A Study of Nutritional Status of Children Below Six Years' Age in an Urban Slum of Gurgaon, Haryana

Medical Science

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ABSTRACT

Background:

Poorly nourished child grows less rapidly during first 6 years of age. In India, around 43% of under five children were underweight. Child malnutrition reflects a number of intermediately processes such as household access to food, access to health service and caring practices. the present study was conducted to study the nutritional status among preschool children (0-6 years) in urban slum.
Objectives:1. To assess the nutritional status of children below six years' age group and to know the prevalence of malnutrition.
2. To explore most probable risk factors influencing malnutrition.
Material and Methods:The study was a community based cross-sectional study carried out in 500 randomly selected households in a slum area of Gurgaon among the children below 6 years age using pretested Performa which contained details regarding socio-demographic, nutritional conditions and utilization health care services. Nutritional status was assessed by Physical examination, anthropometric measurement, hemoglobin & parasitological (stool) tests done. Nutritional grading was done according to by physical and anthropometric examination of child using Indian Academy of Pediatrics (IAP) classification and supplemented by WHO growth chart. Data was entered in the MS Excel sheet and analyzed using Epi info Ver 7.
Results:During survey acute illness detected among 0.25% children and chronic illness prevalence was 25%. Prevalence of malnutrition was found to be 43.86% (37.73% among males, 50.0 % among females). Clinical signs of nutritional deficiency were detected among 31.48 % of children. Common types of nutrition deficiency were anemia, PEM, and vitamin A & B complex deficiencies. Main reasons of poor nutritional status were attributed to female sex, poor literacy of parents, low socioeconomic status, higher No. siblings and large family, recurrent diarrhea and other infections, prolonged breast feeding with delayed introduction of supplements particularly semisolid and poor quality of supplements. Intestinal parasite detected among 38.43% of children, commonest parasite being giardia, ascariasis & thread worms. Existing health services utilized in 30.72% of total illness. This was identified not due to lack of knowledge but other domestic problems. Conclusion: Prevalence of malnutrition was attributed to poor living conditions, poor literacy status of parents, higher No. of siblings, poor utilization of health services, poor nutritional services of children and faulty breast feeding and weaning practices in the family; public health specialists should plan interventions focusing on these issues.

Introduction:

The most crucial period in a child's growth is first 6 years of life since 40% of physical growth and 80% of mental growth are believed to take during these years1. In India, around 43% of under five children were underweight according to the report of third National Family Health Survey (NFHS- 3) 2 conducted during 2005-06. Nutritional status indicators like wasting, stunting, low birth weights, breast feed availability and vitamin A deficiency are also still high in India compared to the USA and China.3 Child malnutrition reflects a number of intermediately processes such as household access to food, access to health service and caring practices.4 Nutritional status and magnitude of morbidity of children particularly due to nutritional factors of slum dwellers in Haryana have not been worked out except for patchy studies carried out. Therefore, the present study was conducted to study the nutritional status among preschool children (0-6 years) in urban slum. In addition, the study indicated for spotting high risk families and high risk children for preventive, promotive and curative actions.

Objectives:

1. To assess the nutritional status of children below six years' age group and to know the prevalence of malnutrition.

2. To explore most probable risk factors influencing malnutrition.

Material and Methods:

The present study was carried out in Basai slum area which represents a typical urban slum of Gurgaon city. The study was a community based cross-sectional study based on random sampling technique used for selection of households. Study participants were all the children below 6 years of age residing in study area. An optimum sample size for study was obtained by 4PQ/L2 assuming the malnutrition prevalence (P) of 40% in children (0-6 years) with 10% relative precision and 95% confidence interval. Expecting 10% family non-responsive, 660 children were targeted for interview. The Study was confined to 500 randomly chosen families out of 12000 population by house to house visits on predesigned structured, pretested Performa which contained details regarding socio-demographic, environmental factors, nutritional morbid conditions and information regarding utilization of available medical and health care services. ne who provide preventive, promotive, curative services to inhabitants. Medical students are also being trained in the community health in this area.

Nutritional status was assessed by Physical examination, anthropometric measurement, haemoglobin & parasitological (stool) tests done (for 06 months-72 months of age group). Nutritional grading was done according to physical and anthropometric examination of child using Indian Academy of Pediatrics (IAP) classification

supplemented by WHO growth chart. The weight (in kg with precision up to 100 gm)) of the children was measured using standardized electronic weighing scale with minimal clothing and without footwear. Height of the respondents recorded in centimeters with 10 cm precision using infantometer (below 2 years' age)/ sta-diometer. Socio-economic status was determined by us-ing modified Prasad's scale (Prasad's SES classification, 2013)5. Data was entered in the MS Excel sheet and an-alyzed using Epi info Ver 7. Statistical value (p- value) was calculated using chi-square tests. Children identi-fied with unhealthy conditions/diseases were examined and treated. Participants who required further manage-ment and follow up were referred to medical college.

Dietary Survey was attempted using 24 hours recall method of family followed for assessing the dietary sta-tus of children by food frequency method.

Results:
Prevalence of malnutrition:
During survey, acute illness detected among 0.25% chil-dren and chronic illness prevalence was 25%. Common types of nutrition deficiency (Table 1) were anemia, PEM, and vitamin A & B complex deficiencies.

Age & sex and malnutrition
As depicted in Table 2, 3 & 4, prevalence of malnutri-tion was found to be 43.86% (37.73% among males, 50.0 % among females). Malnutrition showed a significance difference in various age groups of children, the peak being in 13-24 months' age followed by 36-47 months.

Other factors and malnutrition: Main reasons of poor nutritional status were attributed to female sex, large family size and more siblings (Table 6), low socioeco-nomic status of parents(Table7) and poor literacy of parents (Table 8). Other risk factors associated with malnutrition found in the study were history of death more than 2 siblings, recurrent attack of diarrhea and other infections, prolonged breast feeding with delayed introduction of supplements particularly semisolid and poor quality of supplements.   As shown in Table 9, Intestinal parasite detected among 38.43% of children, commonest parasite being giardia, ascariasis & thread worms. Existing govt. health services were utilized in 30.72% of total illness. This was identified not due to lack of knowledge but other domestic problems. Uti-lization of services was poor not only among curative services but also regarding preventive services.

Table 1. Various clinical sign of malnutrition among children examined

Clinical sign of malnutrition	No of children Male	No of children Female	Total (n=700) No. (%)
Hair changes	123	153	256 (36.87)
Skin changes	61	84	145 (20.75)
Xerosis conjunctiva	17	24	41 (20.75)
Bitot's spots	03	03	06 (00.88)
Chellosis	20	22	42 (06.00)
Angular stomatitis	12	24	36 (05.12)
Muscle wasting	17	28	45 (6.50)
Pallor	123	135	258 (36.88)
Marasmus	02	05	07 (1.00)

Table 2. Distribution of children nutritional status based on weight for age

Age group in months	Adequate weight	Grade I mal-nutrition	Grade II mal-nutrition	Grade III mal-nutrition	Grade IV mal-nutrition	Total mal-nutrition
6-12	51	22	03	03	02	30
13-24	63	51	25	11	03	90
25-36	99	42	18	02	02	64
37-48	108	48	16	01	0	65
49-60	58	33	05	01	0	39
61-72	14	13	05	01	0	19
Total	393	209	72	19	7	307

X2 = 25; DF=5;   P=0.00012

Table 3. Distribution of male children nutritional status based on weight for age

Age group in months	Adequate weight	Grade I mal-nutrition	Grade II mal-nutrition	Grade III mal-nutrition	Grade IV mal-nutrition	Total malnu-trition
6-12	29	05	0	0	0	05
13-24	33	26	08	01	01	36
25-36	63	24	05	01	01	31
37-48	59	21	06	01	0	28
49-60	30	17	03	01	0	21
61-72	04	08	02	01	0	11
Total	218	101	24	05	02	132

X2 = 24; DF=5;   P=0.00019

Table 4. Distribution of Female children nutritional status based on weight for age

Age group in months	Adequate weight	Grade I mal-nutrition	Grade II malnu-trition	Grade III mal-nutrition	Grade IV mal-nutrition	To-tal
6-12	22	17	04	03	01	25
13-24	31	26	17	09	02	54
25-36	36	17	11	01	02	31
37-48	49	27	10	0	0	37
49-60	27	16	03	0	0	19
61-72	10	05	03	01	0	09
Total	175	108	48	14	05	175

X2 = 9.90;   DF=5;   P=0.07793

Table 5: Other factors and malnutrition

Factor		Malnutrition	Stat Calculations
Family size 1 2 3 4 5+ Total	32 118 80 66 97 393	16 67 62 65 97	χ^2= 8.627 6 DF = 4 P=0.0711
Socio economic status Class II Class III Class IV Class V Total	63 45 92 193 393	21 28 83 175 307	χ^2= 15.9825 DF = 3 P=0.0001

Literacy status			
Literate father	280	187	For father χ^2 =8.2963
Illiterate father	113	120	DF = 1 P=0.0039
Literate mother	206	89	For mother χ^2 =38.7961
Illiterate mother	187	218	P=0.00001
Worm infestation			
Ascariasis	06	14	
Hookworm	00	03	
Threadworm	04	15	χ^2 = 11.719
E. histolytica	02	06	DF = 1
Giardiasis	11	27	P=0.0006
Negative	92	72	
Total	115	137	
Age at solid started (months)			
-6	72	33	
6-9	114	54	χ^2 = 50.156
9-11	150	102	DF = 4
12-17	42	70	P=0.00001
18-24	15	48	

Table 6. Utilization of health services

Source of getting treatment	No.	(%)
Allopathic/ Govt hospital/ dispensary	215	(30.72)
Local/ indigenous practitioner	370	(52.85)
Homeopathic	12	(01.71)
Ayurveda/ Unani	20	(02.86)
Folk medicine	63	(09.0)
None treatment	20	(02.86)
Total	700	(100.0)

Discussion

In the present study (Table 2, 3 & 4), prevalence of malnutrition was found to be 43.86% (37.73% among males, 50.0 % among females). Malnutrition showed a significance difference in various age groups of children, the peak being in 13-24 months' age followed by 36-47 months. These results were in concordance to the study of Singh et al. 6 done in rural Meerut district of India among 406 children (1-6 years) where 57.4% children were malnourished whereas other authors 7 reported that prevalence of underweight among children under six years of age was 53.3% in Uttar Pradesh, a largest populated state of India. Similar finding were observed by a study done by Chakraborty et al.8 in rural Jhansi where in malnutrition was more prevalent among 1-3 years of age and nearly two third of female children (61.8%) in comparison to male children (48.6%) were more malnourished.

In a study, done by Stalin P et al.9 among 563 under five children in rural Tamil Nadu, found a significant association between malnutrition and sex of children with prevalence of underweight, 62.6% and 44% among female and male children, respectively.

As per study, only 45.2% children were of normal weight whereas 33%, 18.3% and 3.5% children of grade I, II and III were malnourished.

In the present study, size of family was not found significantly associated which is similar to findings of Singh et al. 6 that reported 63.8% and 52.9% children of nuclear and joint family were malnourished, respectively. It may be due to the reason that children in the joint family are nu-

tritionally better cared. In the present study, the prevalence of malnutrition was found to be higher in those children who have ≥3 siblings compare to children with 1-2 siblings which is in accordance to findings of Sengupta et al.10 and Bhavsar et al. 11, that reported majority of children, 51.7% and 67.2% were malnourished who have ≥3 siblings, respectively.

Literacy status of both father and mother was found significantly related to malnutrition in the present study. More than half (71%) children of illiterate mother as compared to children of literate mother were malnourished. Educated mothers adopt many improved behaviors related to maternal and child health care, feeding and eating practices which ultimately affect the nutritional status of children. Similar result that the prevalence of PEM among children decreased with increasing mother's literacy was reported by NFHS-III (2005-06)2 and Singh et al. (2012)6. In another study by Sengupta et al .10 observed that most (80.2%) of children belonging to lower class (IV+ V) were significantly malnourished. It was observed that the socio economic status of the family improved the nutritional status of the children. A study done by Stalin et al9 in rural Kanchipuram, Tamil Nadu found that nearly two third (63.4%) and half (47.2%) children in category IV and V were significantly (p<0.05) malnourished, respectively.

In the present study, the majority (43.86%) of children who were malnourished, their mother did not have adequate knowledge regarding the diet requirements of her child and the nutritional value of food items. This is similar to the findings from a study done by Joshi et al 12 in western Nepal that reported, 58% children (4-14 yrs) were malnourished whose mother has inadequate knowledge about diet. As per the study, more than half children were malnourished who were started supplementary food very late and where the quality of food was poor which is in concordance to the study of Stalin P et al. (2013)9. Malnutrition was significantly more among those who had worm infestation or had repeated infections these were comparable with findings of other study carried out by Prasoti et al13 in Uttar Pradesh region. In present study, it was observed that established govt health care services were utilized by only 30.7 % of malnutrition children and 52% depended upon local and indigenous remedy.

Conclusion

Malnutrition never occurs in isolation. It is as a result of adverse socio- economic and poor educational status, deep rooted cultural beliefs, poor environmental sanitation and large family with its resultant high prevalence of recurrent infections, particularly diarrhoeal diseases. Malnutrition and under nutrition retard growth and development of a young child.

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