Original Research Article

Study on determinants of nutritional status of a school going children in a village of Tumakuru taluk

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ABSTRACT

Background: Children (0-14 years) contribute to 26% of world population and 28.4% of India's population. School going age is a formative period, physically as well as mentally, transferring child into a promising adult. Malnourishment in this age group compromises both physical and mental growth. The objective of the study was to assess the nutritional status and morbidity status among school going children.
Methods: A cross sectional descriptive study was conducted at Greenberg international school Kannenahalli, Tumkur. After inclusion and exclusion criteria, which comprised children between 3-12 years of age, total 123 students were included in the study. A pre structured and pre tested proforma was used to collect the data on general information of the child, anthropometric measurements, physical examination, personal hygiene and clinical examination and blood grouping was done.
Results: Out of 123 study participants, 30.9% were found to be malnourished and 35.77% had various morbidity conditions. Out of the 39 students who had malnutrition, 20 students (51.3%) were having grade 1 malnutrition, 15 students (38.5%) were having grade 2 malnutrition and 4 students (10.3%) were having grade 3 malnutrition.
Conclusions: It concluded that, balanced diet for all the malnourished children to improve their nutritional status and also for healthy children to maintain their health and nutrition. Grade 3 malnourished children were referred to NRC (nutritional rehabilitation center) to improve their nutritional status.

Keywords: School health checkup, Malnutrition, Morbidity status, Blood group

INTRODUCTION

Children of today are tomorrow's citizens. Children (0-14years) contribute to 26% of world population and 28.4% of India's population.[1] Healthy children are the foundation of communities &nation. Today there are still 50millionyoung lives are at risk due to acute malnutrition & 156 million more children under age of 5 years are chronically malnourished or stunted, compromising their physical growth & brain development.[2] School going age is a formative period, physically as well as mentally,

transferring child into a promising adult. Overall strategy to address malnutrition, maternal education was the main key element which was reported by many studies.[3] In a developing country like India, it is observed that substantial number of school children from pediatric age to adolescents suffer from various illnesses and malnutrition.

In the present study, an attempt was made to find out nutritional status among school going children in 3-12 years age group in Kannenahalli village, Tumakuru taluk

of Karnataka. This age group is on the threshold of adulthood on whom the growth and wellbeing of the nation depends. The present study also further effort was made to explore the role of socio-demographic characteristics of mother on the nutritional status.

Objectives

To assess the nutritional status and determine prevalence of morbidity status among school going children.

METHODS

Study design: Cross sectional descriptive study.

Study area: Greenberg international school of Kannenahalli village, Tumakuru taluk

Study duration: June to December 2018.

Sample size

All children aged 3-12 years at Greenberg international school Kannenahalli.

Inclusion criteria

Inclusion criteria were all children of Greenberg International School.

Exclusion criteria

Exclusion criteria were those who were not willing to participate in the study and absent on the day of study.

Consent from parents and teachers of study participants were taken before begin the study. It comprised children between 3-12 years of age. A pre structured and pre tested proforma was used to collect the data on general information of the child, anthropometric measurements, physical examination, personal hygiene and clinical examination and blood grouping was done.

The students who were having problems related to ear and nose, respiratory system, cardiovascular system, central nervous system, gastrointestinal tract ailments, skin disorders and metabolic disorders were considered as ill.

Measurement of weight and height

Weight

A weighing scale was used to measure weight. The zero error was checked for and corrected if present before measuring weight. Weight of all the children was taken without footwear, without heavy clothing and with the subject standing motionless on the weighing machine and was measured to the nearest 100 g.

Height

Height in centimeters was measured with the help of non-stretchable measuring tape, against wall in case of children above 2 years of age. The children were asked to remove footwear and with heels together and head positioned so that the line of vision was perpendicular to the body, shoulders straight and touching the wall. A wooden plank was used to note the topmost point on the head. Height was recorded to the nearest 0.1 cm.

General physical examination

General clinical examination of a child was done in natural light. Head to toe examination of child was done to look for pallor, icterus, central and peripheral cyanosis, lymphadenopathy and pedal edema.

Systemic examination

Detailed systemic examination of respiratory, cardiovascular, gastro intestinal systems and central nervous system examination was done for all the children involved in the study.

Nutritional status assessment

Parameters like weight for age, was taken and grades of malnutrition was calculated according to IAP classification (Indian academy of pediatrics) and Height for age was plotted on the WHO growth charts for all children.[4,5] Grading of stunting was done based on these growth charts.

Statistical analysis

Descriptive statistics such as mean, SD and percentage was used to present the data.

RESULTS

Out of 123 students, 74 (60%) were boys and 49 (40%) were girls. Majority of students belongs to the age group of 6-9 (43.1%).

Table 1: Gender and age wise distribution of study participants.

Age (years)	Male	Female	Total
	N (%)	N (%)	N (%)
3-6	26 (57.8)	19 (42.2)	45 (36.6)
6-9	26 (49.1)	27 (50.9)	53 (43.1)
10-12	22 (88)	3 (12)	25 (20.3)
Total	74 (60)	49 (40)	123

As per Indian Academy of Pediatrics classification for Malnutrition, it was observed that 85 students (69.10%) were of normal nutritional status. Out of the 39 students who had malnutrition, 20 students (51.3%) were having

Grade 1 malnutrition, 15 students (38.5%) were having Grade 2 malnutrition and 4 students (10.3%) were having Grade 3 malnutrition.

Table 2: Distribution of grades of malnutrition based on gender.

Grades of malnutrition	Male	Female	Total
Grade 1	9	11	20
Grade 2	12	3	15
Grade 3	4	0	4
Total	25	14	39

Out of the 39 students who had malnutrition, 25 students (64.1%) were boys and 14 (38.4%) were girls.

Table 3: Distribution of study participants as per the grades of stunting

Grades of stunting	No. of students	Percentage (%)
Normal	98	79.67
Moderate stunting	20	16.26
Severe stunting	5	4.07
Total	123	100

Further, when grades of stunting was assessed according to WHO growth charts for height for age; it was observed that 98 (79.67%) students had normal growth, 20 (16.26%) students had moderate stunting and 5 (4.07%) had severe stunting.

Table 4: Distribution of study participants according to blood group and Rh typing

Blood group	RH typing	No. of students	Percentage (%)
A	Positive	37	30.06
	Negative	3	2.44
B	Positive	33	26.8
	Negative	0	0
AB	Positive	5	4.0
	Negative	1	0.8
O	Positive	43	34.89
	Negative	1	0.81
Total		123	100

On examination of total 123 subjects it was observed that majority i.e., 44 (35.7%) belonged to 'O' Blood group in which 43 were Rh positive and 1 was Rh negative,40 (32.5%) were of 'A' Blood group, 33 (26.82%) belonged to 'B' Blood group and 4.87% belonged to 'AB' Blood group. From the results of Rh typing, majority i.e., 118 (95.93%) were Rh positive and 5 (4.07%) were Rh negative.

On overall assessment of illness, 64.23% were found to be healthy and 35.77% of students were found to have illness related to various systems.

Table 5: Distribution of study participants according to presence of illness.

Morbidity status	No. of students	Percentage (%)
Ill	44	35.77
Healthy	79	64.23
Total	123	100.0

Table 6: Distribution of study participants according to system involved.

System involved	No. of students	Percentage (%)
Ear and nose	10	22.73
RS	9	20.45
CVS	3	6.82
CNS	1	2.27
GIT	3	6.82
Eye	7	15.91
Skin	4	9.09
Others	7	15.91
Total	44	100.0

In our study of 123 students examined, 44 were found to be ill and among them 10 students (22.73%) had illness related to ear and nose; 9 students (20.45%) had respiratory illness; 7 students (15.91%) had Ophthalmological problems; 7 students had (15.91%) had other illnesses like malnutrition, metabolic disorders and contracture.

DISCUSSION

Most of the studies on malnutrition are done among children under five. In the present study, we made attempt to assess nutritional status and determine morbidity status among school going children in the age group 3-12 years.

In the present study, it was observed that total malnourished children accounted for 30.9% which was comparable with the study conducted by Kamath et al, among school children in 2015 in Bellary district.[6]

In the present study, it was observed that 22.73% of study participants had ear and nose related diseases, 20.45% students had respiratory related illness, 15.91% had ophthalmic illness and 6.82% of students had problems related to GI system. Our study results were found to be similar with the results of studies conducted by Naseem et al, in 2009-10 and study conducted by Asghar in 2015 et al.[7,8]

In current study, 15.4% of study participants had grade 1 malnutrition, 12.1% had grade 2 malnutrition and 3.25% had grade 3 malnutrition. Similar results were found in a

study conducted by Yadav et al at rural field practice area of Amabala, Haryana in 2016.[9]

Our study showed percentage of moderate stunting to be 16.26% and severe stunting to be 4.07% among the study participants, which was comparable with the South East Asian annual data 2017 reports of UNICEF.[2]

High risk conditions involving CVS and CNS and contractures were referred to higher center for further treatment.

Grade 3 malnourished children were referred to NRC (nutritional rehabilitation center) to improve their nutritional status.

CONCLUSION

It was concluded that, balanced diet for all the malnourished children to improve their nutritional status, consume high protein foods like sprouted pulses, egg, meat and green leafy and other vegetables, and also maintain personal hygiene to prevent repeated infections.

Limitations

Our study had smaller sample size and less generalizability. General background information about socio economic status of the students was not taken to compare and see its influence on malnutrition.

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