

Health and Nutritional Status of Ho Preschool Children of Orissa

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Health and nutritional status of an individual throughout childhood is defined mostly by growth assessment (WHO, 1986). This is due to the fact that disturbances in health and nutrition, regardless of their etiology invariably affect infant growth. Disturbances in health and nutritional conditions during childhood can be the result of a wide range of factors, most of them, particularly in the developing countries, related to poor food intake and severe repeated infections. The assessment of infant growth is, thus, a direct evaluation of the health and nutritional status of children, and also indirectly measures the quality of life to which not only children but also the entire society is subjected (U.N., 1985; WHO, 1992). Chronic protein energy malnutrition leads to stunted growth and increased morbidity and mortality among children in the developing world (Gwatkin, 1980; DaVanzo, 1983; Jelliffe and Jelliffe, 1989; Desai, 1993).

In developing countries like India, anthropometry, despite its inherent limitations, still remains the most practical tool for assessing the nutritional status of the children in the community (WHO, 1986). In India malnutrition and infection are the major cause of morbidity, which has an adverse effect on growth and development (Steinhoff et al., 1986; Dixit, 1992; Asthana, 1995). The only reliable source for the evaluation of nutritional status of under 5 children in India was the periodic survey based on the nutritional anthropometry conducted by the National Nutrition Monitoring Bureau (NNMB, 1984, 1991).

Brief review thus suggests that there is lot of variation in the determining factors of health and nutritional status in different regions and among different populations. There are several tribal population in India, who are fast changing due to the modern influences, but the consequences on their cultural, environmental, nutritional and biological makeup are not known except for a few studies. The Ho tribe in Orissa represents one such population and there are hardly any studies on this tribe, except Mitra (1942) who studied the relationship between the income and dietary pat-

tern. He found that diet among the Ho tribe is not always associated with qualitative improvement. This may be due to ignorance and regard for traditional dietary habits. This study attempts to investigate the nutrition and health status of preschool children in relation to changes in some of the demographic and socioeconomic variables due to mining occupation and other associated cultural changes to which they are exposed.

POPULATION

The Ho tribe is concentrated in the Kolhan area of the Singhbhum district of Bihar and are also distributed in the adjacent areas of Orissa, West Bengal and Madhyapradesh. The name Ho is a short form of the word "horo, or man" which is used by the cognate tribes of Munda and Santhal as their identity. The Ho, inhabiting the state of Orissa, migrated from the Kolhan region, which is now in the Singhbhum district of Bihar. In Orissa they are distributed in Cuttack, Kalahandi, Dhenkanal, Keonjhar, Mayurbhanj and other districts and number 44,496 (1981 Census). This tribe mostly lives in group and dwell in "kaccha" houses. The houses are in clusters and built on hills. All the members generally share single room. Often domestic animals also share the living space in the same room. As the area is surrounded by Iron and Manganese mines, constant mining activity has made the environment polluted. During rainy season water is available for agriculture and at other times people get water from stagnant ponds, springs and wells. The tribe mostly earn their living as labourers in mining, and spend most of their income in drinking "handia" or rice beer and country liquor. The people believe in their traditional medicine and childcare is almost lacking, except for the first few months, as the mother has to join the labour force for earning.

MATERIAL AND METHODS

The study was conducted in five villages, (*viz.*

Belkundi, Karakendra, Karakol, Santhbhal and Hairpur) where the concentration of the tribe was maximum. The data on socioeconomic and demographic characters of 110 households were collected. Anthropometric measurements of height, weight and mid arm circumference of 191 preschool children were measured followed by IBP recommendation (Weiner and Lourie, 1981). This study was done in 1992. The measurement of malnutrition has been assessed using the Gomez's and Indian Academy of Pediatrics (Gomez 1956; IAP, 1972, 1984) standard. Midarm circumference as an indicator of lean body mass has been used as one of the parameters for measuring nutritional status. The common practice to identify the malnourished children is to adopt the three fold classification that is: normal (Greater than 13.5cm), borderline (13.5cm-12.5cm) and malnourished (below 12.5cm). Rank correlation was used to assess the association between the grades of malnutrition with the socioeconomic and demographic factors.

RESULTS

The study was done on 110 families and 191 preschool (0-5 years) children were considered. The average family size is 6.10. Majority of the household earns their living by mining (93 households) and rest of the families are agriculturists. Out of 110 families, 66 per cent earn below Rs.1000 per month, of which 37% earn below Rs.800. There are 55.9 per cent literate males

and 44.1 per cent non-literate whereas in case of the females there are 31.2 per cent literate and 68.8 percent non-literate.

NUTRITIONAL ANTHROPOMETRY

The grades of malnutrition were classified by weight for height index on three specific variables viz., family size, income and birth order.

Table 1 and figure 1 shows that there is no relation between the family size and malnutrition, up to family sizes 6 but for 7 and above, the percentage of malnutrition increases. The sharp rise of malnutrition in case of family size above 7 shows association with increase of family size and malnutrition. The overall rank correlation is 0.67 and is not significant at 5% level ($p > 0.05$, d.f. 5).

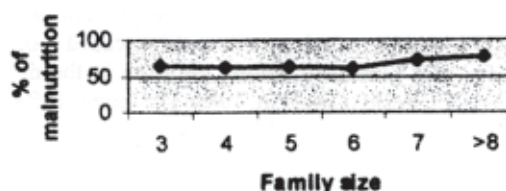


Fig. 1. Relation between family size and percentage of malnutrition

Table 1: Gradation of malnutrition by family size

Family size	No. of H.H.	Normal	Grade 1	Grade 2	Grade 3	Grade 4	Total % of malnutrition
3	11	35.00	35.00	5.00	10.00	15.00	65.00
4	9	36.67	26.67	23.33	6.68	6.67	63.30
5	16	36.36	32.73	20.00	5.45	5.45	63.60
6	22	40.00	34.29	14.29	8.57	2.86	60.00
7	32	28.00	24.00	24.00	4.00	20.00	72.00
>8	20	23.08	26.92	15.38	7.69	26.92	76.92
Total	110	34.03	30.37	17.80	6.81	10.99	65.97

Table 2: Gradation of malnutrition by income level

Income (Rs.)	Family	Total no. of children	Normal	Grade 1	Grade 2	Grade 3	Total % of malnutrition
<900	68	114	32.46	27.19	18.42	21.93	67.54
900-1300	25	49	32.65	36.73	18.37	12.24	67.35
1300-1600	14	24	41.67	29.17	16.67	12.50	58.33
1600-2000	3	4	50.00	50.00	-	-	50.00
Total	110	191	34.04	30.37	17.80	17.80	65.97

Table 2 and figure 2 indicates that malnutrition decreases with increase of income. The less than Rs. 900-1300 income group has maximum percentage of malnutrition, that is, 67 per cent. There is negative correlation ($r_s = -1$).

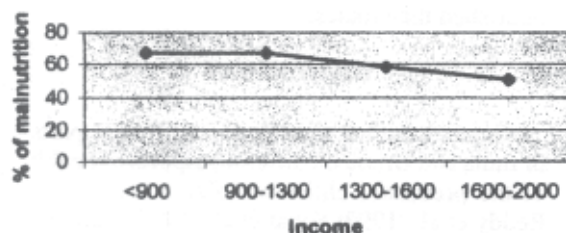


Fig. 2. Relation between income and percentage of malnutrition

Table 3 and figure 3 indicates that with increase in birth order malnutrition increases. Children of 5th and above birth order have the highest degree of malnutrition, that is, 79 per cent. The overall association is not significant ($r_s = 0.14$, $p > 0.05$, d.f. = 4). But if the 5th and above birth order is excluded, then the association is highly significant ($r_s = 1$, $p < 0.001$, d.f. = 3).

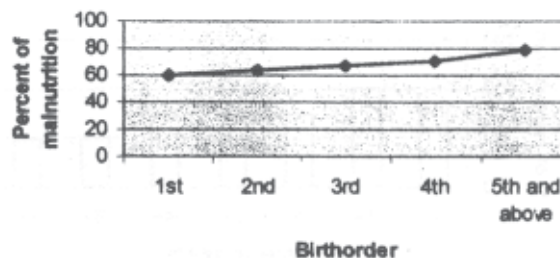


Fig. 3. Relation between birth order and percentage of malnutrition

The grades of malnutrition among the preschool children according to IAP Standards are shown in table 4.

Table 4 and figure 4 reveal that less than 1 year and 1 year children suffer from third degree of malnutrition in greater number than other age groups. The percentage of malnutrition decreases with increase of age. The rank correlation is highly negatively significant ($r_s = 0.9$, $p < 0.01$, d.f. = 5) which suggests that with increase of age malnutrition decreases.

Table 5 and figure 5 shows that children are more malnourished below 3 years of age. Children above 4 years are least affected (3.84%). There is

Table 3: Gradation of malnutrition by birth order

Birth order	No. of children	Normal	Grade 1	Grade 2	Grade 3	Total % of malnutrition
1st	51	39.22	27.45	17.65	15.69	60.00
2nd	52	36.54	38.46	15.39	9.62	63.00
3rd	53	32.08	35.85	13.21	18.87	67.00
4th	21	28.57	23.81	28.57	19.05	71.00
5th and above	14	21.43	0.00	28.57	50.00	78.57
Total	191	34.03	30.37	17.80	17.80	65.97

Table 4: Gradation of malnutrition as wt/age (IAP standard)

Age (yrs.)	Sample size	Normal	Gradation of malnutrition			Total % of malnutrition
			Grade 1	Grade 2	Grade 3	
<1	15	13.33	6.67	13.33	66.67	86.66
1+	16	-	18.75	12.50	68.75	100.00
2+	30	26.67	26.67	26.67	20.00	73.33
3+	19	31.58	10.53	10.53	21.05	68.42
4+	52	26.92	53.85	19.23	-	73.07
5+	18	50.00	27.78	22.22	-	50.00
6+	41	51.22	43.90	4.88	-	48.78
Total	191	31.41	34.02	18.30	16.20	68.52

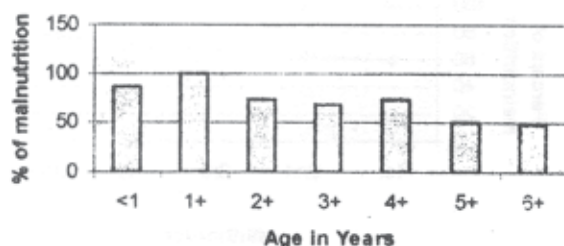


Fig. 4. Gradation of malnutrition as per the IAP standard

Table 6: Incidence of malnourished children according to midarm circumference

Gradation	Males	Females	Total
Normal	20(24.69)	20(18.18)	40(20.94)
Below normal	26(32.10)	25(22.73)	51(26.70)
Malnourished	35(43.21)	65(59.09)	100(52.36)

nourished than males.

DISCUSSION

Several studies were done in different parts of India and Orissa on different aspects of health of the preschool children (Rao et al., 1983; Reddy et al., 1992; Sabat et al., 1997; Rao and

Table 5: Gradation of malnutrition according to Wt/Ht (Gomez's classification)

Age (yrs.)	Sample size	Normal	Mild	Moderate	Severe	Total % of malnutrition
<1	15	46.67	13.33	20.00	20.00	53.33
1+	16	43.75	12.50	18.75	25.00	56.25
2+	30	46.67	3.33	-	50.00	53.33
3+	19	63.16	5.26	10.53	21.05	36.84
4+	52	96.15	-	-	3.85	3.85
5+	18	72.22	16.67	11.11	-	27.78
6+	41	70.73	29.27	-	-	29.27
Total	191	69.11	10.99	5.24	14.66	30.89

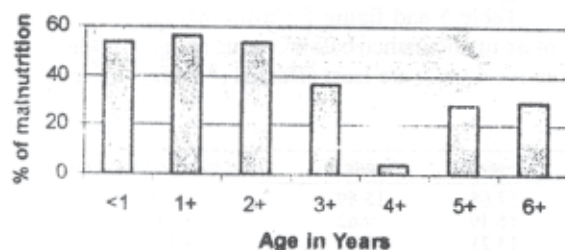


Fig. 5. Gradation of malnutrition according to Gomez's classification

negative association between age and malnutrition as per Gomez's classification but the relation is not significant ($r_s = -0.75$, $p > 0.05$, d.f. 5).

The percentage of normal differs in both the IAP and Gomez's classification of malnutrition. The severe grade of malnutrition is same in both the IAP and Gomez's classification.

Table 6 shows that 52 percent of the children are malnourished. Females are more mal-

Busi, 1995, 1997). Studies on the Ho tribe regarding the infant and maternal feeding practices of agricultural population are also done (Sinha and Pandey, 1998). Several studies have confirmed the association between the family size, birth order and income in different parts of India (Mudkhedar and Shah, 1975; Anthony et al., 1980; Krishna et al., 1991; Sharma and Vali, 1991).

The present study shows that while income and birth order has positive relation to the gradation of malnutrition, family size has no effect upto the six membered families. This indicates that low income and high birth order, which is a common problem in most of the developing countries also exists in this area, increasing the percentage of malnutrition.

Lack of childcare and income spent on excessive drinking of Handia and country liquor leads to low standard of living and less health care resulting in the severe form of malnutrition as shown in both IAP and Gomez's classification of nutrition status, especially in the less than one year children. Proper health care intervention and education may reduce the chances of

malnutrition of the preschool children. Also further analysis may help us to know the exact relation between family size and malnutrition.

KEY WORDS Ho tribe. Nutritional Status. Malnutrition. Growth.

ABSTRACT The present paper deals with the factors, which directly or indirectly affects the health and nutritional status of the Ho preschool children of Keonjhar district, Orissa. A sample of 191 children of 110 households were measured for height, weight and midarm circumference. The results show that malnutrition decreases with increase of age. The impact of family size, income and birth order shows that less than 7 family size has little effect whereas birth order and income has direct effect on nutritional status of the Ho preschool children.

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