Nutritional status of the Mishing Children: a cross sectional study

A. Boruah

Avijit Boruah, Assistant Professor, Department of Anthropology, North Gauhati College, Email: avijitboruah@gmail.com

ABSTRACT

The paper attempts to study health and nutritional status of the Mishing children of pre-adolescent age from Dhakuakhana Sub-Division of Lakhimpur District, Assam. The height and weight of a total of 483 children (241 boys and 242 girls) were collected from five villages, which are exclusively inhabited by the Mishing people.

The recommended indices of height for age (stunting), weight for age (underweight) and BMI for age based on NCHS standard were analyzed. Prevalence of overall malnourished among the Mishing children reveals that 36.93% of boys and 27.27% girls are stunted, 40.25% boys and 44.21% girls are underweight and as per BMI for Age 26.55% boys 27.28% girls are malnourished.

Key word: Health and Nutrition, Height for age, Weight for age, BMI for age, Mishing.

INTRODUCTION

Nutritional status is the status of health of an individual as it is attested by the intake and utilization of nutrient. The physical wellbeing and maintenance of normal health of an individual is related closely to his status of nutrition. Proper nutrition keeps man healthy whereas inadequate or improper nutrition reduce fitness and cause susceptibility to disease. Under nutrition continues to be a primary cause of ill health and premature mortality among children in developing countries (Nandy, 2005). Children nutritional status is an essential component of countries over human development. There is an growing consensus that poor nutrition status during childhood (or even uteri) can have long –lasting scarring consequence in adulthood, both in terms of health and mortality and in terms of other measures of human capital such as schooling productivity (Maluccio *et. al.*, 2009).

There are three commonly used indicators of under nutrition among children are stunting (low height for age), thinness (low body mass index for age) and under weight (low weight for age). Stunting is an indicator of chronic under nutrition, the result of prolonged food deprivation or illness; thinness is used as a composite indicator of acute under nutrition, the result of more recent food deprivation or illness; under weight is used as a composite indicator to reflect both acute and chronic under nutrition although it cannot distinguished between them (WHO, 1995).

Under nutrition among children is prevalent in almost all the states in India (Som *et. al.* 2006). The children living in rural areas of India are disproportionately suffered from under nutrition compared with their urban counterparts (Rajaram, 2007). Although several recent studies have studied the problem of under nutrition among children in different parts of India but in case of tribal population of Assam it is very limited.

In view of dearth of data the present investigation is attempt to assess the nutritional status among the pre adolescent Mishing children (5 years to 10 years of age) of the rural villages of Dhakuakhana Sub-Division, Lakhimpur District, Assam.

MATERIALS AND METHODS:

Study area and subject: This cross sectional study was carried out among the Mishing children of five villages of Dhakuakhana Sub-Division, Lakhimpur District, Assam. The villages *viz.* Matmora, Bokulguri, Dangdhara, Tulsijan and Banhpora are situated at the bank of Brahmaputra River, which are severely affected by flood for a long time. The villages are homogeneously inhabited by the Mishing community.

The Mishing is a major tribal group of Assam, basically inhabited in the districts of Dhemaji, Lakhimpur, Sonitpur, Tinsukia, Dibrugarh, Sivsagar, Jorhat, and Gaolghat. They are also found in the East Siang district, Lower Dibang Valley and Lohit district of Arunachal Pradesh. The Mishings are mainly agriculturalist and live in the river bank. Ethnically they are belongs to mongoloid group.

 The data were collected from village schools as well as door to door survey. A total number of 483 children (boys-241 and girls 242) were measured. Their ages range from 5 to 10 years. Information of age was authenticated from the record of the respective school authority as well as from the family members.

Anthropometric measurements: Height and weight measurement were taken by following the standard anthropometric technique prescribed by Weiner and Lourie (1981). Anthropometer and weighing machine were used for measurements.

Evaluation of nutritional status: Three commonly used nutritional indicators *i.e.* height for age, weight for age and Body Mass Index for age were used to evaluate the nutritional status of the subjects. These indices were derived as z-score (as recommended by WHO, 1986) of the growth reference of United State National Centre for Health Statistics (NCHS) (Kuczmarski *et.al. 2000*). The children were then categorized in to three levels of nutritional status in cut off point, i.e., $\leq$ - 2 z score as normal, -2 to -3 z score as slightly malnourished and $\geq$ -3 z score as malnourished as proposed by Rao (1996).

The statistical analysis is done in Microsoft Excel 2007.

RESULTS AND DISCUSSION

Table: 1 Statistical constant of height and weight among the Mishing children

Age in years	Boys					Girls					t-value of height	t-value of weight
	N	Height(cm)		Weight(kg)_		N	Height(cm)		Weight(kg)			
		Mean	SD	Mean	S.D		Mean	SD	Mean	S.D		
5	41	100.78	0.50	15.35	0.19	42	100.98	0.44	14.95	0.15	0.20	2.12*
6	40	108.86	0.81	17.50	0.30	40	108.57	0.69	17.03	0.28	0.83	0.68
7	40	114.41	0.97	18.70	0.42	40	116.33	0.66	18.32	0.26	1.54	0.97
8	40	120.21	0.68	20.65	0.30	40	120.32	0.56	20.01	0.26	0.15	0.91
9	40	124.82	0.61	21.75	0.30	40	123.03	0.45	21.07	0.22	2.74*	2.32*
10	40	129.49	0.77	24.83	0.38	40	128.65	0.89	23.93	0.43	1.88	2.55*

* $p < 0.05$

The mean value (Table-1) indicates continuous increase in height and weight from the age of 5 years to 10 years in both the sexes. In case of boys maximum increase of stature is found between 5 and 6 years of age and in case of girls it is found between 6 and 7 years of age. The rate of growth is however slow in the age between 8 and 9 years and after 9 years it shows a faster growth among the girls. The girls are taller in age group 5, 7 and 8 years but in 9 years of

age boys are significantly taller (t-2.74). In case of weight boys are always heavier in all age groups and in age group 5, 9 and 10 they are significantly (t- 2.12, 2.32, 2.55) heavier than the girls.

Table: 2 Nutritional statuses according to Height for Age of Mishing children

Age groups in years	Boys				Girls			
	N	Normal (%)	Stunted (%)		N	Normal (%)	Stunted (%)	
			Slight	Severe			Slight	Severe
5	41	58.54	41.46	0.00	42	76.19	21.43	2.38
6	40	50.00	47.50	2.50	40	75.00	15.00	10.00
7	40	77.50	20.00	2.50	40	77.00	20.00	2.50
8	40	80.00	15.00	5.00	40	65.00	25.00	10.00
9	40	45.00	45.00	10.00	40	60.00	37.50	2.50
10	40	67.50	25.00	7.50	40	82.50	12.50	5.00
Total	241	63.07	32.37	4.56	242	72.73	21.90	5.37

According to height for age (Table- 2) a total of 63.07% boys and 72.73% girls have a good nutritional status with a height of 80.00% in age group of 8 years in case of boys and 82.50% in age group of 10 years among the girls. Slightly stunted are 32.37% and 21.90% respectively in boys and girls. The highest rate of slightly stunted boys are found in 6 years of age (47.50%) and in case of girls it is found in 9 years of age (37.50%). The severely stunted children are ranges from 2.50% to 10.00% among boys and 2.38% to 10.00% among the girls with a total of 4.56% among the boys and 5.37% among the girls. In 5 years of age there are no severely stunted boys but in 9 years of age height (10.00%) stunted boys are found. Highest incidence of girls in severely stunted category is in the age group of 6 years and 8 years and lowest stunted are found in 5 years of age.

The result of weight for age of Mishing children shows that a total of 59.75% boys and 55.76% girls are healthy. The higher number of healthy children are found in age group 5 years of age (boys- 87.80% and girls- 76.19%), while the lowest is in the age of 6 and 9 years (32.50%) in boys and in 6 years of age among the girls (37.50%). The rate of slightly underweight children is almost equal in both the sexes (boys- 30.29% and girls- 30.17%). Highest number of slightly underweight are found in 6 years among the boys (57.50%) and 6 and 9 years among the girls (47.50%). It is seen that the number of severely underweight are more

among the girls as 9.96% boys and 14.04% girls are severely underweight. The height number of severely underweight boys (27.50%) is found in age group of 7 years and among the girls it is in 7 and 8 years (22.50%). It is important to note that more than half of the children are underweight in 6 (boys- 67.50% & girls- 62.50%), 7 (boys- 52.50% & girls- 50%) and 9 (boys- 67.50% & girls- 55%) years.

Table: 3 Nutritional statuses according to Weight for Age of Mishing children

Age groups in years	Boys				Girls			
	N	Normal (%)	Underweight (%)		N	Normal (%)	Underweight (%)	
			Slight	Severe			Slight	Severe
5	40	87.80	12.20	0.00	40	76.19	19.05	4.76
6	40	32.50	57.50	10.00	40	37.50	47.50	15.00
7	40	47.50	25.00	27.50	40	50.00	27.50	22.50
8	40	80.00	20.00	0.00	40	57.00	20.00	22.00
9	40	32.50	47.50	20.00	40	45.00	47.50	7.50
10	40	77.50	20.00	2.50	40	67.50	20.00	12.50
Total	241	59.75	30.29	9.96	241	55.76	30.17	14.04

Table: 4 Nutritional statuses according to BMI for Age of Mishing children

Age groups in years	Boys				Girls			
	N	Normal (%)	Malnourished (%)		N	Normal (%)	Malnourished (%)	
			Slight	Severe			Slight	Severe
5	41	95.12	4.88	0.00	42	92.86	4.76	2.38
6	40	65.00	17.50	17.50	40	67.50	20.00	12.50
7	40	57.50	12.50	30.00	40	62.50	30.00	7.50
8	40	82.50	17.50	0.00	40	57.50	20.00	22.50
9	40	67.50	25.00	7.50	40	80.00	12.50	7.50
10	40	72.50	20.00	7.00	40	75.50	17.50	7.50
Total	241	73.44	16.18	10.37	241	72.72	17.36	9.92

BMI for age (Table- 4) shows that 73.44% boys and 73.73% girls have normal health. In both sexes highest number of healthy children are found in 5 years of age (boys- 95.12% and girls- 92. 86%). In case of malnutrition highest number of slightly malnourished (25.00%) are found in 9 years of age and severely malnourished (30.00%) are found in 7 years among the boys while among the girls highest slightly malnourished (30.00%) is observed in 7 years of age and severely malnourished (22.50%) are in 8 years of age.

The result of the study reveals that the prevalence of stunting is higher among the boys (36.93%) than the girls (27.27%) among the Mishing children, which is statistically significant(x^2 -3.23). But the severely stunted girls (5.37%) are slightly higher than the boys (4.56%).

The index weight for age reveals that prevalence of underweight are higher among the Mishing girls (44.21%) than the boys (40.25%) but statistically not significant (x^2 -0.40). It is also found that the rates of severly underweight Mishing girls are higher (14.04%) than the boys (9.96%).

Table: 5 Value of chi-square test of nutritional status of the Mishing boys and girls

Stunted	Under weight	Thinness
3.32*	0.50	0.40

* $p < 0.05$

Body Mass Index for age indicates the prevalence of undernourished Mishing children are lower in comparison to other two indices; height for age and weight for age. According to BMI for age the malnourished is slightly higher in girls (27.28%) than the boys (26.55%) which is not statistically significant (x^2 -0.40). but in case of severely malnourished it is just opposite (boys-10.37%, girls- 9.92%).

CONCLUSION

One of the major health problems in many developing countries is the widespread prevalence of under nutrition and infectious diseases (WHO, 1990). It is generally reported that the basic cause of under nutrition and infectious diseases in developing countries are poverty, poor hygienic condition and little access to preventive and health care (Mitra; 1985, WHO; 1990). As the present study is based on small sample, therefore no far reaching conclusion could be made. However the study provides evidence that the Mishing children of Assam are under acute and chronic nutritional deficient stress. It may be one of the causes that as the area of the study have been affected by flood for a long time which affect the socio-economic life of the people. This may lead to poor health condition among the growing Mishing children.

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