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Research Paper

Clinical profile of tribal children of Koraput district of Odisha

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ABSTRACT : Health and nutritional status of tribal pre-school children, aged 1 to 6 years, of Koraput district of Orissa were studied with the help of clinical examination and morbidity pattern. A total of three hundred pre-school children formed the study group. Children were observed for the presence of clinical signs of both nutritional and non-nutritional origin. Clinical signs of nutritional origin included were PEM, vitamin A deficiency disorder, iron deficiency disorder, iodine deficiency disorder, thiamine deficiency disorder, vitamin D deficiency disorder etc. Similarly deficiency signs of non-nutritional origin included were whooping cough, tuberculosis, measles, diarrhoea, dysentery, helminthesis, amoebiasis and malaria. A number of nutritional as well as non-nutritional disorders were found to prevail among the sampled children. Vitamin deficiency disorders included deficiency due to vitamin A, B complex and C. Anaemia was reported in as high as 67 per cent cases. More than 60 per cent children were observed with signs of PEM. More than 60 per cent children were suffering from dental caries and more than 20 per cent each were suffering from worm infestation, gastroenteritis, malaria and respiratory tract infection. A close proximity was observed in the appearance of deficiency symptoms and under nutrition between boys and girls depicting poor state of health and nutrition. While, the prevalence of various nutritional deficiency disorders may be attributed to their poor nutritional status, the prevalence of various morbidity patterns may be attributed to their unhygienic condition of living. Effective health and nutrition intervention programmes are to be channelled through appropriate agencies to promote and maintain positive health.

KEY WORDS : PEM, Deficiency, Disorders, Clinical signs

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Despite remarkable growth in economic sector as well as progress in human development index, the health of the child in terms of under nutrition still remains a great challenge for India. In spite of the fact that 20 per cent of world's child population inhibitats in India, our country is home to 40 per cent of world's malnourished children (UNICEF, 2004). This clearly indicates the vulnerability of Indian children both from health and nutritional point of view. The worst killers in this age group are severe forms of PEM as kwashiorkor and marasmus. Besides they suffer from various nutritional deficiency disorders like vitamin deficiency disorder, iron deficiency disorder, iodine deficiency disorders and other non-nutritional diseases.Children belonging to backward communities like rural poor, tribal communities and urban slums are prone to various forms of infection like bacterial, viral and parasitic infection due to their unhygienic condition of living. Their poor nutritional status and vulnerability to infection contribute to each other, resulting in various forms of diseases of nutritional and non-nutritional origin.

Today more than ever before, the pre-school children have become the focus of organized medical and social welfare activities and their death rate is considered as an excellent indicator of the social situation in a country. Besides, clinical examination of these growing children has been recognised as an important practical method for assessing health and nutritional status of a community. This method is based on assessment of changes related to inadequate nutrition that can be seen or felt in superficial epithelial tissues, especially skin, eyes, hair and buccal mucosa (Jellife, 1966). On this backdrop, a case study was undertaken to investigate the prevalence of clinical signs and morbidity patterns among the tribal pre-school children of Koraput district of Orissa with an

aim to assess health and nutritional status of the community.

■ RESEARCH METHODS

Three hundred pre-school children (aged one to six years old) belonging to *Paroja* community (a predominate tribe of Orissa) of Koraput district covering fifteen villages were randomly selected as the sample for the present investigation. Study on the prevalence of clinical signs and morbidity pattern was done by personal observations as well as interview method. The sample children were clinically screened for the presence of any deficiency signs in the presence of a physician. Their mothers were also interviewed with the help of a pre-tested schedule. Observation of clinical signs was done for relevant signs of nutritional deficiency disorders like deficiency disorders for vitamin A, B complex, C & D; deficiency disorders for minerals like iron and iodine and symptoms for the prevalence of PEM as described by (Jellife, 1966). The children were also examined for the prevalence of any non-nutritional diseases like whooping cough, tuberculosis, measles, diarrhoea, dysentery, helminthesis, amoebiasis, malaria etc. The data collected were recorded with respect to sex of the children and appropriate statistical analysis was done to draw the inference.

■ RESEARCH FINDINGS AND DISCUSSION

Prevalence of clinical signs for various deficiency disorders and morbidity pattern has been studied among the tribal pre-school children of Koraput district of Orissa. Table 1 depicts the rate of prevalence of various vitamin and mineral deficiency signs among the sample children.

Night blindness and conjuctival xerosis were the common form of vitamin A deficiency signs found to prevail among the sample children at about 33.7 per cent and 28.7 per cent cases, respectively. At the same time no other signs of vitamin A deficiency like corneal xerosis, corneal ulceration and corneal scar were observed. Prevalence of vitamin A deficiency symptoms has been reported by many workers. Khandait *et al.* (2000) and Joseph *et al.* (2010) have also reported such type of vitamin A deficiency signs among pre-school children of their study area. Rao *et al.* (2005) observed the presence of Bitot's spot in 1.6 per cent of sample children. Chandrasekhar and George (1991) observed that xerophthalmia was the most common nutritional deficiency symptoms among the sampled children of selected village of Coimbatore and Periyar districts. Chary (2000) attributed vitamin A deficiency among the sample children to the lower consumption of vitamin A rich foods.

Cheilosis, magenta tongue and stomatitis were the different forms of vitamin B complex deficiency signs reported among the sample children at about 23.3 per cent, 9.3 per cent and 8.3 per cent cases, respectively. However, there was no case of infantile beriberi reported among the sample children. Presence of similar vitamin B complex deficiency signs among the pre-school children was also reported by Chandrasekhar and George (1991) and Rao *et al*. (2005) in their respective studies.

Spongy and bleeding gum was the deficiency signs of vitamin C found to prevail among 27 per cent of the sample children. Prevalence of such deficiency signs could be either due to complete lack of or insufficient intake of fruits and vegetables by the sample children.

Bamji and Thimmayamma (2000) have studied the

Table 1 : Distribution of children according to vitamin and mineral deficiency signs

Sr. No.	Deficiency signs	Male No# (%)	Female No# (%)	χ^2	Total No# (%)
	Vitamin A deficiency disorder				
1.	Night blindness	45 (33.6)	56 (33.73	2.39	101 (33.7)
2.	Xerosisconjuctiva	37 (27.4)	49 (29.51)	3.35	86 (28.7)
	Vitamin B complex deficiency disorder				
1.	Cheilosis	30 (22.4)	40 (24.1)	2.85	70 (23.3)
2.	Stomatitis	10 (7.46)	15 (9.03)	2.00	25 (8.30)
3.	Magenta tongue	18 (13.4)	11 (6.62)	3.38	29 (9.66)
	Vitamin C deficiency disorder				
1.	Spongy and bleeding gum	42 (31.3)	39 (23.5)	1.10	81 (27.0)
	Vitamin D deficiency disorder				
	Ricket	0	0	--	0
	Iron deficiency disorder				
1.	Anaemia	93 (69.6)	109 (65.6)	2.34	202(67.3)
	Iodine deficiency disorder				
1.	Goiter	0	0	--	0

- Sample size : Male - 134, Female - 166 and Total – 300 χ^2 (0.05, 2-1) =3.841

seasonal effects on the prevalence of clinical signs of vitamin deficiencies. They reported that prevalence of ocular lesions suggestive of vitamin A deficiency was higher in winter and oral lesions suggestive of vitamin B complex deficiency were higher in summer. They however concluded that clinical lesions were not always specific to the nutrient deficiency only but may be caused or exacerbated by other environmental factors and infections also.

Anaemia was found to prevail at a high rate (*i.e.*, above 67%) among the sample children, which may be due to iron and/or folic acid deficiency, parasitic infestation and/or malaria infection. No case of rickets was observed among the sampled children. Prevalence of anaemia at a high rate among the sample children was also reported by Jain *et al*. (2000), Rao *et al.* (2005) and Joseph *et al.* (2010). Jain *et al*. (2000) attributed various factors like exclusive breast feeding, weaning at proper age, iron supplementation and nutritional status of children as significant in lowering the prevalence of anaemia in children.

With few exceptions like magenta tongue, spongy and bleeding gum and anaemia; almost all other vitamin and mineral deficiency symptoms were observed at a higher rate among female children in comparison to their male counterparts. Such differences were however statistically not significant.

Distribution of children according to the prevalence of clinical signs of PEM has been displayed in Table 2. The usual signs of PEM like lusterless hair, discoloured and dry hair; thin, sparse and brittle hair; lusterless skin; dermatitis of skin, muscle wasting etc. were observed at varying degrees from 15 per cent to as high as 77 per cent of the sample children. At the same time, other symptoms of PEM like edema and signs related to the face were observed at a meagre rate of below 10 per cent of the sample children. However, there was almost no difference in the rate of prevalence of clinical signs of PEM among the male and female children.

Distribution of children according to the prevalence of morbidity pattern has been depicted in Table 3. It can be seen from the table that more than sixty per cent of the children were suffering from dental caries and more than twenty per

Table 2 : Distribution of children according to prevalence of clinical signs of PEM

Sr. No.	Clinical signs of PEM		Male No# %	Female No# %	Total No# %
1.	Oedema		3 (2.20)	2 (1.20)	5 (1.30)
2.	Hair	Lustureless	87 (65.0)	93 (56.0)	180 (60.0)
		Discoloured and dry	109 (81.3)	123 (74.1)	232 (77.3)
		Thin, sparse and brittle	29 (21.6)	35 (21.0)	64 (21.3)
3.	Skin	Lustureless	32 (23.8)	43 (26.0)	75 (25.0)
		Dermatitis	21 (15.6)	25 (15.0)	46 (15.3)
		Nasolabial dysballea	02 (1.50)	06 (3.60)	08 (2.60)
4.	Face	Depigmentation	-	01 (0.60)	01 (0.60)
		Moon face	09 (6.70)	17 (10.2)	26 (8.60)
5.	Muscle wasting		41 (30.6)	51 (30.7)	92 (30.6)

- Sample size : Male - 134, Female - 166 and Total - 300

Table 3 : Distribution of children according to prevalence of morbidity pattern

Sr. No.	Morbidity pattern	Male No# (%)	Female No#	χ^2	Total No# (%)
1.	Whooping cough	-	01	0.5	01
2.	T.B.	-	01	0.5	01
3.	Measles	06 (4.4)	04 (2.4)	0.8	10 (3.30)
4.	Diarrhoea	09(6.7)	11 (6.6)	0.4	20 (6.60)
5.	Dysentery	13 (9.7)	18 (10.8)	1.66	31 (10.3)
6.	Helminthesis	33 (24.6)	47 (28.3)	4.9 *	80 (26.6)
7.	Amoebiasis	37 (27.4)	43 (25.9)	0.9	80 (26.6)
8.	Malaria	36 (26.8)	46 (27.7)	2.38	82 (27.3)
9.	Respiratory infection	29 (21.6)	39 (23.4)	2.94	68 (22.6)
10.	Acute gastroenteritis	25 (18.6)	35 (21.0)	3.33	60 (20.0)
11.	Dental caries	103 (76.8)	93 (56.0)	1.1	19 (65.3)
12.	Mottled enamel	15 (11.1)	17(10.2)		32 (10.6)

- Sample size : Male - 134, Female - 166 and Total – 300

* - Statistically significant [χ^2 (0.05, 2-1) = 3.841]

cent each were suffering from worm infestation, gastroenteritis, malaria and respiratory tract infection. At the same time, about ten per cent children were suffering from mottled enamel and dysentery and only six per cent diarrhoea and three per cent measles cases were observed. Whereas, prevalence of whooping cough and TB was very negligible. While nutrition may be playing a role in the prevalence of various forms of morbidity pattern, dental disorders like caries and mottled enamel may be due to personal unhygienic condition and environmental insanitation. In every category of illness more number of female children were observed to be affected in comparison to their male counterparts. But, with the only exception of helminthesis infestation, the difference was not statistically significant. Similar findings on morbidity pattern have been reported by many workers. Saraswathy (2001) has reported that 14.5 per cent pre school children were suffering from respiratory tract infection and 6.5 per cent were having history of diarrhoea. Rao *et al*. (2002) observed prevalence of intestinal parasitic infections at a high rate among tribal pre-school children of Madhya Pradesh. Rao *et al*. (2005) reported presence of respiratory tract infection among the sampled children. Joseph *et al*. (2010) observed respiratory tract infection, diarrhoea and skin diseases among the sampled children of South India in about 60 per cent, 40 per cent and 20 per cent of cases, respectively. Vaahtera *et al.* (2000) have reported diarrhoea among infants of rural Malawi. Uppal *et al*. (2006) observed signs of PEM, bitots spot, conjuctival xerosis, deficiency of all the vitamins, signs of dental caries and mottled enamel in their study area. Thakar and Jyostna (1990) observed the prevalence of respiratory tract infections and gastrointestinal disorders among the children that and attributed to the poor nutritional status, environmental sanitation and personal hygiene.

It can be summarised from the study that a number of nutritional as well as non-nutritional disorders prevailed among the sampled children. Vitamin deficiency disorders included deficiency due to vitamin A, B complex and C. Anaemia was reported in as high as 67 per cent cases. More than 60 per cent children were observed with nutritional deficiency signs of PEM. More than 60 per cent children were suffering from dental caries and more than 20 per cent each were suffering from worm infestation, gastroenteritis, malaria and respiratory tract infection. A close proximity was observed in the appearance of deficiency symptoms and under nutrition between boys and girls depicting poor state of health and nutrition. While, the prevalence of various nutritional deficiency disorders may be attributed to their poor nutritional status, the prevalence of various morbidity patterns may be attributed to their unhygienic condition of living.

Based on the findings it can be suggested that effective health and nutrition intervention programmes and efforts need to be channeled through the hospitals, voluntary agencies, non- government organizations and administration in order to promote and maintain positive health.

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