deficiencies among Malnourished Children: A Hospital Based Study

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Abstract:

Background: Nutritional health status of children plays a very important role in their growth, cognitive development and overall health. Nutritional problems are often overlooked among children. Vitamins are essential for various metabolic activities of body.

Aim: To assess vitamin deficiencies in malnourished children aged between 1 to 12 years.

Method: A total of 100 patients attending OPD at Government D.B. General Hospital, Churu, Rajasthan (India) were selected for the study. The samples selected were aged between 1 to 12 years. A selfconstructed questionnaire was prepared and presented to the patients. Choices of questions were based eating habits of patients, vitamins taken, type of deficiency, supplements used etc. face to face interview was also conducted. Responses from the patients were evaluated statistically.

Results: In present study most common age group was found to be 3 to 5 years i.e. 38% children. Of the 100 patients only 22% parents reported that they give nutritional supplement to their child whereas 78 % never used nutritional supplement i.e. 78%. Vitamin A and D was found to be very common among children.

Conclusion: Vitamin A and D are frequently observed in paediatric patients and especially malnourished kids. Early diagnosis and proper education can help to eliminate the issue.

Key words: Malnourished, Vitamins, Deficiency, Children, Health.

Introduction:

World Health Organization defined Health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.¹ Diet and nutrition plays an immense role in the promotion and maintenance of good health throughout the life and holds a prominent position in prevention measures.^{2,3} Studies in past have shown that inadequate diet with insufficient micronutrient density leads to impairment of physical growth.⁴ Nutritional deficiencies have become very common due to low socioeconomic status of people as well as changing lifestyle and dietary habits.

According to world health organization 175 million children in the developing world are malnourished as indicated by low weight for age and 230 million are stunted as indicated by height for age.⁵ Nutritional deficiencies can lead to kwashiorkor, marasmus and marasmic kwashiorkor. Other examples of malnutrition include obesity, nutritional anemia, rickets, infantile beriberi, and infantile scurvy.⁶ High nutritional requirement for children less than 5 years of

age has been observed because they are undergoing a period of rapid growth. When intake of nutrition is deficient there is less energy, this can lead to malnutrition in the long run.⁷

So the objective of present study was to assess vitamin deficiencies in malnourished children aged between 1 to 12 years.

Materials and methods

A cross sectional study was conducted with a total of 100 individuals attending OPD at Government D.B. General Hospital, Churu, Rajasthan (India). Sample selected for the study were aged between 1 to 12 years old children both males and females were selected for the study. Out of 100 samples 50 were males and 50 were females. Ethical clearance was obtained from regional education officer. Written informed consent was obtained from the individuals participating in the study. Patients were assured about the confidentiality of the information provided.

Inclusion Criteria

- Malnourished children
- Aged between 1 to 12 years

Exclusion Criteria

- Those with chronic systemic disease
- mental disorder

A self constructed questionnaire consisting of questions regarding general health was prepared. Bilingual language i.e. Hindi and English were used in questionnaire. The validation of the questionnaire was done. Questionnaire was distributed among the participants and importance of answering was explained.

Statistical analysis

Questionnaire was collected from the participants and data was obtained. Data were analyzed using SPSS package descriptive data. Chi-square test was used in statistical evaluation of bivariate frequency distributions.

Results

Of the 100 patients selected in present study, 50 were males i.e. 50% and 50 were females i.e. 50% (Table 1). Age groups selected for the present study were children aged between 1 to 12 years. According to age distribution out of 100 children, 15 were aged between 1 to 2 years (15%), 38/100 were aged between 3 to 6 years i.e. 38%, 32/100 were aged between 7 to 9 years (32%) and 15/100 were aged between 10 to 12 years (15%). In our study most common age group was found to be 3 to 6 years i.e. 38% children (Table 2).

Of the 100 patients only 22 parents reported that they give nutritional supplement to their child i.e. 22% whereas 78/100 said they never use nutritional supplement i.e. 78% (Graph 1). Out of 100 patients 72 were found to be suffering from vitamin A deficiency i.e. 72%, 81/100 were suffering from vitamin D deficiency i.e. 81%, 15/100 i.e. 15% were suffering from vitamin B12 deficiency and 65/100 i.e. 65% were suffering from vitamin C deficiency (GRAPH 2).

Discussion

Present study highlights on the importance of general health. Childhood malnutrition is a major threat to developing countries and it requires immediate intervention. Malnutrition as well as excess caloric intake can have harmful effect on individual's health. As per the data available every year, it is estimated that under nutrition contributes to

the death of about 5.6 million children aged < 5 years. Lack of nutrition prevent a child from normal activities and they thus lack the potential of achieving normal targets in day today's life.⁸According to the literature vitamin D deficiency is common among children in rural Nepal, India with up to 91.1% of children between 1-5 years of age.^{9,10}

Based on the result of present study the most common age group suffering from nutritional deficiency was 3 to 6 years i.e. 38%. Nutritional requirement is considered to be very essential among children below 5 years because this is the time of growth and development and a child requires adequate amount of nutrient. Vitamin A deficiency is considered to be a widespread public health problem in developing nations where it affects more than 130 million preschool children.¹¹ Proper cares can help to eliminate childhood blindness. In present study 72% children were found to be suffering from vitamin A deficiency and 81% were suffering from vitamin D deficiency. In present study only 22% said they used nutritional supplement for their child. This clearly emphasizes on the lack of knowledge among parents regarding the importance of nutrients. A strong association was found between malnourished children and vitamin deficiencies in present study.

Conclusion

Nutrition plays a very important role in a Childs life. Importance of good nutrition should be explained to parents and especially mothers. Pregnant and lactating mothers should be educated about the importance of nutrition and its supplements. In conclusion vitamin deficiencies are common in paediatric patients and especially in malnourished patients. Regular monitoring and proper education can help to overcome the issue and can lead to healthy life.

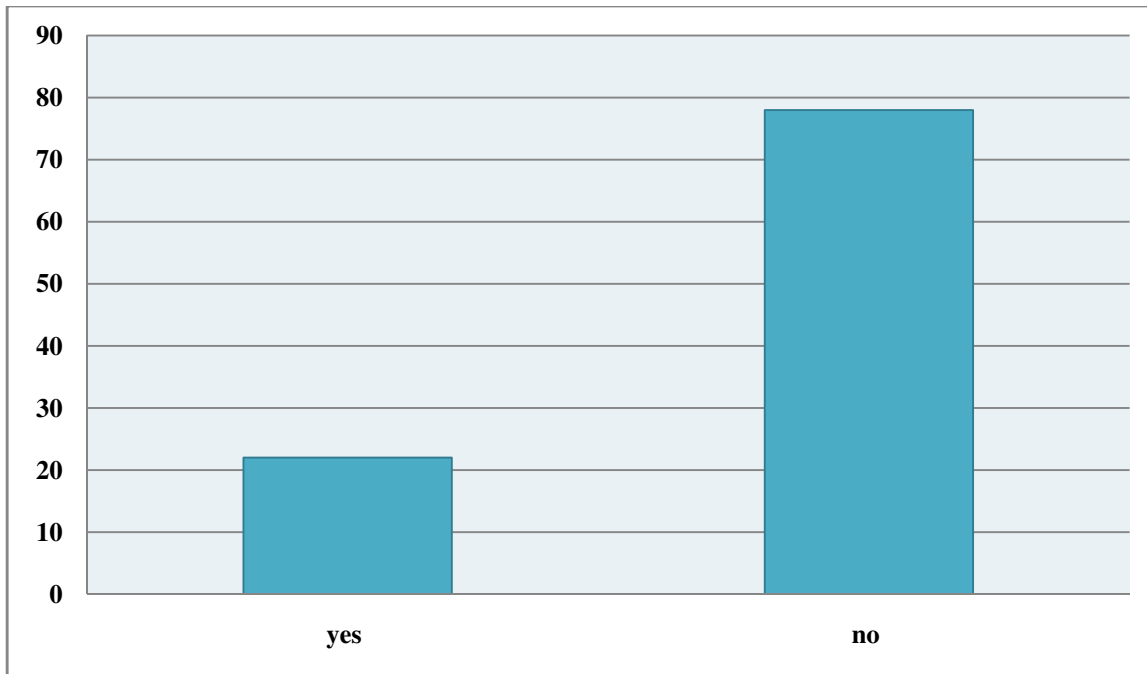
Table 1: Demographic age distribution

Males	50
Females	50
TOTAL	n = 100

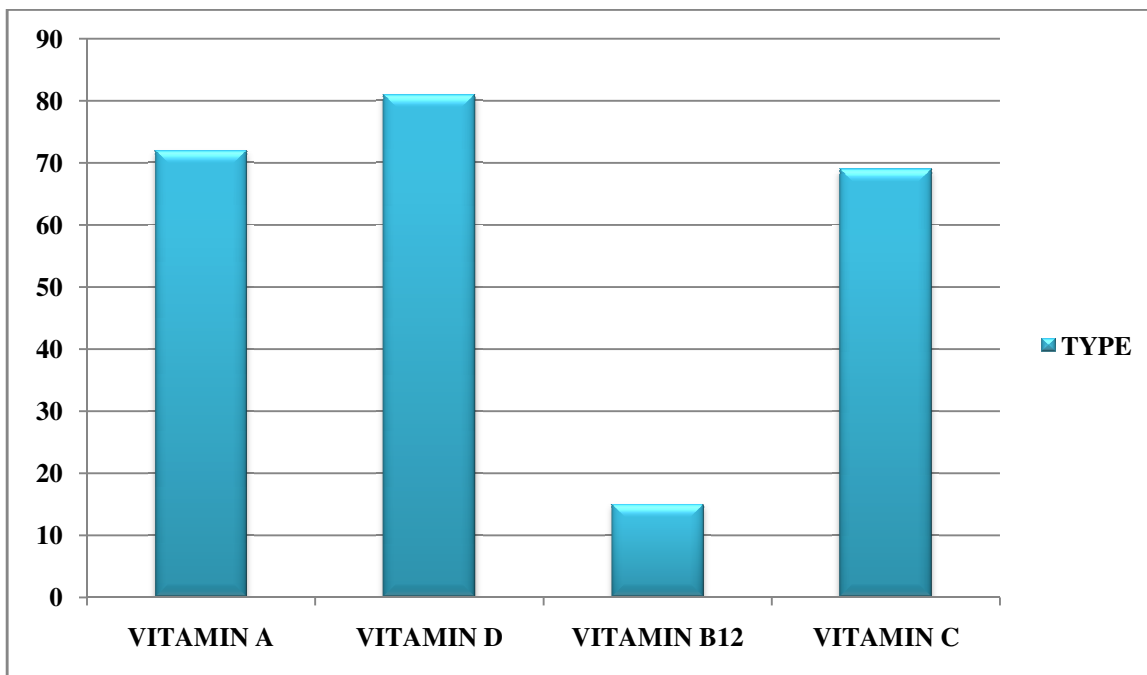
Table 2: Age distribution

Age group	Frequency	Percentage
1-2	15	15%
3-6	38	38%
7-9	32	32%
10-12	15	15%

Graph 1: Use of nutritional supplement among patient



Graph 2: Most common vitamin deficiency observed



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