A comparative study to assess the nutritional status of under five children in selected urban and rural areas in Guwahati, Assam

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ABSTRACT

Background: Child nutrition status is an important measure of poverty in a population; poverty, malnutrition and disease are interlinked with each other. According to UNICEF 2017, nearly half of all deaths in children under 5 are attributable to under nutrition resulting into the loss of about 3 million lives a year. The study attempts to compare the nutritional status of under five children in selected rural and urban areas in Guwahati, Assam.

Materials and methods: A non-experimental, descriptive survey design was carried out in selected Anganwadi centres of Guwahati, Assam among 100 under five children using non-probability convenient sampling technique. Structured interview method for the socio-demographic variables and anthropometric measurements- weight and mid upper arm circumference was used for assessing the nutritional status of under five children.

Results and analysis: Malnutrition was graded according to IAP and MUAC. Results showed that among 100 under five children, total malnutrition cases were 62% in urban and 48% in rural when grading by IAP. Whereas by grading according to MUAC, malnutrition cases were 26% in urban and 22% in rural. No significant difference was found between the nutritional status of under five children in urban and rural areas using unpaired t-test ($p<0.05$).

Discussion and conclusion: The researcher concluded that there is no significant difference between the nutritional status of urban and rural under five children. So, the place of residence does not determine the nutritional status as long as a functional Anganwadi centre is present in the area.

Keyword: Malnutrition, Anganwadi centres, Anthropometric measurement, IAP, MUAC.

INTRODUCTION:

Food is an important and basic biological need of man. It is essential for life, growth and repair of the human body, regulation of body mechanisms. The nutrition of people on a global level is of great concern today particularly in developing nations where the children suffer from malnutrition. Child nutrition status is an important measure of poverty in a population; poverty, malnutrition and disease are interlinked with each other.[1]The nutritional status of an individual is often the result of many inter related factors. Malnutrition is largely the by-product of poverty, ignorance, insufficient education, lack of knowledge, inadequate sanitary environment, large family size, etc. these factors are the major determinants of malnutrition in a society.[2]

Anganwadi is a type of child care centre in India started by the Indian government in 1975 as part of the Integrated Child Development Services program to combat child hunger and malnutrition with the objectives to improve the nutritional status of children 0-6 years to reduce the incidence of mortality, morbidity, malnutrition.[3]

As per Global Health Observatory (GHO) data, in 2016, globally there were 155 million children under 5 years of age stunted, 52 million wasted.[4] The Rapid Survey on Children (RSoC) 2013-14 showed that in India among children aged 0-59 months 39 % were stunted 29% of children aged < 3 years were underweight. About 5% of the children are severely wasted and 10% are severely underweight.[5] NFHS-4 in Assam (2015-16) shows that 36.4% of children under five years are stunted (height for age), 17% of under five children are wasted (weight for age), 6.2% of under five children are severely wasted (weight for height) and 29.8% of under five children are underweight (weight for age).[6]

Anthropometric assessment is widely used and regarded as the best single measures for health and nutritional status in children.[7] Growth assessment best defines the health and nutritional status of children because disturbances in health and nutrition regardless of their aetiology invariably affect child growth and hence provides an indirect measurement of the quality of life of an entire population. Deficiencies in nutrition inflict long term damage to both individuals and society. Therefore a comparative study to assess the nutritional status of under five children was carried out in order to provide early detection of malnutrition by means of anthropometric measurement which will help to reduce mortality and morbidity rate.

MATERIAL AND METHODS

A descriptive survey design was carried out in the month of December, 2017. The researcher have undertaken one urban area i.e Dhirenpara and one rural area i.e Sonapur to represent the urban and rural underfive children. By using simple random techinique 5 Anganwadi centres were selected from Dhirenpara area and 6 Anganwadi centres were selected from Sonapur area after obtaining prior permission from the Community areas.

The sample size was calculated using Yaro Tamane formula, Sample size, $n = N/k + N(e)^2$

Where, N= Population of study, 55
k = constant, 1
e = degree of error expected, 0.05

The sample size obtained from urban area was 48.35 which was decided as 50 by the researcher and the same number of sample size was taken from rural area in order to compare the nutritional status of under five children in urban and rural areas in Guwahati, Assam. The total sample size was 100 i.e. 50 as rural and 50 as urban samples each.

Using convenient sampling technique, the samples were selected from the Anganwadi centres till the required sample sizes were achieved. The purpose of the study was explained and written consent was taken from the mothers while ensuring the confidentiality of the data obtained.

Data was collected by using i) a structured interview schedule regarding the socio-demographic variables of the child consisting of age, gender, religion, number of sibling, birth order of child, type of family, type of house, education of parents, occupation of parents, monthly income, dietary habit, any chronic illness, duration of exclusive breastfeeding, history of diarrheal disease, history of de-worming. Kuppuswamy's SES scale was used to determine the socio-economic status. ii) Observation of the nutritional status by anthropometric assessment such as weight and mid upper arm circumference. Weight was measured with

minimal dress of the child by adjusting to the nearest 0.1 kg. Mid upper arm circumference was assessed by measuring the mid-point between the tip of the shoulder i.e. the acromium process and the tip of the elbow i.e. olecranon process using a measuring tape. Malnutrition was graded according to Indian Academy of Pediatrics and Mid Upper Arm Circumference Classification. Reliability of the instruments was obtained by calibrating the instrument in Physics laboratory, AdtU, Guwahati, Assam.

The sampling criteria of the study are: Inclusion criteria: i) Under five children between the age group of 2-5 years. ii) Under five children who were available at the time of data collection. Exclusion criteria: i) Those under five children who were sick at the time of data collection, ii) Under five children who were not willing to participate.

RESULTS AND DISCUSSION

Results showed that among 100 under five children, total malnutrition cases were 31(62%) in urban and 24(48%) in rural when grading by IAP. Whereas, malnutrition cases were 13(26%) in urban and 11(22%) in rural when grading according to MUAC.

Socio- demographic characteristics of the under five children

Table:1 showed the socio-demographic distribution of the under five children. Majority 18(36%) under five children are from the age group 4-5 years in both the urban and rural area. Majority 28(56%) in rural were male, and in urban majority 29(58%) were female. Majority 47(94%) rural under five children were Hindu and majority 28(56%) urban under five children were Muslim. Majority 25(50%) rural under five children does not have any siblings and majority 24(48%) urban under five children have two or more siblings. Majority 22(44%) rural under five children were from joint family and majority 34(68%) urban under five children were from nuclear family. Majority 33(66%) rural under five children were from upper lower class and majority 28(56%) urban under five children were from upper lower class. Majority 37(74%) rural under five children received exclusive breastfeeding for 6 months and majority 17(34%) urban under five children received exclusive breastfeeding for more than 6 months. Majority 45(90%) in rural under five children does not have history of diarrhoeal disease and majority 27(54%) urban under five children have diarrhoeal disease in the last 2 week before the survey. Majority 35(70%) rural under five children had history of de-worming within 6 months and majority 29(38%) of urban under five children has no history of de-worming.

Table 1: Frequency and percentage distribution of urban and rural under five children with selected socio demographic variables

n=100

Sl no	Socio-Demographic variables	URBAN (n=50)		RURAL (n=50)	
		F	(%)	F	(%)
1.	Age of the child (in years)				
	a) 2 – 3	14	28	15	30
	b) 3-4	18	36	17	34
	c) 4-5	18	36	18	36
2.	Gender of the child				
	a) Male	21	42	28	56
	b) Female	29	58	22	44

3.	Religion				
	a) Hindu	22	44	47	94
	b) Muslim	28	56	2	4
	c) Christian	0	0	1	2
	d) Others	0	0	0	0
4.	Number of siblings				
	a) None	18	36	25	50
	b) One	8	16	19	38
	c) Two or more	24	48	6	12
5.	Type of family				
	a) Nuclear	34	68	21	42
	b) Joint	14	28	22	44
	c) Extended	2	4	7	14
6.	Type of house				
	a) Kucha	32	64	37	74
	b) Pucca	18	36	13	26
7.	Educational qualification of the mother				
	a) Illiterate	14	28	15	30
	b) Primary school certificate	9	18	13	26
	c) Middle school certificate	15	30	14	28
	d) High school certificate	8	16	5	10
	e) Intermediate or post high school diploma	2	4	3	6
	f) Graduate or post graduate	2	4	0	0
	g) Profession of Honours	0	4	0	0
8.	Socio economic class				
	a) Upper	0	0	0	0
	b) Upper middle	1	2	2	4
	c) Lower middle	21	42	15	30
	d) Upper lower	28	56	33	66
	e) Lower	0	0	0	0
9.	Dietary habit				
	a) Vegetarian	1	2	0	0
	b) Non- vegetarian	49	98	50	100
10.	Any chronic illness				
	a) Yes	1	2	1	2
	b) No	49	98	49	98
11.	Duration of exclusive breastfeeding				
	a) < 6 months	12	24	10	20
	b) for 6 months	16	32	37	74
	c) >6 months	17	34	1	2
	d) Never been breastfeed	5	10	2	4
12.	History of diarrhoeal disease in the last 2 week before the survey				
	a) Yes	27	54	5	10
	b) No	23	46	45	90
13.	History of de-worming				
	a) Within 3 months	11	22	10	20
	b) Within 6 months	12	24	35	70
	c) Within 9 months or more	8	16	2	4
	d) No history	19	38	3	6

Frequency and percentage distribution of nutritional status of under five children in selected rural and urban areas.

Figure 1 shows that by using IAP classification 26(52%) and 19(38%) of under five children are normal among rural and urban under five children respectively, majority 18(36%) each belonged to Grade I (Mild under nutrition), 13(26%) of urban under five children belonged to Grade II (Moderate under nutrition) whereas only 5(10%) belonged to rural under five children, and 1(2%) of rural under five was Grade III (Severe under nutrition). Supported by Thakur MS et al (2014) [8] in which overall prevalence of PEM was 56.23% with higher Grade I PEM (25.6 %) followed by grade II (20%).

The data in figure 2 showed that by using mid arm circumference the distribution of malnutrition in urban were 37(74%) of under five children are normal, 11(22%) were mild – moderate under nutrition and 2(4%) were severe PEM. Whereas among rural under five children, 39(78%) were normal, 10(20%) were mild – moderate under nutrition and 1(2%) was severe PEM. Result can be supported by a study conducted by Debnath SC et al (2017) [9] on malnutrition in a rural area of Bangladesh among 205 children aged 1-5 years using purposive sampling technique and by MUAC measurement, majority (21.8%) were moderate acute malnutrition (MAM) and 1.1% were severe acute malnutrition (SAM).
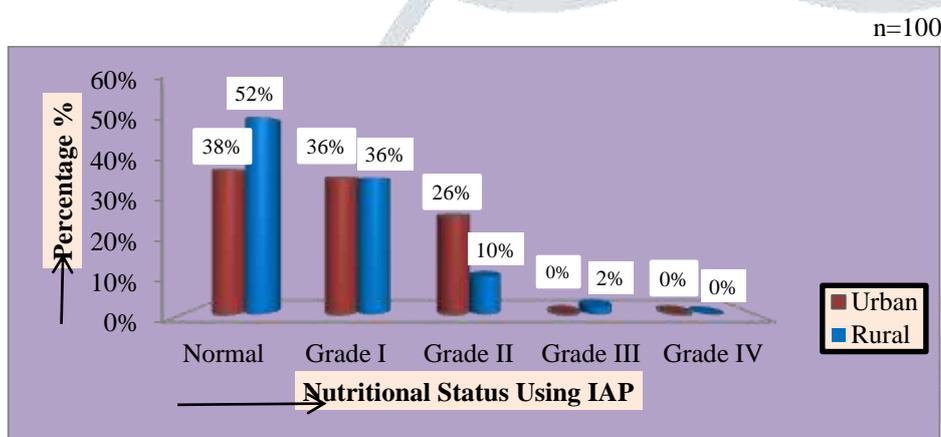

FIG 1: Clustered cylinder diagram showing percentage distribution of nutritional status using IAP
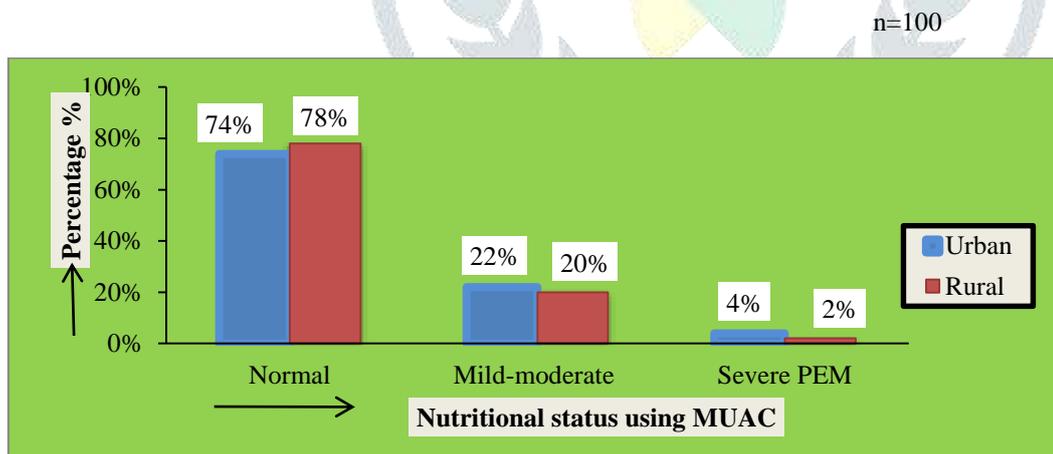

Fig 2: Clustered column diagram showing percentage distribution of nutritional status using MUAC.

Comparison of nutritional status of under five children in selected urban and rural areas

The data presented in table 2 showed that by using IAP classification, the mean of urban under five children was 78.06 while for rural under five children was 80.72. The standard deviation was SD±10.88 among urban under five children and SD±9.84 among rural under five children. The unpaired t-value was 1.28 which was found to be not significant at p<0.05 level of significance. Thus the research hypothesis was rejected. The data presented in the table 3 shows that by using MUAC, the mean of urban under five

children was 14.57 while for rural under five children was 14.38. . The standard deviation was SD±1.47 among urban under five children and SD±0.26 among rural under five children. and the unpaired   t-value was 0.74 which was found not significant at p<0.05 level of significance. Therefore, no significant difference was found between the nutritional status of under five children in the urban and rural areas using unpaired t-test (p<0.05).

The study can be supported by Cesani MF et al (2013)[10] who conducted a comparative study on nutritional status of urban and rural school children from Brandsen District of Argentina using weight, height, arm circumference and tricipital among 1368 school children aged 3 to 14 and the study concluded that the environment of residence does not promote any differentiation in the nutritional status. However, Navya N et al (2016)[11] conducted a comparative study of anthropometric measurements of children attending urban and rural Anganwadi centers of coastal district in Karnataka where the result showed the prevalence of wasting was significantly higher (p=0.006) in children attending urban Anganwadi centers compared to rural centers.

Table 2: Mean, standard deviation and t-value of the under five children using Indian Academy of Paediatrics classification

n=100

Sl no	Group	Mean	Standard deviation	Df	t-value (Unpaired t-test)	p value	Inference
1	Urban under five children	78.06	±10.88	98	1.28	0.20	NS
2	Rural under five children	80.72	±9.84				

S= Significant,   NS= Not significant at p<0.05 level of significance

Table 3: Mean, standard deviation and t-value of measurement of mid arm circumference of urban and rural under five children

n=100

Sl no	Group	Mean	Standard deviation	df	t-value (Unpaired t-test)	p value	Inference
1	Urban under five children	14.57	±1.47	98	0.74	0.457	NS
2	Rural under five children	14.38	±0.26				

S= Significant,   NS= Not significant at p<0.05 level of significance

CONCLUSION

Malnutrition has become a global health issue killing or disabling millions of children each year. The study was conducted to compare the nutritional status of under five children in selected urban and rural areas in Guwahati, Assam. With an improvement in the diet provided by the Anganwadi centres and the regular health monitoring by the health workers, the nutritional status of the rural under five children was satisfactory and no significant difference was found when compared with urban under five children. It can be further stated that the place of residence does not determine the nutritional status as long as a functional Anganwadi centre is present in the area. However, generalization of the study result cannot be done due to the small sample size.

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