



STUDY THE PREVALENCE OF MALNUTRITION AND ITS DETERMINANTS IN CHILDREN BELOW 2 YEARS ATTENDING A HOSPITAL OF BIHAR

Pediatrics

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ABSTRACT

Background and objective: Under nutrition is considered as one of the world's most serious and least addressed health problem. When children are born malnourished and underweight they are much more likely to suffer from serious infections and to die from common childhood illness such as diarrhea, measles, pneumonia etc. Malnutrition slows down motor, sensory, cognitive and social development. The most damaging effects of under nutrition occur in the first two years of child's life and these damages are irreversible, making dealing with malnutrition in the first two year crucially important. The objective of this study was to know the prevalence of stunting, wasting, underweight, anemia and vitamin A deficiency among children age 0 to 2yrs, attending the pediatric indoor & outdoor of Nalanda Medical College and Hospital, Patna, Bihar, India. **Methods:** A hospital based observational study was conducted with sample size of 400 children for a period of January 2022 to December 2022. Assessment was done by clinical examination, anthropometry and biochemical evaluation. **Results:** 53.5% were males and 46.5% were females, while majority (71.25%) of them belonged to 0 to 6 months age group. Prevalence of Pale conjunctive was 30.5% and was more in female child. Prevalence of anemia was 44.5% and was more in male child. Prevalence of conjunctival xerosis was 5.5%, Bitot's spot was 2.75% and corneal xerosis was 1.75%. Prevalence of underweight was 41.25%, stunting 40.75%, wasting 23%. Male children were more underweight and stunted than female children where as female children were more wasted than male children.

KEYWORDS

Anaemia, Corneal Xerosis, Pallor, Stunting, Wasting.

INTRODUCTION:

The importance of growth in a child as an index of his health and wellbeing is known to everybody. Under nutrition is considered as one of the world's most serious and least addressed health Problem. The great advantage of looking at malnutrition as problem in human ecology is that it allows for variety of approaches towards prevention (1).

Nutritional assessment in the community is essential for accurate planning and implementation of intervention programs to reduce morbidity and mortality associated with under nutrition. Causes of malnutrition are complex, multidimensional and interrelated(2). In children, malnutrition is most likely to strike those who lack nutritionally adequate diets, are not protected from frequent illnesses and do not receive adequate care.

The nutritional status of an individual is often the result of many interrelated factors. It is influenced by the adequacy of food intake in terms of quantity and quality, its utilization in the body and also by the physical health of the individual. Nutritional status can be determined with the help of clinical examination of symptoms of nutritional deficiencies, dietary intake and anthropometry(3).

Anthropometry measures such as height, weight, mid upper arm circumference, skin fold thickness, head and chest circumference are valuable indicators of nutritional status. There are number of physical signs, some specific and many non specific, associated with states of malnutrition(4).

MATERIALS AND METHODS:-

Study on Prevalence of stunting, wasting, underweight, anemia and vitamin A deficiency of children age group 0 to 2 years was carried out in pediatric department of Nalanda Medical College and Hospital. It was observation based study conducted between January 2022 to December 2022. After obtaining informed consent, total 400 children in age group 0 to 2 years who attended OPD and Indoor of pediatric department of NMCH were included in the study. Children having any chronic illness, HIV exposed or infected patient and children with congenital abnormalities of GIT, cardiac, renal system and CNS were excluded from the study. Data was entered in standardized proforma.

Nutritional assessment:

Nutritional assessment was done by assessment of vitamin A deficiency and anemia.

For vitamin A deficiency assessment was done to look for- Bitot's spots, Conjunctival xerosis, Corneal xerosis and ulceration, Corneal scarring.

For Anemia - Presence of pallor.

Anthropometry:

Weight:

Weight was recorded to the nearest of 0.1kg. The weighing scale was placed on the flat horizontal surface. The shoes or slippers were removed and child was made to lie on the weighing scale with minimum clothing. The weighing scale was calibrated regularly.

Height:

In children less than 2 years old length is measured in place of Height. The infantometer was used to measure the length between 0 to 100 cm with a precision of 1 mm. Child was placed supine on the infant measuring board. Head was placed in the frankfurt plane and fixed with headpiece by one assistant. Other side of the infantometer which was movable was brought to rest firmly against the child's feet with soles flat on the board and the toes pointing directly upward.

Biochemical evaluation:

Hemoglobin level was estimated using venous blood by automated complete blood count analyzer. According to WHO criteria children having hemoglobin concentration <11 g/dl were considered anemic. Anemia was further graded into three groups, mild anemia (Hb 10 to 10.9 g/dl), moderate anemia (Hb 7 to 9.9 g/dl), severe anemia (Hb < 7 g/dl).

Statistical analysis:-

Data entry and statistical analysis was performed with the help of SPSS version 17. Continuous variables were presented as mean and standard error of the mean, while categorical variables were presented as number and percentage. Chi-square test was used to compare difference in categorical variables and independent t-test for continuous variables between boys and girls. The P value <0.05 was considered significant and P value <0.01 was considered highly significant and analysis of the data and Microsoft word has been used

to generate graphs, table etc. length for age, weight for age, weight for length were calculated using WHO Anthro software and using WHO Reference 2006 values.

OBSERVATION AND RESULTS:

In our study, 53.5% of the subjects were males and 46.5% were females, while majority (71.25%) of them belonged to 0 to 6 months age group. Prevalence of Pale conjunctiva was 30.5% and was more in female child. Prevalence of anemia was 44.5% and was more in male child. Prevalence of conjunctival xerosis was 5.5%, Bitot's spot was 2.75% and corneal Xerosis was 1.75%. Prevalence of underweight was 41.25%, stunting 40.75%, wasting 23%. Male children were more underweight and stunted than female children where as female children were more wasted than male children.

Table no 1. Distribution of wasting, stunting and underweight.

	Z Scores	Males (n=214)		Female (n=186)		Total	
		Number	%	Number	%	Number	%
Wasting	Absent (Wt for length > -2SD)	166	77.57	142	76.34	308	77.0
	Present (Wt. for length < -2SD)	48	22.43	44	23.66	92	23.0
Stunting	Absent (Wt for length > -2SD)	113	52.80	124	66.67	237	59.25
	Present (Wt. for length < -2SD)	101	47.20	62	33.33	163	40.75
Underweight	Absent (Weight for age > -2SD)	118	55.14	117	62.90	235	58.75
	Present (Weight for age < -2SD)	96	44.86	69	37.10	165	41.25

Table no 2. Anaemia with grading and prevalence.

Sl. No.	Hemoglobin (g/dl)	Males (n=214)		Females (n=186)		Total (n=400)	
		Number	%	Number	%	Number	%
1	11 g/dl [Normal]	118	55.14	104	55.91	222	55.5
2	<11 g/dl [ANEMIC]	96	44.86	82	44.09	178	44.5
	Grades of Anemia						
3	Mild Hb(g/dl) (10to10.9)	26	12.15	19	10.22	45	11.25
4	Moderate Hb(g/dl) (7 to 9.9)	58	27.10	52	27.96	110	27.5
5	Severe Hb (g/dl) (<7)	12	5.61	11	5.91	23	5.75
6	No Anemia Hb 11 g/dl	118	55.14	104	55.91	222	55.5

Table no 3. Distribution of Eye manifestations.

Sl. No	Conjunctiva	Male (n=214)		Female (n=186)		Total	
		Number	%	Number	%	Number	%
1	Normal	138	64.49	118	63.44	256	64
2	Pale Conjunctiva	64	29.91	58	31.18	122	30.5
3	Xerosis	12	5.60	10	5.38	22	5.5
	Bitot's spot						
4	Absent	208	97.20	181	97.31	389	97.25
5	Present	6	2.80	5	2.69	11	2.75

	Corneal xerosis						
6	Absent	209	97.66	184	98.92	393	98.25
7	Present	5	2.34	2	1.08	7	1.75

DISCUSSION:

A hospital based observational study was conducted with sample size of 400 for a period of 12 months. In the present study 53.5% of children were males and 46.5% were females. Majority (71.25%) of the children belonged to 0 to 6 months and majority 79.75% of children were Hindu. Those children who came for vaccination also attend OPD. Major age group for vaccination is 0 to 6 months of age so, majority of children belong to 0 to 6 months of age. The prevalence of Pale conjunctiva in the present study was more in female children (31.18%) compared to male children (29.91%). Overall prevalence of pale conjunctiva was 30.5%. According to study conducted by Awasthi et al in Uttar Pradesh, 70% of preschool children were anemic, while the study conducted by Behera TR et al found that 51.4% of 1 to 5 year children were anemic in which 2.1% had severe anemia. In the study conducted by Jood S et al 8.89% of preschool children had pale conjunctiva and 4.4% of them had Bitot's spots. In the present study overall prevalence of anemia was 44.5%. The Prevalence of anemia in male child was more (44.86%) compared to female child (44.09%) which was statistically not significant. According to NFHS - 5 prevalence of anemia in India was 59.5% and in Bihar was 69%. In the present study prevalence of mild anemia was 11.25% moderate anemia was 27.5% and severe anemia was 5.75%. According to NFHS - 3 survey, 3% of children age 6 to 59 months were severely anemic, 40% were moderately anemic and 26% were mildly anemic. In present study, Dry Cornea was seen in more male children (2.34%) Compared to female children (1.08%). Bitot's spots was seen more in male children (2.8%) compared to female children (2.69%) but it was statistically insignificant (P>0.05).

CONCLUSION AND RECOMMENDATIONS:

Our study showed that malnutrition is still a big menace for children of under developed states of India. We have done a great deal of work during last few decades to counter this problem of malnutrition. Our governments and associated agencies like UNICEF, WHO have been consistently working in a collaborative way to improve the health of infants and children. Still malnutrition and anemia stand in our way as big hurdles in the development of our society. Thus following recommendations can be suggested for implementation.

- 1) Initiation of breast feeding as early as possible after birth, preferably within one hour.
- 2) Exclusive breastfeeding for the first six month of child's life.
- 3) Continued breast feeding for two years or more, together with safe, age appropriate and hygienically prepared complementary foods starting at 6 months of age.
- 4) A comprehensive programme approach to improving complementary feeding practices including counseling for caregivers on feeding and care practices and on the optimal use of locally available foods, micronutrient supplements when needed (including iron and vitamins).
- 5) Early and efficient management of common childhood infections like respiratory and diarrheal infections. This helps to break the malnutrition and vicious infection cycle.
- 6) A comprehensive, standardized and continuous growth monitoring of child for early detection of malnutrition.

Conflicts of interest: Nil

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