



Original Research Article

Prevalence of Nutritional Deficiency among Selected Tribal Children

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ABSTRACT

The research was undertaken to assess the nutritional status and prevalence of nutritional deficiency of the selected irullar children in Coimbatore district. The nutritional status of tribal children in India is critical. Appropriate measures should be taken by the respective authorities to improve childhood health and nutritional status. The causative factors for the incidence diseases were explored and diet, health and hygienic counseling was imparted. The age group of the subject selected for the present study is about 6 to 15 years; totally 210 children were selected for the study through purposive sampling method. Out of 210 children, 90 percent of children had normal BMI and nine percent of the children were under weight. Actual mean nutrient intake of girls higher than the boys except energy intake. Hundred children had enrolled in midday meal programme; it is given to increase the school enrolment and health of the children. Fourteen percent of the children belong to moderate anaemia whose hemoglobin level was 7.1-10g/dl and they have risk of getting severe anaemia and only 50 percent of children had normal hemoglobin level, 36 percent of children had mild degree of anaemia. Public distribution system was provided to the tribes, this shows the better nutritional status among the tribal children.

Key Words: BMI (Body Mass Index), Nutritional Status, Irullar, Haemoglobin.

INTRODUCTION

The tribal population is recognized as socially and economically vulnerable. Their lifestyles and food habits are different from that of their rural neighbours; they depend on minor forest produce and manual labour for livelihood.

Total Indian population is 1.15 billion, in that total tribe population constitutes about 8.2 percent. Total population of tribal children in India is 24,175,900. ^[1] Totally 573 communities recognized by the government as scheduled

tribes and therefore eligible to receive special benefits. Total population of tribal children in Tamil Nadu is 1,6000 and there are 224,000 people belongs to Irullar community. ^[2]

In Tamil Language, the name Irula means "People of Darkness". This could refer to their dark coloured skin or to the fact that all important events traditionally took place in the darkness of night. In India approximately 573 tribal groups who constitute more than eight percent of India's population and they are distributed all over

the hilly and dense forest regions of the country. Therefore improvement of the nutritional status is of vital importance from public health point of view at the national level. [3]

Children below the age group of five to ten years constitute nearly fifteen percent of the total population of country and from the nutritional standpoint constitute a vulnerable segment and suffer the highest rate of morbidity and mortality. [4]

Malnutrition in its various forms is a very depressing health problem of today, affecting over half of the world's population. Malnutrition leads not only to stunting of physical growth but also to suboptimal intellectual development. [5]

In India, 30 percent of the school age children belong to moderate to severe malnutrition category, among them tribal school children are more reported to protein energy malnutrition, vitamin A deficiency and iron deficiency anaemia. Dietary inadequacies have been considered as predominant etiology factors in the causation of all deficiency diseases. Growth and nutritional status of preschool and school going children are profoundly influenced by the diet consumed by them. [5] The most vulnerable group regarding health and nutritional status was preschool and school going children living in rural as well as in urban slum areas, within which the tribal school going children were the main victims of undernourishment. [6]

Prevalence of goiter rate in tribal school children is seven percent. Prevalence of goiter increased with age in female and tribal children. There is moderate iodine deficiency with poor community knowledge of iodine nutrition. There is a need to strengthen the monitoring of salt iodization and intensive education activities to the tribal school children. [7]

Keeping this in mind the present research was carried out to assess the

prevalence of any nutritional deficiency diseases among the tribal children to assess the demographic and socio-economic status of selected tribal children, study the dietary pattern of the selected children, evaluate the health status and prevalence of deficiency diseases among selected children and impart the nutritional education to the tribal children.

MATERIALS AND METHODS

Locale of the research was carried out in Velliangiri hills of Coimbatore District. Total population of Velliangiri hills is 1719; the Schedule Caste population is about 978 and Schedule Tribe population is about 791, total Adults population comprises about 1455 and children including adolescents are about 264.

The present research focused on the nutritional status of the children, by purposive sampling technique. 210 school children (55 boys and 55 girls were residing in hostel, 55 boys and 45 girls children were dayscholars) in the age group of 6 to 15 years were selected.

Assessment of the nutritional status is done by the researcher for assessing the health status of the children. Pre-structured interview schedule was prepared for collecting information about the sex, age, socio-economic status, family background, anthropometric measurement, clinical examination, dietary pattern (24 recall method), medical history, life style pattern, hygienic practices and health status of the children.

Diet Survey

Diet surveys constitute an essential part of any complete study of nutritional status of individuals or groups, providing essential information on nutrient intake levels, sources of nutrients, food habits and attitudes, signs of malnutrition do not exist, a survey of intake of nutrients may give an indication of the adequacy of the diet for

promoting optimal nutrition of individuals or groups. [8]

Dietary survey using 24 hour diet recall method was utilized to find out the quantity of food consumed by the selected children. The raw equivalents were calculated and the nutrient intake of the children was computed using food composition table. [8]

Taking into consideration the prestructured questionnaire were formulated to collect the details of the selected children. Using well framed questionnaire, face to face interview method was conducted to obtain correct details for the selected school children. Nutrition counseling was imparted to the selected children for two months at the interval of 15 days. The duration of the counseling was 30 minutes. The counseling was imparted to the children during the leisure time without disturbing the classes. The demonstration activities were used for imparting health education on aspects of hand washing, nail cutting and brushing teeth. Basic five food groups, signs and symptoms of the deficiency diseases, foods to overcome the diseases is included in the chart and posters include food pyramid, leaflets and children take part in the nutrition games to gain the knowledge in nutritious foods

Knowledge Attitude Practices (KAP)

Knowledge Attitude Practices (KAP) was assessed using checklist to find out the effect of intervention programmes with the components such as nutritious rich foods, hygiene and sanitation.

KAP assessment is used to find out the nutrition knowledge. Multiple choice questions were prepared to find the pre and post knowledge, attitude and practices of the selected children. Scores were allotted for each question and the impact was assessed. Scoring was done on the following basis.

Scores of one, half and zero were awarded respectively to each correct, partially correct and wrong answer. Gain in scores and percent improvement was calculated using the following equation.

$$\text{Gain in scores} = \text{Scores of post test} - \text{Scores of pre test}$$

$$\text{Percentage of improvement} = \frac{\text{Gain in scores}}{\text{Pre test scores}} \times 100$$

RESULTS AND DISCUSSION

Two hundred and ten children living in Velliangiri hills are going to school, studying in the class of 1st-10th std is selected, these population were in the age group of the selected children is between 6-14⁺ years, 49 of the children were in the age of 6-8 years, 89 children were between 9-11 years and 72 in the age of 11-14⁺ years. Fifty eight percent of children family belongs to low income group and only two percent belong to high income group. The study showed that 45 percent and 56 percent of the tribal school children parents were illiterate and only 12 percent and 5 percent of children parents had higher education. Out of 210 sample, 90 percent of the children had normal BMI and 9 percent of the Children were underweight.

The study revealed that 98 percent of the boys and girls from both residential and non-residential children have normal height when compared to the standard height. It was found out that mean weight of the boys and girls was compared with standard values, in that 70 percent of them have normal weight.

It was noted that 14 percent of the children belong to moderate anaemia whose haemoglobin level was 7.1-10g/dl and they are have risk of getting severe anaemia and only 50 percent of children had normal haemoglobin level, 36 percent of children are in mild degree of anaemia.

TABLE 1: Mean haemoglobin level of the selected tribal children

Degrees of anaemia (g/dl)	Sex								Total	
	Boys				Girls					
	Residential		Non-residential		Residential		Non-residential			
	No.	%	No.	%	No.	%	No.	%		
7.1-10 (moderate)	6	3	7	3	12	6	4	2	29	14
10.1-10.9 (mild)	19	9	21	10	20	10	16	8	76	36
11-13 (normal)	30	14	27	13	23	11	25	12	105	50

Note 1: Normal Haemoglobin Level for children 11-13gm/dl (WHO, 1989).

TABLE 2: Clinical examination of the selected tribal children

Clinical Symptoms	Sex								Total	
	Boys				Girls					
	Residential		Non-residential		Residential		Non-residential			
	No.	%	No.	%	No.	%	No.	%		
Dry hair	12	6	6	3	4	2	7	3	29	14
Dry skin	4	2	-	-	-	-	6	3	10	5
Worm infestation	57	27	17	8	41	20	30	14	145	69
Paleness of the skin	2	1	1	0.4	-	-	4	2	7	3
Tooth decay	24	11	12	6	11	5	12	6	59	28
Pale nails	2	1	-	-	4	2	-	-	6	3

The clinical examination of the study shows that 69 percent of the tribal children had worm infestation and 28 percent of children have the complaints of tooth decay and 14 percent of children have dry hair and skin (Table 2). It was evident that the mean intake of boys is deficient in all the nutrients and does not met with recommend dietary allowances. [8] Actual intake of girls mean deficient intake was higher than the boys

except energy intake, protein and fat intake was significant at 5% level whereas in boys vitamin C intake is not significant.

RDA for boys is 2189 but the actual mean intake of the boys is 1012, it was very low intake when compared to RDA but for protein and fat intake is normal and for girls actual mean intake of energy is only 999 when compared with RDA it was very low (Table 3).

TABLE 3: Nutrient intake of selected tribal children

Nutrients (units)	Boys					Girls				
	RDA	Mean ± SD	Difference	% Difference	't' value	RDA	Mean ± SD	Difference	% Difference	't' value
Energy(kcal)	2189	1012 ± 184.6	-1177	54	4.30**	2008	1009 ± 207	-999	50	2.30**
Proteins(gm)	39	34 ± 2.88	-5	13	2.77*	40	35 ± 3.18	-5	88	2.30**
Fats(gm)	35	15 ± 7.7	-20	57	2.77*	35	18 ± 5.7	-17	49	2.30**
Carbohydrates (gm)	440	188 ± 25.8	-252	57	2.77**	383	193 ± 19	-190	50	2.30**
Fiber(gm)	20	5 ± 0.74	-15	75	2.77**	20	6 ± 1.13	14	70	2.30**
Calcium(mg)	600	321 ± 29.36	-279	47	2.77**	700	345 ± 58.8	-355	51	2.30**
Iron(mg)	21	9 ± 1.16	-12	57	2.77**	27	9 ± 0.59	-18	67	2.30**
β-carotene(µg)	4800	561 ± 111.34	-4239	88	2.77**	4800	548 ± 309	-4252	89	2.30**
Vitamin-C (mg)	20	52 ± 31.8	+32	63	2.77 ^{NS}	20	40 ± 9.3	+20	100	2.30**
Niacin(mg)	18	6.6 ± 0.58	-11.4	63	2.77**	14	6.4 ± 0.7	-7.6	54	2.30**
Thiamine(µg)	1.2	0.6 ± 0.20	-0.6	50	2.77**	1.1	0.6 ± 0.17	-0.5	45	2.30**

** Significant at one per cent level * Significant at five per cent level NS – Not significant

It was evident to note that 90 percent of the children followed good and healthy hygienic practices. Proper education about health, hygiene and sanitation is given to children by their parents and teachers and

these children are influenced by T.V advertisement.

The nutrition knowledge of the children in the scores of pre test and post test of nutrition knowledge and health

practices, the pre test scores of the girls group were less when compared with the pre test scores of the boys group. After administration of KAP nutrition knowledge was increased and the gain in scores was noted. The maximum increase in scores was

noted in boys and girls of the selected tribal school in lifestyle and personal hygiene. The percentage of improvement in nutrition knowledge, lifestyle, sanitation and hygiene was improved education.

TABLE 4: Hygienic Practices of the selected Tribal Children

Clean habits	Sex								Total	
	Boys				Girls					
	Residential		Non-residential		Residential		Non-residential		No.	%
	No.	%	No.	%	No.	%	No.	%		
Wear neat & clean cloths	53	25	50	24	53	25	42	20	198	94
Wash hands daily before having food	55	26	55	26	55	26	45	22	210	100
Washing hands and legs after coming from school	53	25	52	25	51	24	40	19	196	93
Clean nails regularly	49	23	47	22	50	25	42	20	188	90
Brush teeth daily	55	26	55	26	55	26	45	22	210	100
Take bath daily	55	26	55	26	55	26	45	22	210	100
Habit of washing hands after using toilet	50	24	52	25	51	24	43	20	196	93

TABLE 5: Assessing the Nutrition Knowledge of the selected Tribal Children

Parameters	Boys			Girls		
	Pre test	Post test	Gain in scores	Pre test	Post test	Gain in scores
Nutrition score	10	16	6	10	16	6
Lifestyle score	11	17	6	10	17	7
Personal hygiene and sanitation score	10	16	16	11	17	6
Deficiency disease score	12	17	5	11	16	5

TABLE 6: Adoption of desirable practices by selected Tribal Children

Practices	Before Nutrition Counseling		After Nutrition Counseling	
	No.	%	No.	%
Washing of vegetables before cutting	100	48	200	95
Cooking in covered pan/pressure cooker	90	43	205	98
Use fresh fruits/vegetables	98	47	200	95
Tendency of skipping meals	70	33	20	10

TABLE 7: Nutritional Attitude Test for the selected Tribal Children

Attitude	Percentage of children			
	Before N.C		After N.C	
	No.	%	No.	%
Milk is rich in calcium and it is good for heart patient	100	48	200	95
Fish is richest source of protein	110	52	205	98
One parent is suffering from heart disease, risk is high in children	97	46	207	99
Always sieve and use the floor.	80	38	205	98

In case of practices, before nutrition counseling only 48 percent of the children had put nutritional practice but after giving education, 95 percent of the children follow nutritional practices in their daily life. Before education 33 percent of the children think about skipping of meals is good and after education then try to take breakfast and put into practices.

In case of attitude, majority of children scored marks before education. After education it is increase upto 90 percent. The

post test scores revealed an improved in attitude as majority, 90 percent of respondents showed more than 95 percent of improvement.

CONCLUSION

The most vulnerable group regarding health and nutritional status was school going children. In school going age girls are more malnourished than boys, girls actual food intake was low when compared with boys actual intake. Even among tribal children deficiency diseases was not

prevalent among them. Worm infestation is common. Proper food distribution system was provided for the tribes, this shows the better nutritional status among the children and also the improvement in personal hygiene had significant impact on reduction related to morbidities.

REFERENCES

1. www.censusindia.net
2. www.census.tn.nic.in
3. Bisai Samiran and Mallick chhanda. Prevalence of Malnutrition among tribal school boys and girls. *Journal of Human Ecology*. 2002; 26(1):1252-1256.
4. Gupta and shukla. Nutritional status of kodaku pre-school children in central india. *Journal of Human Ecology*. 2000; 17(3):229-231.
5. Chandna.S and Salll Sehgal. Prevalence of Deficiency Diseases Among school Children. *Indian Journal of Health and Education*. 2004; 17(1&2): 108-113.
6. Rao. M, Mitra, Tiwara, Gopalan. Nutritional status of tribal children. *Journal of Nutrition*. 2006; 21(2): 20-25.
7. Sethy. PG,Bulliyya G, Dwibedi B, Mallick G, and Kar SK. Determination of iodine nutrition and community knowledge regarding iodine deficiency disorders in selected tribal blocks of Orissa, India. *Journal of Pediatrics Endocrinal Metabolism*. 2008; 21(1):79-87.
8. Swaminathan, M. Essential of food and nutritious. *Indian Journal of Health and Education*. 2006; 2: 23.
9. C.Gopalan, B.V Rama Sastri and S.C. Balasubramanian. Nutritional Value of Indian Foods. *Indian Council of Medical Research*. 2007;34.

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