

Assessment of Growth Faltering Among Pre-School Children

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INTRODUCTION

Growth and nutritional studies are valuable as they provide information on the health status of a community, and also be helpful for improving the health conditions (Dutta, 1977). The pattern of growth is influenced by environmental and socio-economic conditions including diet. Research results reveal that children belonging to different income levels have shown significant differences in their growth pattern. Children from economically advanced groups are taller and heavier than children from economically under privileged groups (Hanumantha Rao and Sathyanarayana, 1975; Vijayaraghavan 1971; Banik, 1982). Studies from the Western Countries also shown similar trend (Bindon, 1986). Country wide surveys of growth on low income group school children indicate that their heights and weights fall below the 5th percentile of well fed normal children (Swaminathan, 1971)

The environment seems to produce its effect on growth mostly by the presence or absence of infective, parasitic and psychological illness and above all by the plan of nutrition. Research works tend to suggest that environmental influences, especially diet are of greater importance than genetic background or other biological factors (Narasinga Rao et al., 1969, Gopalan et al., 1973; Hanumantha Rao et al., 1977). Numerous works related to growth studies are available from developed nations, however, studies from developing countries are meagre, particularly in India. The economic and social inequality in the context of infant health has been an important unsolved problem in India. It is thus important to reduce, or if possible to eliminate the differential in infant health with regard to different socio-economic groups. During the last several years extensive growth studies have been carried out under the auspices of Indian Council of Medical Research (ICMR), in different parts of the country by biological anthropologists (Sharma, 1986). However, there are limited studies on growth faltering with reference to season and socio-economic status. To fill this lacunae, an attempt has been made in the present

study to assess the growth faltering among pre-schoolers with reference to the seasons and income levels.

METHODOLOGY

The present study was carried out in the Integrated Child Development Service (ICDS) project rural area of Sri Kalahasti, Chittoor District, Andhra Pradesh. Four villages were randomly selected for the present study under the ICDS project area. A total of 200 pre-school children (1-5 Years) were chosen randomly from different communal groups like Scheduled Caste, Scheduled Tribe, Backward Class and Other Caste consisting 50 (25 boys + 25 Girls) children in each communal group. Information on age, income and dietary intake were collected. Body weight (kg) were recorded quarterly through the year by using salter spring balance. Nutritional Grades were classified based on ICDS charts as per the guidelines prescribed by the Indian Academy of Pediatrics (Chopdur and Samal, 1979).

The child's weight was plotted on the growth chart and joined their weight points with a line to form growth curve on the growth chart to represent children in different nutritional grades. If weight/growth curve is increasing in upward direction it is said to be "increase or improvement". When growth curve will slows or downward it is said to be "growth faltering". If the growth curve is not changed in any direction, then it is said to be "maintenance", as weight for age (Gomez et al., 1956; Waterlow, 1973).

Family income of child was assessed based on the type of house, family size, Occupation, land holding and card of public distribution system and classified into one of the three following economic levels. They are (i) Low income group (LIG): Income with Rs. <6000/- per annum (ii) Middle income group (MIG): Income ranging from Rs. 6000/- to <12000/- per annum and (iii) High income group (HIG): Income of Rs. >12000/-. The seasons broadly classified into four categories based on climatical and also ICDS quarterly survey, they are Winter (January to March), Summer (April to June)

Rainy (July to September) and Autumn (October to December). Suitable statistical tools were applied to draw inference.

RESULTS AND DISCUSSION

Nutritional grades i.e., normal, grade I and grade II were presented according to age in table 1. Both in 1-3 and 3-5 years of age groups, children with Grade I percentage was higher than Grade II as well as to normals. Growth monitoring is advocated and used as a pivotal achievity to maintain children on the path of normal growth and development and to recognize early growth faltering. Childhood malnutrition is caused primarily by poverty but is exacerbated by ignorance in the family and community to the basic dietary needs of the child. It is estimated that 77% of rural and 72% of tribal children are malnourished out of which 23 percent in rural and 27 percent in tribal areas suffer from acute (Grades III and IV) malnutrition, particularly in the weaning phase (Tandon, 1984). It has been suggested that classifying children according to weight for age would help in assessing the type of malnutrition/nutritional grades among pre-school children (Vijayaraghavan, 1971). However, severe malnutrition was not observed in the present study.

Percentage distribution of pre-school children classified by nutritional status in different communities were presented in table 2. In the SC community 54% of children were found to

be grade I malnutrition followed by normal (30%) and grade II (16%). Similar results were observed in case of BC community also. A high percentage of people fall under grade I (46%) malnutrition followed by grade II (28%) and normals (26%) in ST community. A quiet reverse picture was found in case of OC wherein a gradual decrease was observed from normals to grade II respectively. It is significant to mention that caste based growth studies inturn depends on economic status. This may be the probable reason that children belonging to scheduled caste and tribes who are basically poor in economic aspects, whose percentage of malnutrition was also higher than normals (Hanumantha Rao and Sathyanarayana, 1975).

Percentage distribution of pre-school children classified by nutritional grades in the three economic classes were presented in table 3. Normals were decreasing and grade I & II were increasing when income levels were decreasing. It is believed that varying levels in income, family size, parental education and home environment may have marked influence on the growth and development of pre-school children (Visweswara Rao, 1978). Vijayaraghavan (1971) observed better weight and height increments in children belonging to higher income groups than low income groups. The present findings were in good agreement with above findings, where high income group children show better nutritional status. On the other hand children belonging to low and middle income groups have shown higher percentage of grade I malnutrition followed by grade II.

Caste wise nutritional grades in various seasons with respect to age criteria among pre-school children were presented in table 4. The data shows that faltering was high in summer (41%) followed by autumn (29%), rainy (15%) and winter seasons (14%). Taking caste into the consideration, maximum faltering was observed

Table 1: Percentage distribution of pre-school children according to nutritional grades

Age Groups (Y)	Number of children	Nutritional Grades (%)		
		Normal	Grade I	Grade II
1-3	100	36	46	18
3-5	100	33	50	17
1-5	200	34.5	48	17.5

Table 2: Percentage distribution of nutritional grades of the pre-school children according to community

Community	Number of children	Nutritional Grades (%)		
		Normal	Grade I	Grade II
SC	50	30	54	16
ST	50	26	46	28
BC	50	22	60	18
OC	50	60	32	8
Total	200	34.5	48	17.5

Table 3: Percentage distribution of pre-school children classified by nutritional grades according to income groups

Income levels	Number of children	Nutritional Grades (%)		
		Normal	Grade I	Grade II
LIG	95	20	53.7	26.3
MIG	75	38.7	49.3	12
HIG	30	70	26.6	3.4
Total	200	34.5	48	17.5

in SC during summer and autumn seasons followed by ST, BC and OC in the age groups of 1-3 years. The caste wise faltering in 3-5 years age groups was different, where faltering in OC during summer was maximum followed by ST, SC and BC and in winter the order was again same as presented for 1-3 years age group. In both 1-3 and 3-5 years age group the observed faltering in various caste groups in winter and rainy seasons is minimal when compared to summer and autumn. Seasonal changes of nutritional grades in low, middle and high income groups for pre-school children were presented in table 5. In the three income groups i.e., low, middle and high; growth faltering in summer was more or less equal, whereas in autumn, low income group showed high percentage of faltering followed by middle and

high income groups. With regard to the winter and rainy seasons, the faltering was lower than summer and autumn seasons. When the data was visualised caste wise, again low income group was represented by high percentage of faltering in the order ST>SC>BC>OC. Faltering was not up to the appreciable extent in high income group of all caste groups.

High prevalence of faltering in SC children denotes the status of malnutrition which was observed to be high in Summer. Most of the SC and ST's depend on daily labour for their livelihood, and because of non-availability of work in summer, food intake may be low which reflects on the growth of children. The progressive growth increments of weight possess differences in terms of caste, income and seasons. The more or less equal faltering in various economic groups

Table 4: Percentage prevalence of growth faltering according to community and seasons

Age groups	Comm	No. of unity children	Seasons											
			Winter			Summer			Rainy			Autumn		
			I	F	M	I	F	M	I	F	M	I	F	M
1-3	SC	25	24	8	68	8	40	52	52	4	44	8	40	52
	ST	25	40	8	52	16	48	36	12	32	56	24	36	40
	BC	25	24	24	52	32	36	32	24	16	60	8	32	60
	OC	25	16	12	72	20	12	68	8	12	80	16	12	72
	Sub-total	100	26	13	61	19	34	47	24	16	60	14	30	56
3-5	SC	25	32	16	52	16	36	48	44	20	36	24	36	40
	ST	25	20	20	60	12	56	32	52	8	40	20	32	48
	BC	25	32	8	60	20	36	44	28	8	64	8	32	60
	OC	25	32	12	56	8	64	28	44	20	64	24	8	68
	Sub-total	100	29	14	57	14	48	38	35	14	51	19	27	54
1-5	SC	50	28	12	60	12	38	50	48	12	40	16	38	46
	ST	50	30	14	56	14	52	34	32	20	48	22	34	44
	BC	50	28	16	56	26	36	28	26	12	62	8	32	60
	OC	50	24	12	64	14	38	48	12	16	72	20	10	70
	Total	200	27.5	13.5	59	16.5	41	42.5	29.5	15	55.5	16.5	28.5	55

I= improvement F= faltering M= maintenance

Table 5: Percentage prevalence of growth faltering according to seasons and economic levels

Income Level	No. of children	Seasons											
		Winter			Summer			Rainy			Autumn		
		I	F	M	I	F	M	I	F	M	I	F	M
LIG	95	30.6	12.6	56.8	16.8	44.2	38.4	33.7	16.8	49.5	20.2	36.9	36.9
MIG	75	20.0	17.3	62.6	21.3	33.3	45.4	30.7	10.7	58.7	16.7	22.7	66.6
HIG	30	36.6	6.7	56.7	3.3	50.0	46.7	33.3	20.0	66.7	20.0	6.7	73.3
Total	200	27.5	13.5	59.0	16.3	41.0	42.5	29.5	15.0	55.5	16.5	28.5	55.0

I= improvement F= faltering M= maintenance

in summer clearly indicates the effect of environment leading to malnutrition, on the other hand low income irrespective of seasons also lead to malnutrition among pre-school children. By pooling the data it is inferred that faltering is maximum in low income group of SC and ST which indicates the status of scheduled communities who are developing malnutrition. Appropriate measures may be advocated to reduce/prevent malnutrition among the pre-schoolers.

KEYWORDS Growth. Pre-schoolers. Season. Economic Level. Community

ABSTRACT In order to elucidate the effect of income levels and seasonal variation on growth pattern of pre-school children, body-weight measurement was assessed in 200 pre-schoolers, in different communities like Scheduled Caste (SC), Scheduled Tribe (ST), Backward Class (BC) and Other Caste (OC) with a sample size of 50 (25 boys+25 girls) in each group in the rural areas of Srikalahasti, Chittoor District, Andhra Pradesh. Nutritional grades were classified based on ICDS charts and family income was assessed and classified as low income group(LIG), middle income group(MIG) and high income group(HIG). Scheduled caste, ST and BC communities were observed to have a high percentage of grade-I malnutrition, whereas in OC community normals were observed to be high. The data shows that growth faltering was high in summer (41%) followed by Autumn (29%), Rainy (15%) and winter seasons (14%). The percentage distribution of normals were decreasing and malnutrition grade I & II were increasing when income levels were decreasing. In all the income groups prevalence of growth faltering in summer was more or less equal, and in autumn season low income group shown high percentage of faltering followed by middle and high income groups. Taking caste into the consideration, low income group was represented by high percentage growth faltering in the decreasing order ST>SC>BC>OC. Most of the SC, ST depend on daily labour, and because of non-availability of work in summer, food intake may be low which reflects on growth of children.

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