

Growth Status of Male Children in Rural Haryana

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INTRODUCTION

Investments in child health and welfare are made for the future. Planning for child health is essentially long-term, prospective and future-oriented. Alva (1979) aptly describes "When infants die, although medical knowledge knows how to prevent it, the technical dimension of a civilization has most cruelly outdistanced its humanitarian development." There is a two-way interaction between health and other factors such as income, housing, water supply, sanitation, culture, education etc. For our country the issue is still more crucial with nearly 42 percent of a population being in the 0-14 age group. Such a large percentage of child population does not contribute to production and increases one dependency load of the country. A realistic picture of their health status become important because they constitute the labor force of the future what they are today will determine their tomorrow.

So it becomes inevitable to let such a large population to grow and develop at an optimum rate. Assessment of growth is most often done in terms of a child's height and weight, which is compared with a standard derived from measurements of a large number of children or the present status, may be evaluated according to a record of past growth. Use of simple indices for evaluation of nutritional status is very important for both research and practical reasons. This is especially true for making epidemiological evaluations of individuals in developing countries and in personal control of nutritional status (Jeliffe, 1966; Wolanski, 1974). So an attempt has been made in the present investigation to measure the growth of our tomorrow's citizen.

MATERIALS AND METHODS

A multi-stage sampling technique was adopted in order to have the desired sample. The Haryana State is divided into three agro-climatic zones namely hot and dry, hot and semi-dry and hot and humid. A list of the districts falling in each of these three zones was prepared. Two districts from each zone were randomly selected.

A list of all the villages falling in the respective district was prepared. From among the villages a cluster of villages in each district were further randomly selected as given in table 1.

A total of 1509 children formed the sample. The sample was distributed over the fifteen yearly age groups. More than hundred children were sampled at each level. The schools served as work place as the data were collected from among school going children.

To know the socio-economic and personal background of the respondents and their relation with the dependent variables different personal, familial and social variables were selected. These were age, ordinal position, father's education, occupation, mother's education, occupation, caste, family income, structure, size, farm and household assets, type of house, drinking water facility etc. Based on the scores of respondents on socio-economic and personal background information, they were distributed in three categories of socio-economic status. Respondents with scores upto 18 were from Low SES, whereas respondents with scores ranging between 19 to 28 and 29 to 38 were categorized as Middle and High SES group children respectively. Body size was measured by body weight increases during a period of growth. Weighing machine was used to take weight.

Simple frequency and percentages were calculated to assess the background profile of the respondents. Mean and S.D. of physical parameters was calculated and these measurements were compared with ICMR (1984) and NCHS (1988) standards. Using these parameters, respondents were assessed for their nutritional status with the help of Gomez classification.

Table 1: Zone and district-wise village distribution

	Zone	District	Villages
1.	Hot and dry	Hisar, Bhiwani	Siswala, Alakhpura cluster
2.	Hot and semi-dry	Rohtak, Jind	Bohar and Ramrai cluster
3.	Hot and humid	Panipat, Karnal	Matlodha and Unchasamana cluster

RESULTS AND DISCUSSION

The background characters play an important role in physical development of children. Efforts have been made to collect this information of the respondents on various aspects so as to determine the extent of their role and contribution in physical development of the child. The results indicated that the majority of respondents belonged to first three birth orders. The state of education of parents showed that the rural areas are still untouched by the benefit of education policies. The majority of respondents belonged to nuclear and medium size families. With respect to economic conditions of respondents' families, it was found that agriculture is still the predominant sector of livelihood. A very few farm and household assets were possessed by majority of families and as a result, the family members in farms as well as for household chores did manual labor.

Overall socio-economic status of the families was calculated based on their scores on SES items. The results revealed in Table 2 show that out of a total of 1509 respondents 291 belonged to low SES and 345 had high SES. So the majority of the respondents belonged to families with middle socio-economic status. The table further pinpoints that children with low socio-economic status had lower mean body weight when compared with those of middle and higher socio-economic group. Same trend was observed in children belonging to middle and high economic group at all the age levels. The evident reason might be availability of more opportunities

Table 3: Weight of 6-20 years old males

Age (yrs)	N	Mean	S.D.	C.V.	S.E.M.	Velocity of gain
6	110	16.15	2.42	15.02	0.23	
7	103	19.31	2.44	12.04	0.24	3.16
8	102	20.67	3.45	17.20	0.34	1.36
9	103	23.16	3.46	14.98	0.34	2.49
10	100	25.19	4.48	17.81	0.44	2.03
11	104	27.32	4.49	16.43	0.44	2.13
12	106	30.16	5.25	17.43	0.51	2.84
13	102	32.15	5.22	16.25	0.51	1.99
14	102	35.34	5.27	15.78	0.55	3.19
15	108	40.14	7.28	18.15	0.70	4.80
16	101	43.58	6.58	15.10	0.65	3.44
17	104	49.61	5.84	11.97	0.57	6.03
18	107	55.44	6.20	11.19	0.59	5.83
19	80	56.41	4.59	08.14	0.51	0.97
20	78	56.98	4.16	07.43	0.47	0.57

to children and awareness on the part of parents' etc. The results revealed that caste-wise hierarchy was even maintained in the weight of respondents, although the difference in weight was sometimes negligible. This shows that availability, knowledge and awareness on the part of parents has a pivotal role to play in the physical development of children.

The mean weight of the respondents at 6 years of age was 16.15 kg with Standard deviation of 2.42. The weight of respondents increased with the increase in chronological age (Table 3). A total of 40.83 kg of weight was gained from 6 to 20 years of age in case of males with maximum velocity of gain of 6.03 kg at 17 years of age whereas this gain was minimum with an increase of 0.57 kg at 20 years of age. This

Table 2: Weight of respondents according to socio-economic status

Age (yrs)	Low socio-economic status			Middle socio-economic status			High socio-economic status		
	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.
6	17	15.50	2.89	70	16.27	2.31	23	16.92	2.46
7	21	20.26	2.00	61	20.40	2.49	21	20.90	2.81
8	26	20.44	4.51	55	19.96	2.98	21	20.50	2.00
9	28	23.38	3.23	63	22.94	3.48	12	25.50	2.50
10	19	25.68	3.04	58	25.06	4.69	23	25.50	0.09
11	18	26.56	4.33	54	27.49	4.54	32	27.25	2.25
12	16	27.78	3.98	67	30.30	5.39	23	30.67	2.05
13	19	30.03	4.80	52	31.67	5.22	31	32.00	2.60
14	25	34.66	5.08	55	35.48	5.67	22	36.00	6.00
15	21	40.17	5.77	64	40.27	7.64	23	41.33	5.31
16	22	42.91	5.80	59	43.78	6.77	20	44.00	5.08
17	18	49.14	6.37	54	49.81	5.68	32	50.50	5.50
18	14	54.46	6.30	63	55.59	6.17	30	56.00	6.02
19	15	56.17	4.27	44	56.44	4.69	21	58.50	4.82
20	13	56.58	4.38	54	56.02	4.14	11	57.00	4.60

gain was almost stagnant at 19 and 20 years of age with annual increase of less than even 1 kg of weight. The weight of males at 6 years formed 40.37% of their weight at 20 years of age. When compared with NCHS norms, it was found that males lagged behind their counterparts at all the age levels from 6-18 years. The difference in mean weight increases with the increase in age. A minimum difference of 2.58 kg was found at 7 years of age as the mean weight of Haryana males formed 88.71% of weight of NCHS children. A maximum deviation of 14.41 kg in weight was found among respondents at 16 years of age. Their body weight formed 75.15% of the weight of NCHS standards (Table 4).

Weight of males indicates that the Haryana males differed from ICMR standards (Table 5). Devi and Bilquis (2000) also reported the same trend. Their weight differed from a minimum of

Table 4: Comparative mean weight of rural males and NCHS Standards

Age	Mean	NCHS	Difference	%age
6	16.15	20.7	4.54	78.04
7	19.31	22.9	2.58	88.71
8	20.67	25.3	5.22	79.36
9	23.16	28.1	4.93	82.43
10	25.19	31.4	6.21	80.22
11	27.32	32.2	4.87	84.85
12	30.16	37.0	6.83	81.54
13	32.15	39.9	8.74	78.61
14	35.34	47	11.65	75.20
15	40.14	52.6	12.45	76.31
16	43.58	58	14.41	75.15
17	49.61	62.7	13.08	79.12
18	55.44	65	9.55	85.29
19	56.41			
20	56.98			

Table 5: Comparative mean weight of rural males and ICMR standards

Age	Mean	ICMR	Difference	%age
6	16.15	22.14	5.99	72.9
7	19.31	24.46	3.15	78.9
8	20.67	26.42	5.75	82
9	23.16	30	6.84	77.5
10	25.19	32.29	7.10	77.8
11	27.32	35.26	7.94	77.7
12	30.16	38.78	8.62	77.7
13	32.15	42.88	10.73	74.9
14	35.34	48.26	12.92	73.5
15	40.14	52.15	12	76.9
16	43.58	55.54	11.96	78.6
17	49.61	57.91	8.30	85.7
18	55.44	58.38	2.94	90.4
19	56.41	59.90	2.49	90.4
20	56.98	59.64	2.66	90.5

2.49 Kg. At 19 yrs. to a maximum of 12.92 Kg. At 14 yrs. of age. The difference From ICMR standards ranged from 73 to 90 percent. Dharma Rao and Busi (1993) also confirmed the same by reporting the distinctly less mean values than National standards of weight for their sample.

Gomez classification was also used to categorize the respondents according to various categories of nutritional status as depicted in (Table 6). The results revealed that majority of the males at 7 and 18 years only were found to be normal weight-wise whereas majority of the respondents at rest of the age groups was mildly malnourished.

Table 6: Growth profile of males (Gomez classification)

Age (yrs)	Normal 90% and above	Mild 75-90%	Moderate 60-75%	Severely malnourished <60%	Total N
6	14	54	39	3	110
7	47	44	12	0	103
8	16	48	34	4	102
9	21	46	35	1	103
10	24	40	31	5	100
11	34	41	27	2	104
12	24	48	31	3	106
13	16	37	43	6	102
14	15	29	53	5	102
15	19	36	41	12	108
16	11	41	38	11	101
17	11	60	31	2	104
18	14	31	32	0	107

Severe mal-nourishment was prevalent among children of 15 to 16 years of age. Fourteen percent of children of this age group had the problem of severe mal-nourishment, which was highest in the sample. This shows that the period during childhood years needs more care. The onset of pubertal changes had bearing on their physical development also. As majority of males at 14, 15 and 16 years of age were moderately malnourished. It can further be revealed from that the coefficient of variation in weight (18.15) was found to be maximum at 15 years of age with a SEM of 0.70.

Thus it can be suggested that through proper education, mothers must be helped to understand the nutritional requirements of their children, the sources of these nutrients, their availability in the vicinity and the easily available substitutes. Question-answer session and group discussions would go a long way in reducing the beliefs, habits and prejudices on food.

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KEYWORDS Growth Status. Weight. Nutritional Status. Gomez Classification

ABSTRACT The present cross-sectional study was conducted in different agro-climatic zones of Haryana. A total of 1509 male children distributed over the fifteen yearly age groups served as sample. More than hundred children at each age level were selected randomly from schools in the rural area. Socio-economic and personal background of the respondents was collected through an interview schedule. Growth status was measured through body weight, which were further compared with NCHS and ICMR norms. Nutritional status of respondents was assessed through Gomez classification. The results revealed that rural areas are even now untouched by the benefits of educational policies. A shift was observed to nuclear and medium size families from joint and large families. Agriculture is still the predominant sector of livelihood. Further it was found that a total of 40.83 kg of weight was gained from 6-20 years of age with maximum velocity of gain of 6.03 kg at 17 years of age. When compared with NCHS norms, it was found that males lagged behind their counterparts at all the age levels from 6-18 years of age. Similarly Haryana males were found to be lagging behind their counterparts when compared with

the ones at ICMR at all the age cohorts from 6-20 yrs. Maximum deviation in weight was found at 14 yrs. with minimum at 19 yrs. of age. The results of nutritional status pinpointed that the period of childhood years need more care and attention.

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