<div style="text-align:right">**RESEARCH ARTICLE**</div>

NUTRITIONAL STATUS OF CHILDREN ATTENDING OPD AT TERTIARY CARE HOSPITAL IN KATIHAR, BIHAR

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ABSTRACT

Background: Despite India's remarkable economic growth over the last decade, many children still struggle to meet their basic needs, include access to sufficient food and health care .In this context it was important to get a more recent data on child nutritional status.

Aims & Objective: (1) Prevalence of malnutrition in children under 5 years of age coming to Pediatric OPD at Katihar medical college; (2) Age and sex most severely affected by malnutrition; (3) Identify major risk factors associated with malnutrition in the population under study.

Material and Methods: Institution based cross-sectional study was carried out in Pediatric OPD of Katihar medical college The median weight for height, height for age and weight for height of NCHS standard were used as references anthropometric indices. A total of 260 randomly selected children were covered in the study of 20 days.

Results: Prevalence of underweight (30%), stunted (74.2%) and wasting (41.9%). The major risk factors affecting nutritional status include mother's age, mothers and fathers education, monthly per capita income, pre lacteal feeds, birth order and duration of breast feeding. The study demonstrates multiple risk factors affecting nutrition status.

Conclusion: The study demonstrates multiple risk factors affecting nutrition status. A more elaborate community based study would help to find out prevalence of malnutrition in children of Katihar and it should be done at regular interval in order to monitor the situation.

Key-Words: Underweight; Stunted; Wasting; Prevalence; Nutritional Status

Introduction

One in every three malnourished children in the world lives in India.[1] Despite India's remarkable economic growth over the last decade, many children still struggle to meet their basic needs, include access to sufficient food and health care. According to 2005-06 National family health survey (NFHS-3), 20% of children less than five years were wasted, 48% were shunted. Importantly, with 43% of children were underweight.[2]

Katihar is located on the eastern zone of Bihar, where there are many difficulties on economy and numerous natural calamities, drought and flood have happened annually. HUNGAMA (Hunger and Malnutrition) survey report 2011 was conducted across 112 rural district of India including Katihar. Report had shown unacceptably low prevalence of malnutrition in children less than five years in Katihar, Bihar. 37.33% of children are underweight, 13.32% are wasted and 52.90% are stunted.[2] We know that the nutritional statues of children clearly have an impact on the child's health and development physical, mental and social. Nutritional states of Children and determinants of child malnutrition should be periodically studied to monitor the situation and it is important to give appropriate intervention to prevent malnutrition.[3] In this context, it was important to get a more recent data on child nutritional status and to understand the current situation.

Objectives:

- Prevalence of malnutrition in children under 5 years of age coming to paediatric OPD at Katihar Medical College.
- Age and sex most severely affected by malnutrition.
- Identify major risk factors are associated with malnutrition in the population under study.

Materials and Methods

Intuitional based cross-sectional study was carried out in pediatric OPD of Medical College,

Katihar from 1st December, 2012 to 20th December, 2012 among under five children attending OPD.

It was revealed form attendance register of pediatric medicine OPD of Medical College, Katihar that average attendance of under five children was approximately 130-150. So for 20 days about 2600 to 3000 children under five years of age were supposed to attend OPD for medical care and 10% of them were taken for the study. The Children are selected by systematic random sampling technique and a total of 260 children are covered in the study of 20 days.

A pre-tested questionnaire was used to collect data after abstaining signed informed consent from the respondents. The height/length was measured to the nearest centimeter and weight was measured when the digital display of the body weight become stabilized. These children who were not co-operative were weight with their mothers. The weight of mother was deducted to yield the weight of the child. The median weight for age, height for age and weight for height of the NCHS (national center for health and statistics) standard was used as reference anthropometric indicator in the study. Underweight is used here to indicate whose weight was less than 80% of the median weight for age which is equivalent to grade I, II, III, IV degree of malnutrition according to IAP classification. Wasting and stunting are defined as weight for height and height for age of 2SD or more belong the corresponding median of reference population. Stunting is an indicator of chronic malnutrition while wasting is an indicator of acute malnutrition. The socioeconomic status was measured by using modified Prasad classification.[4] Mean's proportion, chi-square test and odds ratio were used for statistical analyses.

Results

A total of 260 students were included in the study, there were 78 (30%) case of underweight, 193 (74.2%) were stunted, 109 (41.9%) was wasting (table 1). More females were found to be stunted and wasted, though the gender difference here was not statically significant.

The highest proportion of underweight, stunting

and wasting was 50%, 88.46%, 46.1% respectively in the age group of 48-59 months the difference was statistically significant for underweight (P=0.012)and stunting (P=0.004)

Table-1: Nutritional Status of Under-Five Children in Relation to Some Socio-Demographic Factors

Parameters	Total N=260	Underweight N=78	Stunting N=193	Wasting N=109
Gender				
Male	140	43(30.7%)	99 (70.7%)	53 (31.8%)
Female	120	35 (29.1%)	94 (78.3%)	56 (46.6%)
P – Value		0.786	0.161	0.151
Age				
0-11 Months	53	15 (28.3%)	30 (56.6%)	20 (37.73%)
12-23 Months	57	14 (25.4%)	40 (70.17%)	25 (43.85%)
24-35 Months	48	12 (25%)	36 (75%)	19 (39.58%)
36-47 Months	50	11 (22%)	41 (82%)	21 (42%)
48-59 Months	52	26 (50%)	46 (88.46%)	24 (46.1%)
P – Value		0.012	0.004	0.916
Family Type				
Nuclear	29	10 (34.4%)	24 (82.7%)	11 (37.9%)
Joint	231	68 (29.4%)	169 (73.1%)	98 (42.4%)
P – Value		0.189	0.265	0.240
Mother's Age at Child's Birth				
20 years	7	5 (71.4%)	3 (42.8%)	3 (42.8%)
21-29 yrs	227	59 (25.9%)	168 (74%)	102 (44.9%)
30 yrs and more	26	14 (53.8%)	22 (84.6%)	4 (15.3%)
P – Value		P<0.001	0.079	0.015
Mother's Education				
No Education	70	31 (44.2%)	64 (91.4%)	34 (48.5%)
Primary School	67	27 (40.2%)	50 (74.6%)	31 (46.2%)
Middle School and above	123	20 (16.2%)	79 (64%)	44 (35.7%)
P – Value		P<0.001	0.001	0.157
Father's Education				
No Education	29	17 (58.6%)	21 (72.4%)	17 (58.6%)
Primary School	153	41 (26.8%)	108 (70.5%)	68 (44.4%)
Middle School and above	78	20 (25.6%)	64 (82%)	24 (30.7%)
P – Value		0.002	0.165	0.021
Monthly Per Capita Family Income				
10,000 and above	78	6 (7.69%)	57 (73%)	20 (25.6%)
5000 – 9999	39	6 (15.38%)	26 (66.6%)	8 (20.5%)
3000 – 4999	78	14 (17.94%)	60 (76.9%)	32 (41%)
1500 – 2999	36	26 (72%)	30 (83.3%)	23 (63.8%)
500 – 1499	19	17 (89.4%)	12 (63.1%)	17 (89.4%)
<500	10	9 (90%)	8 (80%)	9 (90%)
P – Value		P<0.001	0.484	0.023
Nutritional States According to Religion				
Hindu	70	28 (40%)	54 (77.1%)	34 (48.5%)
Muslim	67	20 (29.8%)	50 (74.4%)	31 (46.2%)
Other	123	30 (24.3%)	89 (72.3%)	44 (35.7%)
P-Value		0.075	0.763	0.157

Family type and sex of the child does not appear to be significantly affecting child nutrition. Prevalence of stunting was not found to be significantly associated with the maternal age at birth, the prevalence of underweight and wasting was found to be significantly higher in those where mother is <20yrs (P=<0.001 and 0.015 respectively). The highest proportion of

underweight, stunted as well as wasted children were found in illiterate mothers and lowest in mother with higher education. Hence maternal education appear to be associated with better child nutrition and differences were observed to be statistically significant (P=<0.001) for underweight and stunting. Father's with no education has high underweight (58.6%) and wasted (58.6%) children as compared to father with primary and higher education, and the difference was statically significant related to underweight and wasting (P=0.002 and P=0.021 respectively) Prevalence of underweight, stunting and wasting (40%, 77.1%, 48.5% respectively was more in Hindus but the observation was not statically significant. So religion does not appear to affect the nutritional status of children.

Table-2: Nutritional Status of Under-Five Children in Relation to Some Important MCH Factors

Parameters	Total N=260	Underweight N=78	Stunting N=193	Wasting N=109
Pre-Lacteal Feeds				
Given	117	58 (49.5%)	101 (86.3%)	51 (43.5%)
Not given	143	20 (13.9%)	92 (64.3%)	58 (40.5%)
P – Value		<0.001	<0.001	<0.001
Birth Order				
1	67	9 (13.4%)	44 (65.6%)	16 (23.88%)
2 – 3	161	45 (27.9%)	122 (75.7%)	68 (42.23%)
4 or more	32	24 (75%)	27 (84.3%)	28 (78.12%)
P – Value		<0.001	0.028	0.002
Vaccination Status				
Complete	29	10 (34.4%)	24 (82.7%)	11 (37.9%)
Incomplete	231	68 (29.4%)	169 (73.1%)	98 (42.4%)
P – Value		0.576	0.265	0.644
Birth Weight				
<2500gm	110	33(30.9%)	78 (70.9%)	52(47.27%)
2500gm	150	45(30%)	115(76.66%)	57(38%)
P – Value		1.000	0.294	0.134
Exclusive Breast feeding				
<4M	171	9 (47.3%)	139 (81.2%)	68 (39.7%)
4-6M	70	27 (38.5%)	50 (71.4%)	27 (38.5%)
>6M	19	42 (24.5%)	4 (21%)	14 (73.6%)
P – Value		0.023	<0.001	0.014

Table 2 Shows that prevalence of underweight stunting and wasting was significantly high in children who were given pre-lacteal feeds (49.5%, 86.3%, and 43.5% respectively) and are also statically significant (P<0.001 for all). Higher birth order is positively associated with child malnutrition. From the table we observed that, as compared to children with birth order one. The children with 2-3 birth order and 4 or 4+ birth order were more likely to be underweight, stunted and wasted and is also statically significant (P=<0.001, 0.028 and 0.002 respectively)

prevalence of underweight (40.9%) and wasting (50%) was more in children where birth weight were less 2500gm. The difference were significant for underweight wasting (P=0.001 and 0.024 respectively) vaccination status does not appear to be significantly affecting child nutrition.

Discussion

In the current study, prevalence of underweight (30%), stunted (74.2%) and wasting (41.9%) found in children is unacceptably high. The high prevalence of stunting indicates chronic malnutrition in these children. Comparing with Indian National data (NFHS-3) and HUNGaMa survey report 2011, the stunting and wasting was higher, and the underweight prevalence was lower than the national average.

The highest underweight prevalence belongs to 48-59 M of age group. Observed data shows that stunting increases with age, which is similar to finding by the Huong et al.[5] Mother's age has highly significant effect on prevalence of malnutrition was reported by A Mittal et al.[6], which is very much similar to our finding. Maternal educations appear to be important risk factor for malnutrition. Raphael et al.[7] also reported that mother's education has significant negative relationship with incidence of stunting suggesting that improved mother's education will reduce the incidence of child malnutrition. Educated mother are better aware about the nutrition requirement of their children and they provide improved health care as a result of their awareness. Father's education emerged as an important factor that was significantly associated with underweight states among under five children. Analysis showed that children whose father has higher level of education were lower in proportion of weight deficiency then those with no-education. Usually father is main earner and decision maker of a family and so their higher level of education plays on important role, to secure better nutritional status of children.[8]

Monthly per-capita income has already been reported as important risk factor by Denise 0 Shoepecl et al, possibly become low socioeconomic families cannot access proper nutrition.[9]

Under nourishment is more prevalent in children who were given per lacteal feeds, those who were not given per lacteal feeds. Similar finding has also been reported by Megha Luthra et al.[10] Birth order has also been observed as an important determinants of malnutrition.[11] We may explain of children it by fact that, a mother who had many children will devote less time to child care then the mother who has two of less children. Low birth weight is important risk factors influencing nutritional status.

The recommendation by whom to exclusively breastfed the infants for first six months after delivery are not being followed by a proportion of mother. With known benefits of exclusive breast feeding it is important intensify breast feeding education and encourage mother to practice exclusive breastfeeding.

Conclusion

The study demonstrates multiple risk factors affecting nutrition status. A more elaborate community based study would help to find out prevalence of malnutrition in children of Katihar and it should be done at regular interval in order to monitor the situation.

References

1. UNICEF India. The children: Nutrition. Available from: URL: www.unicef.org/india/children_2356.htm. [Accessed on 2/10/12].

2. HUNGaMA: fighting hunger & malnutrition. The HUNGaMa Survey report, 2011. Available from: URL: http://hungamaforchange.org/HungamaBKDec11LR.pdf

3. Hien NN, Hoa NN. Nutritional status and determinants of malnutrition in children under three years of age in Nghean, vietnam. Pakistan Journal of Nutrition 2009;8:958-64.

4. Agarwal AK. Social classification: The need to update in the present scenario. Indian journal of Community Medicine. 2008;33(1):50-51.

5. Huong LT, Nga VTT. Nutritional Practices among ethnic minorities and child malnutrition in mountainous areas of central veitnam. Food and nutrition sciences 2013;4:82-9.

6. Mittal A, Singh J, Ahluwalia SK. Effects of maternal factors on nutritional status of 1-5 years – old children in urban slum population. Indian J comunity Med 2007;32(4):264-7.

7. Bobutunde RO, Olagunju FI, Fakayode SB, Sala-Ojo FE. Prevalence and determination of malnutrition among under five children of farming households in Kwara state, Nigeria, Journal of Agricultural sciences 2011;3(3).

8. Rayhn MI, Khan MSH. Factor causing malnutrion among under five children in Bangladesh. Pakistan Journal of Nutrition 2006;5(6):558-562.

9. Shoeps DO, Abreu LCD, Valenti VE, Nascimento VG, de Oliveira AG, Gallo PR, et al. Nutritional status of Per-school children from 1000 income families. Nutrition journal 2011;10:43.

10. Luthra M, Kishar S, Jain K. Epidemiology of under nutrition in children between 0-5 years from rural areas of Dehradun. Indian Journal of Community health 2010;21(2) & 22(1):18-21.

11. Anderson AK, Bignell W, Winful S, Iri INS, Steiner-Aseida M. Risk factor for malnutrition among children – 5 years and younger in Akuapim – North District in the eastern region of Ghana. Current research Journal of Biological sciences 2010;2(3):183-8.