

Dynamics of Physical Growth of Infants

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The present longitudinal study was undertaken on 140 infants from Hisar and Jind districts of Haryana. Their anthropometric measurements recorded served as indicator of their physical health status. These measurements were recorded at different age levels i.e. at birth, one month, three months and six months of age. The frequency of visits decreased with the increase in age. The results revealed that with the increase in chronological age, increase in various body measurements was recorded which spoke of their continuous physical growth during this period. The analysis of sex-wise differences proved the superiority of males over their counterparts in physical development. The overall picture of physical status of rural infants depicts the grim situation of female child, making them the neglected population in our state.

Children are most precious resource of the country but unfortunately they don't get proper care and attention in certain areas due to several reasons. If we look at the child as an individual, he is delightful in his spontaneity, his truthfulness, his sense of wonder and fun. If we regard him as an economic entity, he is vital to the development of human resources and safeguards the country's future. Even marginal investment in child welfare brings manifold returns. Hence, the child care must be the corner stone of all our constructive activities. It may be stated that all ages mean anthropometric measurements of male children were found to be better than females. Ghai and Sindhu (1968) also recorded the physical development of infants and observed that the measurements of female children at specific age levels were lower than that of their male counterparts. Similar results were reported by Datta Banik (1970). Thus overall picture of physical status of rural infants depict the grim situation of female child. Even mother

of the girl child discriminates between her own son and daughters what to say about society. Variation in size not only depends upon sex only but also on factors in prenatal environment. Of these, maternal diet is one of the most important factors. Infants whose mothers had good prenatal diets were rated superior. They were found to weigh more at Birth than those whose mothers had poor diets. The former were likewise longer at birth than those whose parental environment was not so favorable. (Montagu, 1962).

One of the important methods of determining the status of a community/society/country is by determining the growth and condition of the child population. Growth is far from being a simple and uniform process of becoming taller or longer. As the child gets older there are changes in shape and in body composition and in distribution of various tissues. In a new born, the head represents about a quarter of the total length, in adult about one-seventh and so on. Different tissues

mature at different rates and the growth of a child consists of a highly complex series of changes. These changes lead to physical growth of the individual. Developmental assessment of children requires training, time, patience and cooperation of children as well as their parents. Especially in rural areas such studies in this field are scarce. To know the physical status of rural children of Haryana, present study was undertaken through taking their anthropometric measurements.

Method

Sample

The longitudinal study was carried out in Hisar and Jind districts of Haryana state. Further, four villages namely Balsamand, Ladwa, Khunga Kothi, Kharak Ramji from these two districts were selected for the study. One

hundred and fifty pregnant women in their third trimester were identified from both the districts for the sample of infants in first week of their life. The infants born to these pregnant women were followed up to six months of age.

Measures

Anthropometric measurements of infants were taken to assess their physical development. For the recording of these measurements, baby weighing scale and infantometer were used for weight and height, respectively. Fiber glass tape was used to measure head, chest and arm circumference. Measurements were recorded weekly in the first month of birth in next three months and monthly till 6 months of age. Sex-wise mean of different measurements at different age levels was calculated for the analysis of data.

Table 1: Mean anthropometric measurements of Birth – Six month old rural infants.

S.No.	Anthropometric measurements/Sex	Age			
		Birth	1 month	3 month	6 month
1.	Weight (kg.) M	2.0	4.2	5.9	7.6
	F	1.8	3.9	5.2	7.3
2.	Height (cm.) M	43.0	53.4	60.5	66.2
	F	42.5	54.0	58.5	64.2
3.	Head Circumference (cm.) M	30.9	37.6	40.3	43.6
	F	29.1	36.9	39.2	42.2
4.	Chest Circumference (cm) M	29.0	35.3	39.3	43.4
	F	28.2	34.7	38.6	42.5
5.	Arm Circumference (cm.) M	8.5	11.5	13.0	14.0
	F	7.5	11.3	12.2	12.8

Table 2: Mean gain in anthropometric measurements of Birth to Six month old infants.

S. No.	Anthropometric measurements	Males	Females
1.	Weight (kg.)	5.6	5.5
2.	Height (cm.)	23.2	21.7
3.	Head Circumference (cm.)	12.7	13.1
4.	Chest Circumference (cm.)	14.4	14.3
5.	Arm Circumference (cm.)	5.5	5.3

Results and Discussion

Means of anthropometric measurements of infants taken from Birth – 6 months were calculated and are presented in Table 1 as follows.

Weight: The mean weight of children from Birth – 1 month ranged from 2.0 kg. to 4.2 kg. for males and 1.8 kg. to 3.9 kg. for females. For children of three months, it was 5.9 kg. for males and 5.2 kg. for females. The mean weight of 6 months old males was 7.6 kg. and 7.3 kg. for females. Close scrutiny of the data revealed that from birth to 6 months males weighed better than females. Supporting the present findings, Yusuf, 2000 also reported males to be heavier than females at all ages.

Height: Regarding the length of infants, results further revealed that the mean length for males and females ranged from 43.0 cm. to 53.4 cm. and 42.5 cm. respectively from birth to one month. The mean length of males and females of three month olds was found to be 60.5 cm. and 58.5 cm. respectively. Six months old males had 66.2 cm. mean height whereas females had 64.2 cm. of mean height. At all ages, males were found to be lengthier than females. The differences in the mean measurements at birth not being spectacular increased with the increase in age. The results of present study corroborate with earlier workers (Kiran and Mann, 1992; Dixon, 1995). Chhabra et.al. (2003) too while reporting the superior physical developmental status of boys' reported that according to Gomez classification, 17 percent of boys and 34 percent of girls were moderately malnourished.

Head Circumference: The head circumference also followed a pattern similar to weight and height. The measurements of mean head circumference of males from birth to one month ranged from 30.9 cm. to 37.6 cm. and for females the range was from 29.1 cm. to 36.9 cm. the mean head circumference of males of three month age was 40.3 cm. and that of females was 39.2 cm. At 6 months of

age, males and females had 43.6 cm. and 42.2 cm. of mean head circumference respectively. Males were again found better in head circumference as compared to females. Spectacular differences in head circumference of males and females were observed in the three to six month old children. Mishra and Gupta (1978) further found that not only in weight and height, males' also surpassed female infants in head and chest circumference.

Chest Circumference: The mean chest circumference of birth to one month old males ranged from 29.0 cm. to 35.3 cm. and that of females ranged from 28.2 cm. to 34.7 cm. the measurement of three months old males were 39.3 cm. and of females were 38.6 cm. at six months, males head mean chest circumference of 43.4 cm. and the females had 42.5 cm. following the trend, males were again found to be better than females, though the differences were negligible. The study also indicated that from Birth to one month the head circumference is more than the chest circumference in both the males and females. But in 3-6 month old children the head and chest circumference were more or less the same. Theoretically also the chest circumference should outgrow the head circumference by about 6-9 months of age.

Arm Circumference: Mean arm circumference of Birth to one month old males ranged from 8.5 cm. to 11.5 cm. and that of females ranged from 7.5 cm. to 11.3 cm. males of 3 months age had 13.0 cm. of mean arm circumference and females had 12.2 cm. of mean arm circumference. Six months old males and females had 14.0 cm. and 12.8 cm. of mean arm circumference, respectively. The periodic recordings over 6 months revealed that males acquired higher positions than females at all ages. Six months old males and females had 14.0 cm. and 12.8 cm. of arm circumference as well the periodic recordings over six months revealed that males acquired higher positions than females at all ages.

As the results depict males' superiority over females was proved in physical development. Though with the increasing age both the sexes experienced increase in their body measurements indicating their physical development over different ages. The mean gain experienced by both the sexes during first six months of their life was almost similar. (Table 2). Though females had gained more in weight, head and chest circumference, but their body measurements at 6 months of age were still lower than males. Nagamani, T and Radhakrishna, O.R. in their study on developmental norms concluded that boys surpassed girls by exhibiting their superiority in tasks related to gross motor development and muscle coordination.

Thus, it can be suggested that factors influencing the growth and development and childcare should also be stressed upon through parent and community education. A child grows and develops not in vacuum but in community, a culture and a nation. Early care and nurturing have a decisive and lasting impact on how children grow to adulthood. This section of the society needs special attention of society including family and all government and non governmental agencies to improve its status as this is the most important part of human resources.

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