

Assessment of Nutritional Deficiency of the Sekmai Children, Manipur (Clinical Aspect)

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Abstract

Nutritional status of the Sekmai children belonging to 4+ to 10+ has been assessed on the basis of six clinical symptoms associated with nutritional depletion. The sample comprises 360 boys and 371 girls. Assessment based on hair luster, quantity and texture reveals protein deficiency of the Sekmai boys as 8.9 %, 16.1 % and 10.8 % respectively. The frequencies of protein deficient girls on the basis of hair characters are 11.3% (hair luster), 13.2% (hair quantity) and 14.5% (hair texture). Symptom of niacin deficiency assessed by examination of tongue is very low, represented by only 0.2% of the boys and 0.26% girls. Fluoride deficiency as revealed by mottled enamel of teeth, is also low, being shown by 3.87% of the boys on average and 1.61% among the girls. Average frequency of Bitot's spot on eye, which is an indication of vitamin-A deficiency, among the boys is 0.83% and that of the girls is 0.26%. By and large, nutritional deficiency among the Sekmai children of 4+ to 10+ years cannot be considered as alarming situation.

Keywords: Clinical, PCM, VAD, Niacin, Fluoride

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INTRODUCTION

Inappropriate nutrition of children has been recognized as one of the major public health problems in many developing countries including India (Rathur, et.al.1975, ICMR.1971). Nature and extent of malnutrition vary according to varied eco- cultural settings and socio economic conditions as well. There are, on the other hand, different methods for assessing nutritional status such as anthropometric measurement, dietary survey, clinical examination and biochemical tests, etc. All these methods have their own merit, but a combined assessment, obviously, is all the time preferred to any single method. Anthropometry provides good information about nutritional status of an individual or of populations as well. But racial variation of the anthropometric traits together with jargon of classifications about different categories of nutritional status, although based on the same parameters like height, weight and age, fail to provide a uniform and convincing conclusion. Different classifications portray different pictures of the same data (JibonKumar and Singh, 2006). It is also questionable, to what extent the adoption of data of NCHS (National Centre for Health Statistics) as standard unit for comparative assessment of other communities, who belong to different genetically varied racial groups and of different places is methodologically feasible? Development of regional standards of healthy children will only alleviate such drawbacks in anthropometric method of assessment.

Clinical examination has always been an important practical method for assessing nutritional status of an individual or a population. Essentially, this method is based on examination of changes, related to inadequate nutrition that can be seen or felt in the super facial epithelial tissues, skins, eyes hair and buccal mucosa, or in organs near the surface of the body such as the parotids and thyroid glands. This method of assessment has an advantage of relative inexpensiveness, as the neither elaborate field equipment nor costly laboratory is needed. The present paper reports on nutritional status of the Sekmai children, Manipur, assessed on the basis of clinical symptoms (physical sign) associated with nutritional depletion. This is a part of survey which also included anthropometric measurements and dietary survey. Physical signs included in the paper are lack of hair luster, thinness and sparseness, straightness, scarlet and raw tongue, mottled enamel and bitot's spot on eye. The first three symptoms of hair are related to protein calorie malnutrition. The fourth symptom, scarlet tongue, is indication of niacin (a part of vitamin B complex) deficiency and the fifth one, mottled enamel is indication of fluoride deficiency. Bitot's spot on eye is considered to be due to vitamin A deficiency.

The Sekmai population under the present study is a section of the Meiteis, the largest community of Manipur. The Sekmai is included in the scheduled caste list of the state. Racially, they belong to Mongoloid group. By and large, they marry among themselves although there are sporadic cases of intermarriage with other sections of the Meiteis. They are known for expertise in distillation of superb quality liquor. They were excluded when the Meiteis were proselytized en masse in to Hindu religion during the early part of eighteenth century. Consequently, they still retain their age-old traditional religious worships. Rice is the staple food; pork is the most frequently eaten meat.

MATERIAL AND METHODS

The present study is based on cross sectional data of 731 children, 360 boys and 371 girls belonging to 4+ to 10+ years of age. The sample was drawn from Awang Sekmai (North) village,. Distance of the village, from Imphal,

the capital of Manipur is about 20 km towards the north. Being located just by the side of National Highway 39 and not very far from the capital, the villagers enjoy a semi urban way of life. The reason of choosing this village is the expectation that the study would yield a tentative average about nutritional status of children of the state at the first instance. Clinical signs of the children were recorded with the help of a physician by visiting door to door. Ascertainment of age of the Sekmai children was not easy but not very difficult too. Though they do not maintain birth record, they are very conscious of an individual's age, which is, as per their tradition, determined by the number of New Year that an individual has passed through since birth. Traditional New Year's Day usually falls on sometime in the middle of April. A child is said to be two years old on the day of New Year even though it was born just a month or a day before the New Year. For conversion of the traditional age into biological (Gregorian) age, it was essential to enquire if child was born before or after a New Year event and the time gap from the new year in month and days if possible to recollect. Conversion into decimal age has not been done because of uncertainty of exact date of birth in a number of cases. Assignment of the children into appropriate age group is the first and foremost important step to be taken up in any age - dependent investigation, like growth and nutrition. In the present study the children belonging to 4 to 5 years of age, e.g. those who have completed 4 years and more but not attained 5, have been grouped together as 4⁺ year, and so on

RESULT AND DISCUSSION

Tables 1 to 6 show the incidence of various physical signs associated with nutritional depletion among the Sekmai children. Tables 1 to 3 depict the picture of protein calorie malnutrition (PCM) as indicated by hair luster, thinness and sparseness as well as straightness. Only 8.88% of the boys and 11.3% of the girls show lack of hair luster. Greatest incidence of it is found at 6+ years of age among the boys (27.77%) and 5+ years group among the girls (Table 1). Thinning of hair and sparseness in quantity is shown by 16.11% of the boys and it is more pronounced during 5+ to 6+ years of age, represented by 23.21% and 25.92% respectively (Table 2). The girls show a relatively lower incidence of hair thinning and sparseness than the boys (13.19%). Among them the age group of 7+ years stands for the greatest incidence (29.09%). Hair straightness exhibits 10.80% of the boys and 14.55% of the girls as affected from protein calorie deficiency (Table 3). Among the boys incidence of PCM, assessed on the basis of hair straightness, is very low in the age group of 4+, 5+, and 10+ years, ranging from 2.43% to 9.25%. It is increased from 13.2% to 15.68% during 6+ to 9+ years. Among the girls greatest frequency is found in the age group of 7+ years with 36.36%.

It is learnt from table 1 to 3 that assessment of PCM based on three different clinical signs on hair reveals different results. That means assessment of protein deficiency by visual observation of hair characters is tentative and unless different characters are taken together, reliability will ultimately be lower. Considering the three hair characters of PCM together it can be inferred from the present data that protein deficiency among the Sekmai children of 4+ to 10+ years ranges from 8.88% to 16.11% among the boys and 11.3% to 14.55% among the girls.

Scarlet and raw tongue which is a sign of niacin deficiency is very low among the Sekmai children, being represented by only 1 boy of 7+ years of age and 1 girl of 10+ years. Thus, the overall incidence of niacin, a part of vitamin B complex deficiency is only 0.27% among the boys and 0.26% among the girls (table 4). Mottled enamel of teeth, which is indicative of fluoride deficiency, is shown by 3.87% of the boys and 1.61% of the girls. It is shown by the children of lower age groups such as 4+ to 7+ years among the boys and 4+ to 6+ years among the girls (Table 5). Bitot's spot on eye is an indicative of vitamin A deficiency (VAD). Only 3 boys, one each from 6+, 7+ and 8+ years group and two girls of 5+ years group were found to have this spot. Thus, overall VAD among the Sekmai boys is only 0.83% and 0.26% among the girls.

It is learned from the present study among the Sekmai children of 4+ to 10+ years of age that only a few children were found to be deficient of certain essential nutrients. In other words, a clinical symptom of malnutrition is not that disheartening situation among the Sekmai children. By saying so, it does not mean to remain complacent about the Sekmai children's nutritional status. The matter of concern is that even from the visual examination of hair about 8.88% to 16.11% of the boys and 11.3% to 14.55% of the girls could be detected as deficient of protein. It, at least, demands for an awareness programme on food and nutrition in this region for healthy growth of the people. It is pertinent to mention here that assessment of nutritional status of children based on anthropometric parameters like weight, height and age produce different results depending upon the classifications proposed different authors. As for the present data on the Sekmai children, clinical assessment shows closer affinity with the Vishveshwara Rao's classification of height for age, which shows 89.17% of the Sekmai boys and 87.60% girls as normal (JibonKumar and Singh, 2006).

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Table 1 - Lack of hair luster

Clinical Sign	AGE	BOYS						GIRLS			
		Affected		Normal		Total	Affected		Normal		Total
		No	P.C.	No	P.C.	No	No	P.C	No	P.C.	No
Lack of Hair Luster	4+	01	2.43	40	97.56	41	03	6.66	42	93.33	45
	5+	02	3.57	54	96.43	56	17	34.00	33	66.00	50
	6+	15	27.77	39	72.22	54	06	11.32	47	88.07	53
	7+	03	5.66	50	94.33	53	04	7.27	51	92.72	55
	8+	02	3.92	49	96.07	51	01	1.81	54	98.18	55
	9+	05	9.80	44	90.19	51	06	9.83	55	90.16	61
	10+	04	7.40	50	92.59	54	05	9.61	47	90.38	52
			32	8.88	328	91.11	360	42	11.32	329	88.67

Table 2- Hair thinness and sparseness

Clinical Sign	Age	BOYS						GIRLS			
		Affected		Normal		Total	Affected		Normal		Total
		No	P.C.	No	P.C.	No	No	P.C.	No	P.C.	No
Hair Thinness and Sparseness	4+	02	4.87	39	95.12	41	05	11.11	40	88.88	45
	5+	13	23.21	43	76.78	56	05	10.00	45	90.00	50
	6+	14	25.92	40	74.07	54	05	9.43	48	90.56	53
	7+	07	13.20	46	86.79	53	16	29.09	39	70.90	55
	8+	07	13.72	44	86.27	51	07	12.72	48	87.27	55
	9+	10	19.60	41	80.39	51	05	8.19	56	91.80	61
	10+	05	9.25	49	90.47	54	06	11.53	46	88.46	52
			58	16.11	302	83.88	360	49	13.20	322	86.79

Table 3- Hair Straightness

Clinical Sign	Age	BOYS						GIRLS			
		Affected		Normal		Total	Affected		Normal		Total
		No	P.C.	No	P.C.	No	No	P.C.	No	P.C.	No
Hair Straightness	4+	01	2.43	40	97.5	41	03	6.66	42	93.33	45
	5+	03	5.35	53	94.64	56	07	14.00	43	86.00	50
	6+	08	14.81	46	85.18	54	09	16.98	44	83.01	53
	7+	07	13.20	46	86.79	53	20	36.36	35	63.63	55
	8+	07	13.72	44	86.27	51	08	14.54	47	85.45	55
	9+	08	15.68	43	84.31	51	07	11.47	54	88.52	61
	10+	05	9.25	49	90.74	54	00	00	52	100	52
			39	10.83	321	89.16	360	54	14.55	317	85.44

Table 4- Scarlet and Raw Tongue

Clinical Sign	Age	BOYS					GIRLS				
		Affected		Normal		Total	Affected		Normal		Total
		No	P.C.	No	P.C.	No	No	P.C.	No	P.C.	No
Scarlet and Raw Tongue	4+	00	00.00	41	100.00	41	00	00.00	45	100.00	45
	5+	00	00.00	56	100.00	56	00	00.00	50	100.00	50
	6+	00	00.00	54	100.00	54	00	00.00	53	100.00	53
	7+	01	1.88	52	98.11	53	00	00.00	55	100.00	55
	8+	00	00.00	51	100.00	51	00	00.00	55	100.00	55
	9+	00	00.00	51	100.00	51	00	00.00	61	100.00	61
	10+	00	00.00	54	100.00	54	01	1.92	51	98.07	52
		01	0.27	359	99.72	360	01	0.26	370	99.73	371

Table 5- Teeth Mottled Enamel

Clinical Sign	Age	BOYS					GIRLS				
		Affected		Normal		Total	Affected		Normal		Total
		No	P.C.	No	P.C.	No	No	P.C.	No	P.C.	No
Teeth Mottled Enamel	4+	01	2.43	40	97.56	41	00	00.00	45	100.00	45
	5+	04	13.14	52	92.58	56	05	10.00	45	90.00	50
	6+	05	9.25	49	90.74	54	01	01.80	52	98.00	53
	7+	04	7.54	49	92.45	53	00	00.00	55	100.00	55
	8+	00	00.00	51	100	51	00	00.00	55	100.00	55
	9+	00	00.00	51	100	51	00	00.00	61	100.00	61
	10+	00	00.00	54	100	54	00	00.00	52	100.00	52
		14	3.88	346	96.11	360	06	1.61	365	98.38	371

Table 6 – Eye Bitot's Spot

Clinical Sign	Age	BOYS					GIRLS				
		Affected		Normal		Total	Affected		Normal		Total
		No	P.C.	No	P.C.	No	No	P.C.	No	P.C.	No
Eye Bitot's Spot	4+	00	00.00	41	100.00	41	00	00.00	45	100.00	45
	5+	00	00.00	56	100.00	56	01	2.00	49	98.00	50
	6+	01	1.85	53	98.14	54	00	00.00	53	100.00	53
	7+	01	1.88	52	98.11	53	00	00.00	55	100.00	55
	8+	01	1.96	50	98.03	51	00	00.00	55	100.00	55
	9+	00	00.00	51	100.00	51	00	00.00	61	100.00	61
	10+	00	00.00	54	100.00	54	00	00.00	52	100.00	52
		03	0.84	357	99.16	360	01	0.26	370	99.73	371