

Original Research Article

## **An Assessment of Nutritional Status of 1 to 5 Year Old Children in Slum Area under Urban Health Training Centre Guwahati**

Abhishek Gope<sup>1</sup>, Kanika K Baruah<sup>2</sup>, Jutika Ojah<sup>3</sup>

<sup>1</sup>Post Graduate, <sup>2</sup>Associate Professor, <sup>3</sup>Professor,  
Department of Community Medicine, Gauhati Medical College, Guwahati, Assam.

Corresponding Author: Abhishek Gope

Received: 29/06/2016

Revised: 12/07/2016

Accepted: 16/07/2016

### **ABSTRACT**

**Background:** Under nutrition is a public health problem in India. Under five children are vulnerable to undernutrition because of their increased nutritional requirements during the growth period.

**Objectives:** To assess the nutritional status of 1 to 5 year old children in the urban slum area and to determine the association between socio demographic factors and infant feeding practices with undernutrition.

**Materials and Methods:** The cross sectional study was performed on 220 children aged 1 to 5 years in the slum area under Urban Health Training Centre, Guwahati city. A pro forma was prepared to fill up the socio demographic variables and infant feeding practices. The anthropometric indices for underweight, stunting and wasting, i.e., weight for age, height for age and weight for height respectively were calculated to check nutritional status.

**Results:** Out of 220 children, 28.18% were underweight, 45.9% were stunted and 18.7% were wasted. Under nutrition was significantly associated with males, maternal illiteracy and low socio economic status among the selected socio demographic factors and lack of exclusive breast feeding, untimely initiation of complementary feeds and prelacteal feeds.

**Conclusion:** Under nutrition in the study children has been found to be significantly high which necessitates interventions such as nutrition education among mothers and care givers of the children.

**Keywords:** Nutritional status, under five, urban slum area, under nutrition, Guwahati.

### **INTRODUCTION**

Nutrition has profound effects on health throughout the human life course and is inextricably linked with social and cognitive development. <sup>[1]</sup> Under nutrition commonly affects all groups in a community, but infants and young children are vulnerable because of their high nutritional requirements for growth and development. <sup>[2]</sup> Under nutrition affects children's development as it retards their physical and cognitive growth and increases susceptibility to infection, further increasing the probability of malnutrition. Under nutrition is estimated to cause 3.1 million

child deaths annually or 45% of all child deaths. <sup>[3]</sup> Under nutrition also undermines educational attainment, and productivity, with adverse implications for income and economic growth.

The prevalence of underweight among children in India is among the highest in the world. According to NFHS 3, the prevalence of underweight among under five children in India is 42.5 %. Among the North eastern states, Assam is one of the major contributors to the problem of child undernutrition with the prevalence of underweight, stunting and wasting among under five children as 36.4%, 46.5% and

13.7% respectively. [4] Infant feeding practices constitute one of the main determinants of nutritional status of under five children and WHO and UNICEF recommend early initiation of breast feeding within 1 hour of birth, exclusive breastfeeding for the first 6 months of life and introduction of nutritionally-adequate and safe complementary (solid) foods at 6 months together with continued breastfeeding up to 2 years of age or beyond. Studies have also documented the risk of morbidity and mortality from suboptimum breastfeeding in young children Suboptimum breast feeding results in more than 800000 child deaths annually. [6]

This study is undertaken to assess the nutritional status of children aged 1 to 5 years old in the slum areas under Urban Health Training Centre in Guwahati and to determine the impact of selected socio demographic variables and infant feeding practices on their nutritional status.

## **MATERIALS AND METHODS**

### **Study setting**

The study was conducted in the slum area under Urban Health Training Centre, Ulubari in Guwahati city. It was a cross sectional study conducted over a period of six months from July to December 2015. The study protocol was approved by the Institutional Ethics Committee.

### **Sample size and sampling technique**

The sample size for the study was calculated by using the formula  $n = 4pq / [d^2 + 4pq/N]$ , where 'p' is prevalence of underweight (NFHS 3) among under five children in Assam = 36%, 'd' is allowable error = 10% of P, N = population of under five children in the slum area = 305. The final sample size was found to be 214, rounded off to 220.

A list of households was prepared having the study subjects and the subjects were selected randomly using a random number table.

### **Data collection and analysis**

Data was collected by interviewing the parents of under five children after obtaining the informed consent. Using pretested proforma, information was collected on selected socio demographic variables and infant feeding practices of the children. The anthropometric indices of weight and length / height were measured by standardised equipments. Weight was recorded up to the nearest 0.5 kg. Recumbent length or height was measured up to nearest 0.5 cm.

The WHO child growth standards 2006 generated for boys and girls aged 0 to 60 months Z a score curve was used to assess the nutritional status. According to WHO criterion based on standard deviation (SD) units, children who were more than 2 SDs below the reference median were considered undernourished, i.e, under weight, stunted, and wasted. Children with anthropometric measurements less than 3 SD were considered to be severely undernourished. [7]

Modified B.G Prasad's classification adjusted with current income levels was used to determine the socio economic status. [8]

The data were analyzed using SPSS software for windows. Chi-square test was used to determine the statistical significance of the difference in prevalence of under-nutrition with various factors.

## **RESULTS**

Out of the 220 children, 127 (57.7%) were boys and 93 (42.3%) were girls. 121 mothers of under five children were literate and 99 mothers were found to be illiterate. The distribution of socio economic status of families were 5 in Class I, 82 in Class II, 44 in Class III and 89 in Class IV. There was no family in SES Class V.

Overall prevalence of underweight, stunting, and wasting was found to be 28.18%, 45.9% and 18.2% respectively. Severe underweight, stunting, and wasting (<-3 SD) was found in 7.3%, 25%, and 3.18%, respectively as shown in Table 1.

**Table 1: Distribution of nutritional status of children according to different anthropometric indices**

Indices	Normal		Under nutrition		Severe under nutrition		Total	
	No	%	No	%	No	%	No	%
Weight for age	158	71.81%	46	20.9%	16	7.3%	220	100
Height for age	119	54.09%	46	20.9%	55	25%	220	100
Weight for height	180	81.81%	33	15%	7	3.18%	220	100

**Table 2: Distribution of nutritional status of children according to socio demographic variables**

Socio demographic variables	Normal	Under nutrition	P value
<b>Underweight</b>			
Sex: Male	76	51	<0.0001
Female	82	11	
<b>Maternal literacy</b>			
Literate	99	22	0.0005
Illiterate	59	40	
<b>Socio economic status</b>			
Class I	5	0	<0.0001
Class II	82	0	
Class III	33	11	
Class IV	38	51	
<b>Stunting</b>			
Sex: Male	59	68	0.0018
Female	60	33	
<b>Maternal Literacy</b>			
Literate	66	55	0.9892
Illiterate	53	46	
<b>Socio economic status</b>			
Class I	0	5	<0.0001
Class II	73	9	
Class III	20	24	
Class IV	26	63	
<b>Wasting</b>			
Sex: Male	99	28	0.1187
Female	81	12	
<b>Maternal literacy</b>			
Literate	110	11	0.0002
Illiterate	70	29	
<b>Socio economic status</b>			
Class I	5	0	0.0878
Class II	73	9	
Class III	33	11	
Class IV	69	20	

Table 2 depicts the association between socio demographic variables and nutritional status of the children. Among the socio demographic variables, the prevalence of underweight and stunting was more among boys than girls. Literacy level of mothers has been found to be conducive for improved nutritional status as both underweight and wasting were more prevalent among illiterate mothers. The anthropometric parameters of underweight and stunting have also been found to be more among socio economic status Class III and Class IV.

Table 3 depicts the association between infant feeding practices and nutritional status of the children. 60% mothers (132 out of 220) practised exclusive

breast feeding, 45.45% (100 out of 220) children were put on complementary feeding at the age of 6 months and 22.2% (49 out of 220) children were given prelacteal feeds after birth mostly in the form of honey.

**Table 3: Distribution of nutritional status of children according to infant feeding practices**

Infant feeding practices	Normal	Under nutrition	P value
<b>Underweight</b>			
Exclusive breast feeding			0.0030
Yes	105	27	
no	53	35	
<b>Complementary feeding</b>			
months	75	25	0.4196
>6 months	83	37	
<b>Prelacteal feeds</b>			
Yes	132	39	0.0017
No	26	23	
<b>Stunting</b>			
Exclusive breast feeding			0.0499
Yes	79	53	
no	40	48	
<b>Complementary feeding</b>			
months	70	30	<0.0001
>6 months	49	71	
<b>Prelacteal feeds</b>			
Yes	92	79	0.8720
No	27	22	
<b>Wasting</b>			
Exclusive breast feeding			0.5925
Yes	110	22	
no	70	18	
<b>Complementary feeding</b>			
months	83	17	0.810
>6 months	97	23	
<b>Prelacteal feeds</b>			
Yes	141	30	0.8039
No	39	10	

## DISCUSSION

The present study shows the prevalence of underweight to be 28.18 % which is markedly less than the NFHS 3 prevalence of underweight at the national level which is 42.5 % whereas the prevalence of other two indices i.e, stunting and wasting in the present study are slightly less than that of the national scenario according to NFHS 3 (stunting and wasting are 48% and 19.8% respectively). On the other hand, our study shows a lesser prevalence of underweight and stunting

when compared to the findings of Assam according to NFHS 3 i.e., underweight 36.5% and stunting 46.5%. But the prevalence of wasting in the present study i.e., 18.2 % is higher than that found in Assam, i.e., 13 % according to NFHS 3. Similar findings were observed in a study by Islam S<sup>[9]</sup> done in the char areas of Dibrugarh district with the prevalence of underweight and stunting as 29 % and 30.4% respectively both of which are less than the NFHS 3 findings of Assam and wasting was 21.6% , higher than the NFHS 3 prevalence of wasting in Assam .

Among the socio demographic factors, boys were found to be more undernourished than girls which was statistically significant. This finding is in conformity with a study done in the char areas of Dibrugarh district, Assam<sup>[9]</sup> and the study by Dhona A B<sup>[10]</sup> where under nutrition was seen to be significantly higher among boys. Different finding was observed in a study done by Suri S<sup>[11]</sup> in Jammu where there was no gender differential. Again Gupta V<sup>[12]</sup> found increased prevalence of under nutrition among girls. Rasania and Sachdev<sup>[13]</sup> in their study found higher prevalence of underweight and stunting among girls. Maternal literacy is also a factor in influencing the nutritional status of children where prevalence of under nutrition was higher among illiterate mothers in our study. This is in agreement with the study by Dhona AB,<sup>[10]</sup> But Mathad V<sup>[14]</sup> in his study conducted in rural part of South India found no significant association between maternal literacy and under nutrition. In our study, under nutrition was significantly higher in socioeconomic status Class III and IV. Mathad V<sup>[14]</sup> in his study found higher prevalence of under nutrition among low socio economic status but Suri S<sup>[11]</sup> found no significant association between under nutrition and socio economic status.

Among the infant feeding practices, breast feeding helps in better nutritional status as evidenced by the study finding. Suboptimum breastfeeding, especially non-

exclusive breastfeeding in the first 6 months of life, results in 1. 4 million deaths and 10% of disease burden in children younger than 5 years.<sup>[5]</sup> In the present study, lack of exclusive breast feeding showed significant association with both the anthropometric indices of underweight and stunting. Similar findings were observed in the study by Rasania and Sachdev<sup>[13]</sup> and Islam S<sup>[9]</sup> where under nutrition was found among under five children who were not exclusively breast fed. Even with optimum breast feeding, children become stunted if they do not receive an adequate quantity and quality of complementary foods after 6 months of age.<sup>[5]</sup> In our study stunting was found to be significantly associated with delayed initiation of complementary feeding among children. In a study by Kumar D and Goel NK<sup>[15]</sup> improper complementary feeding was associated with undernourished children. Islam S<sup>[9]</sup> in their study also found significant association between delayed complementary feeding and undernutrition.

## CONCLUSION

Under nutrition was found to be high among the study children which calls for intervention such as nutrition education among mothers and care givers of the children with special emphasis on exclusive breast feeding and timely introduction of complementary feeds. Awareness to promote female literacy is equally important as it has been observed that mothers with higher level of education are better caretakers of their children.

## REFERENCES

1. World Bank. India's Undernourished children: A call for reform and action. Available from: <http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/SOUTHASIAEXT/0,contentMDK:20916955~pagePK:146736~piPK:146830~theSitePK:223547,00.html>
2. Blössner M, de Onis M. Malnutrition: quantifying the health impact at national and local levels. Geneva, World Health Organization, 2005. (WHO

- Environmental Burden of Disease Series, No. 12).
3. World Health Organization. Infant and Young Child feeding. N<sup>o</sup> 342 (Updated January 2016).
  4. International Institute for Population Sciences (IIPS) and Macro International. 2007. National Family Health Survey (NFHS-3), India, 2005-06: Mumbai.
  5. Black RE, Allen LH, Bhutta ZA et.al. Maternal and Child undernutrition: global and regional exposures and health consequences. *Lancet* 2008; 371: 243-60.
  6. Black RE, Victoria CG, Walker SP, et al. Maternal and child under nutrition and overweight in low income and middle income countries. *Lancet* 2013; 382: 427-51.
  7. Seetharaman N, Chacko T V, Shankar S, Mathew A C. Measuring malnutrition - The role of Z scores and the composite index of anthropometric failure (CIAF). *Indian J Community Med* 2007; 32:35-9.
  8. Gururaj MS, Rashmi MR. BG Prasad's socioeconomic status scale - Revision for 2014 Socioeconomic a - The Scientific Journal for Theory and Practice of Socio-economic Development 2014, 3(6): 351-354.
  9. Islam S, Mahanta TG, Sarma R, Hiranya S. Nutritional status of under 5 children belonging to tribal population living in riverine (Char) areas of Dibrugarh district, Assam. *Indian J Community Med* 2014; 39:169-74.
  10. Dhona AB, Chitnis UB, Bhawalkar JS Jadhav SL. Epidemiological study of under nutrition among under five years children in an urban slum. *Med J DY Patil Univ* 2012; 5:110-3.
  11. Suri S, Kumar D. Nutritional Status and the Factors Associated with it among Children Aged 1-5 Years in a Rural Area of Jammu. *Int J Sci Stud* 2015; 3(3):60-64.
  12. Gupta V, Mohapatra D, Kumar V. Nutritional assessment among children using various anthropometric indices. *International Journal of Biomedical Research* 2015; 6 (09):629-634.
  13. Rasanias SK, Sachdev TR. Nutritional status and feeding practices of children attending MCH Centre. *Indian J Community Med* 2001; XXVI: 145-50.
  14. Mathad V, Metgud C, Mallapur MD. Nutritional status of under-fives in rural area of South India. *Indian J Med Sci* 2011; 65:151-6.
  15. Kumar D, Goel NK, Mittal PC, Misra P. Influence of infant feeding practices on nutritional status of under five children. *Indian J Paediatr* 2006; 73 (5): 417-21.

How to cite this article: Gope A, Baruah KK, Ojah J. An assessment of nutritional status of 1 to 5 year old children in slum area under urban health training centre, Guwahati. *Int J Health Sci Res.* 2016; 6(8):29-33.

\*\*\*\*\*