PHYSICAL AND SEXUAL GROWTH PATTERN OF AFFLUENT INDIAN CHILDREN FROM 5 TO 18 YEARS OF AGE

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ABSTRACT

The present study was conducted to study growth parameters on 12899 boys and 9951 girls of affluent class from 8 States of the country. In pooled data, the 50th centile height approached 30-40th centile till 6½ years in boys and up to 10 years in girls, and ultimately the height growth curves for both fell between the 10-20th centile of NCHS standards. Similarly, for weight, they approached 10-20th centile of NCHS at the age of 17 yr. Comparison with other European countries showed that Indian affluents are shorter and lighter; however, they are similar to their counterparts of Asian origin.

The secular trend for height in Delhi showed increase of 2.1 cm for boys, and 2.7 cm for girls per decade at 17 yr and 14 yr, respectively. In Varanasi, the corresponding trend was 1.5 and 2.1 cm at 16 yr for boys and girls, respectively. The mean ages for genital development stages G 2-5 were 11.9, 13.3, 14.6 and 15.9 yr, respectively. In girls, the breast development Stages B 2-5 had mean ages of 10.9, 12.8, 13.9 and 14.8 yr, respectively. The mean age for menarche was 12.6 yr. In 14 yr old boys, the mean height may vary between 150.3, 155.8, 161.2 and 165.2 cm and mean weight between 38.0, 42.5, 46.8 and 52.9 kg for genital stages G 2-5, respectively. Similarly, girls of 12.5 yr (close to menarcheal age of 12.6 yr) had mean height 145.3, 150.3, 152.1 and 153.8 cm and mean weight 34.7, 41.2, 45.4 and 54.4 kg for breast stages B 2-5, respectively. It is recommended that for growth assessment during adolescence these charts in relation to sexual development and age be used for comparison.

Key words: *Growth, Adolescence, Affluent Children, Percentiles, Sexual Development, Secular trend.*

As early as in 1971 a Committee of International Union of Nutrition Sciences(1) made recommendations for establishment of growth standards. They said "The commission strongly recommends that studies be carried out in as large a variety of countries as possible. Each country's own standards must be derived from carefully selected samples representing children growing in an optimal environment for that country".

"In selecting the specific population the first group should be from the 'Modern Elite' group in each study area". It is felt that justification for the creation of growth

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standards is as follows. Anthropometric measures are the most important means of assessing nutrition and health in communities, especially in children. Furthermore, appropriately developed standards can serve as a reference against which to measure changes in health and nutrition of a given country and also as standards for evaluating the results of intervention programmes".

The argument for use of 'Growth Standards' based on elite population is due to the fact that this group has no nutritional constraints and also have all possible access to the best possible health care. Secondly, it is also justified as all individuals in the community have a right to attain status of growth and health enjoyed by the privileged sections of society.

The 'Growth Standards' of developed countries (Western) are almost similar but the children of developing countries may not attain that level of growth. In case that is true and if same standards are used in developing countries to identify children 'at risk' of needing intervention, it may overtake the limited resources available. Rationally such argument is especially applicable for our country where undernutrition in child population is still of very high magnitude. In a recent publication of the Nutrition Foundation of India(2), and also the Central Technical Committee of Integrated Child Development Scheme(3) of the country, it has been reported that 45-90% of children in different states of the country are undernourished both by Gomez's and Indian Academy of Pediatrics Classification. Thus the only valid criterion that should govern the choice of growth standard must be that it should represent the level of growth performance which can be attained by the population. Thus the growth standard based on population without any nutritional constraints are more valid for our country.

There have been limited studies mostly more than a decade back, showing that the affluent children of our country possibly approach the western children. However, the sample size in the latter part of adolescence was very small and therefore they only observed the peak period of adolescence spurt as compared to American children who were still continuing in the adolescent growth spurt. The present study has been planned to see that children under optimal condition are studied for full range of adolescent growth period. As the study is cross-sectional in design, to express the relationship with sexual development, the growth parameters are presented in different breast stages in girls and genital development in boys.

Keeping in view the above points, it was planned to collect the cross-selectional data of affluent class children from various parts of the country. The objectives of the study are defined below:

(*i*) to derive growth curves for various physical anthropometric characteristics of children aged 5-18 yr.

(*ii*) To assess if the growth potential of Indian affluent class children in different parts of the country is similar.

(*iii*) What are the differences for various parameters studied as compared to the recent Asian, European and earlier NCHS growth standards?

(*iv*) To prepare growth data tables in relation to sexual development for the age.

(*v*) To compare the data for secular trend of growth parameters.

Material and Methods

Area of study and sample design

The present study was carried out on affluent class children from various Public/ English medium schools spread out in 8 States of the country. These schools admit children of well-to-do families who do not have any financial constraints and the parents are educated.

The data were collected from 23 schools of different cities of India, *i.e.,* Delhi, Shimla, Dehradun and Nainital (North Zone); Bombay, Madras and Udaipur (West-South Zone); Lucknow, Allahabad and Varanasi (Central Zone), and Dhanbad and Calcutta (East Zone). In all 12899 boys and 9951 girls studying in Classes 1-12th were registered for the study.

Children suffering from any systemic diseases or with major surgical operation likely to affect their growth were excluded.

The study was completed under the thrust area of research in the field of 'Growth and Development' conducted by Nutrition Research and Training Centre, an Advanced Centre for Nutrition Research in the Banaras Hindu University, Varanasi sponsored and funded by the Indian Council of Medical Research, New Delhi. The study was started in August 1988 and continued till July 1991.

Analysis Sample

The six monthly age distribution of the total sample collected and analysed is presented in *Table I.*

Regional Analysis of Data

An attempt was also made to study the growth pattern of children in different zones of the country. For this purpose the data were analysed separately for North, West-South and Central and East zones, respectively.

Anthropometric Measurements

Weight, height, sitting height, head circumference, chest circumference, biacromial and bicristal diameters and skinfold thickness (triceps, biceps, subscapular and suprailiac) were recorded by using the methods described by Tanner(4) and Weiner and Lourie(5).

Weight (kg): Each subject standing straight on Chattilon weighing machine (John Chattilon and Sons Inc, Kew Gardens, New York) with a standard minimum clothing and without shoes was weighed.

Height (cm): The height was obtained with an 'anthropometric rod'. The individual was asked to stand on the horizontal platform with heels together, stretching upward to the fullest extent with arms hanging on the sides and heel and buttocks touching against the rod. The head was aligned so that the lower rim of the orbit and the auditory canal were in a horizontal plane (Frankfurt plane). Mild upward pressure was exerted on the mastoid regions bilaterally. The right angle device of the anthropometer rod was brought down and was held against the top of the head and the readings were taken to the nearest mm.

Midarm Circumference (cm): The left midarm circumference was measured by a fibre glass tape with the subject standing or sitting comfortably and the arm hanging relaxed at the side with a fibre glass tape passed over the arm at a point midway between the tip of the olecrenon of the ulna and the acromion process of the scapula with an accuracy of up to 1 mm(6).

Sitting Height (cm): This was taken by the anthropometric rod, subjects were

asked to sit on the table and their back was kept as straight as possible. The horizontal arm of the anthropometer was brought down on the subject's head and readings were recorded nearest to the one decimal place in cm.

Head Circumference (cm): The maximum circumference of the head was taken with the standard measuring tape passing over the supraorbital ridges infront and occipital protuberance at the back.

Chest Circumference (cm): This was measured with the standard tape at the level of xiphoid process at the end of normal expiration.

Skinfold Thicknesses (mm): The skinfold thickness (tricep, bicep, subscapular and suprailliac) of each subject (boys and girls) were recorded with the help of caliper with least count of 1.0 mm. The specific sites were as follows: (*i*) *Triceps (mm):* Vertical fold was raised mid way between the left olecranon and acromion processes on the posterior of the brachium; (*ii*) *Biceps (mm):* Vertical fold was raised 1 cm above the line marked for the triceps skinfold on the front of the left arm, directly above the centre of the cubital fossa; (*iii*) *Subscapular (mm):* Skinfold was picked up 1.0 cm. below the inferior angle of the left scapula inclined downwards and laterally in the natural cleavage of the skin; and (*iv*) *Suprailliac (Waist); (mm):* Vertical fold was taken on the mid axillary line above the illiac crest on the left side.

Biacromial Diameter (cm): This measurement was taken on subjects standing with shoulder relaxed to the point of slumping forward, standing behind, the outside edge of acromion process of scapula was felt and one arm of anthropometer was placed on the external border of acromion process and other arm was brought inward till it rested on the opposite external border of the acromion process of scapula.

Bicristal Diameter (cm): This was taken with subjects standing with heels together and anthropometric arms were brought into contact with the illiac crest at the place which gave the maximum diameter. Strong pressure was applied on blades to push aside any fat covering the bone.

Secondary Sexual Characteristics

The sexual growth was assessed for each individual in terms of development of genitalia, breast, presence of axillary and pubic hair. These were graded according to Tanner(4).

Onset of Menarche

Each girl of adolescent age was questioned whether she had menarche or not and the age of menarche was calculated by probity analysis(7).

Statistical Technique

The means, standard deviation, standard error and percentiles for each anthropometric characteristics were calculated using the SYSTAT package(8). The percentile curves were smoothened using the cubic spline method(9). The basic method of systematic curve smoothing is spline polynominal smoothing of the observed percentile value. It was considered that without the constraints of time and resource, a better alternative would probably be to raise a degree of the existing spline polynominal system from cubic to quadratic and thus allow a better inter-relationship between the percentile lines. It was seen that existing cubic spline technique had strength of placing (fixed or variable) knots. Using the fixed knot alternatively

gives some degree of parallelism and inter-relationship between the percentile.

Probit analysis was done to calculate the mean ages for various breast-development and genitalia stages and age of menarche.

Results and Discussion

1. Height (mean and percentiles)

The anthropometric observations on affluent children were first analyzed for North, West-South, Central and Eastern zones both for boys and girls separately. The per cent variation in the mean height for various zones with the pooled data are 1.92% for boys and 2.31% for the girls. Thus apparently it appears that the affluent children from all parts of the country are following the same growth pattern. Therefore, the pooled observations for all the anthropometric parameters are presented for Indian affluent children and they are compared with the NCHS, recent European, Asian and Indian growth data.

The mean and percentile values from 5.0 to 18.0 yr in boys and 5.0 to 17.0 yr in girls are presented in *Table II & III.* The means and 50th centile values for age are close to each other in both boys as well as girls. There is a progressive increase in mean height with age, 5-6 cm per yr up to 10th yr in both boys as well as girls. In subsequent age, yr increment in height for boys are 8.0, 6.0, 3.0 and 1.5 cm in 13-14, 14-15, 15-16 and 16-17 yr, respectively (*Table II*). In girls, the trend for progressive increase in mean height lasts up to 13 yr, the gain is limited to around 54.0-6.0 cm per yr, the maximum being 7.0 cm in 10-11 yr of age which is reduced to <2.0 cm in 13-14 yr of age and beyond. The peak height velocity (PHV) in boys seems to be around 13-14 yr as compared to 10-11 yr in girls and it decreased to 1.5 cm in boys at the age of 16-17 yr and 2.0 cm in girls at 13-14 yr. Thus in girls, the velocity of height reduces 3 yr earlier as compared to boys in adolescence (*Table III*). The study design being cross-sectional, the age related gains in height may not be the real pattern, as peak height velocity is different in each child.

Up to 10.5 yr of age, boys have only marginally higher or similar mean height as compared to girls. During 11-12.5 yr of age, girls have higher mean height by 2.0 cm as compared to boys of that age. This is because the adolescent growth spurt occurs earlier in girls with peak height velocity (PHV) at the age of 10-12 yr and acquiring mean height of 153.2 cm at 13.5 yr and 157.1 cm at 17 yr of age.

At 14 yr of age, the boys are taller by 5.0 cm and in 15 and 16 yr of age by 9.5 and 12.0 cm than the counterpart girls, respectively. This is because in boys, adolescent growth continues for a longer period. The final height difference at 17th yr of age in 3rd, 50th and 97th centiles between boys and girls remaining similar was 11.3, 11.7 and 13.2 cm, respectively (*Table II & III*).

(a) *Comparison with NCHS and European Data*

The currently used NCHS standards for 2-18 yr of age are based on data of American children collected between 1963-1974(10). More recently, many other growth studies on European children have also been published(11). The mean/median value of these studies from Belgium, Czechoslovakia, Denmark, Hungary, the Netherlands, Norway, Sweden, Poland and Spain for boys and girls are summarized in *Table IV.* These recent data on height of European children published between

1982-88 are similar to those of NCHS data published in 1977 except that Netherland boys and girls are taller by 4.0 and 6.0 cm at the age of 16 yr, respectively. The present data of Indian boys (mean) from 5-18 yr of age are lower at all age points as compared to the NCHS and European; the mean difference being 1.8 cm at the age of 5 yr and 5.0-6.0 cm between 12-16 yr and at 18 yr. The present study shows Indian boys are shorter by 8.0 cm and 12.0 cm as compared to the NCHS and Netherlands, respectively. The mean difference of height for girls (in the present study as compared to NCHS) is 1.9. 4.6 and 2.7 cm at 4, 9 and 11 yr, respectively. This increases to 8.7 and 12.6 cm as compared to the NCHS and Netherland girls at the age of 16 yr (*Table IV*). Thus Indian children even during peak height velocity period fail to overtake the European counterparts.

The NCHS data are being used as growth reference in most of the countries and the WHO(21) has also recommended their use for International comparison till the countries have constructed their own standards. The 3rd, 5th, 10th, 50th and 97th percentile values for height of boy and girls in comparison with NCHS data are presented in *Table V & VI*. The percentile values of the present study for boys at all age points from 5-18 yr are lower as compared to the NCHS data; the difference being 3.0 to 5.0 cm for 3rd percentile which increases to 7.0-8.0 cm for values of 50th and 97th centile. The differences in height are increasing with age specially between 13 and 14 yr. The differences in girls are increasing with age for all centile values, being more at the age of 11-12 yr. Ultimately, the Indian boys and girls remain short by about 7.0 cm, for 50th and 97th centile values of the NCHS at 16 and 17 yr of age, respectively.

(*b*) *Comparison with Asian Children*

Recent data, from Asiatic children(11, 22-30) are compared with the present study in *Table VII*. The height mean/median values for Thai and Taiwanese children during adolescence are similar to the present study in case of boys. Chinese boys in China are having lower height by 2.0 cm as compared to those in Hongkong at 17 yr of age. The Japanese boys seem to be taller than Indians, the differences are 2.4, 3.7, 3.0, 1.7, 1.9 and 1.4 cm from 12-17 yr of age. Similarly the Korean Japanese are also taller in adolescence, the difference is varying from 2.4 to 4.7 cm from 12-14 yr of age, but at 17 yr of age the difference is only 0.4 cm and thus the height attained is similar in both. The data on girls height show that the Indians are having similar height to girls in China and Hongkong-Chinese between 5-17 yr age. Japanese girls maintained marginally higher height up to 16 yr age. However, the mean height at 17 yr is similar to the present study while Taiwanese girls are shorter by 1.0 cm.

(*c*) *Comparison with Indian Upper Socio-Economic Children*

The data on Indian upper socio-economic group having sample representative from all over country were published by the Indian Council of Medical Research(31). In addition data on children from 14 public schools are also available(32).

The data of ICMR study(31) are lower by 1.0-3.0 cm both for boys as well as girls till 15 yr of age and ultimately girls are shorter by 3.1 cm at 17 yr of age as compared to the present study. Similarly for boys the difference at 18 yr of age is 3.3 cm. (*Table VIII & IX*). The data reported by Raghvan *et al.*(32) are similar to the pres-

ent data both for boys as well as girls. There are many other local studies on affluent children from different parts of the country reported from time to time (31-48). As compared to the present study data, Ludhiana children are taller by 5.0-6.0 cm(45). A similar pattern was observed for pre-school children of that area reported in a study conducted by the Nutrition Foundation of India(34). In a recent study by the Nutrition Foundation of India(33) on 1967 affluent class girls from Delhi, Bombay, Calcutta, Coimbatore it has been shown that their mean height is similar to the present study except for Delhi girls who were taller by 4.0 cm at 9 yr and 0.8 cm at 17 yr.

2. Weight

The mean, standard error and percentiles for weight for boys and girls are given in *Table X & XI.* The girls are heavier in the age period 9.5-14.0 yr than the corresponding boys. The 50th centile and mean values are similar for the age in boys as well as girls. The gain in weight for girls between 9.5 and 17.0 yr is 22.1 kg and for boys between the same age is 29.8 kg and ultimately boys are heavier than girls by 7.6 kg.

(*a*) *Comparison with NCHS and European Data*

The data of boys and girls in the present study as compared to the European and NCHS children for weight are presented in *Table XII.* The weight of Indian boys is lower as compared to the data from Belgium, Czechoslovakia, Denmark, Hungary, the Netherlands, Norway, Sweden, Poland and Spain. The difference being minimum around 5-6 yr of age ranging between 1.4 to 2.7 kg, which continue to increase with age, *i.e.,* at 10 and 17 yr Indian boys are having 3.3 to 4.9 kg and 7.0 to 13.3 kg lower weights as compared to their European counterparts, respectively. Indian girls are also having lower weight as compared to European girls and the difference increases with age ranging between 4.5 and 9.5 kg at 17 yr.

The present study and NCHS data are compared in detail in *Table XIII & XIV.* The former have lower weight as compared to the NCHS the differences being more distinct from 10 yr in boys and 8 yr in girls. For 50th centile at 5 yr of age the NCHS boys and girls are heavier by 1.6 and 0.9 kg, respectively as compared to the present study data. This gap widens at 17 yr of age, the differences being 11.0 kg for boys and 8.0 kg for girls. At 3rd centile level the differences between NCHS and present study weight are 4.4 kg and 4.7 kg, which are 11.7 kg and 4.4 kg at 97th centile for boys and girls, at 18 and 17 yr of age, respectively.

(*b*) *Comparison with Asian Children*

On comparison with Asian boys and girls, the mean weights in the present study are closer to Chinese, Thai and Japanese National data but are higher than the Hongkong Chinese at the age of 5 yr (*Table XV.* 11, 22-26, 28-30). Boys in most of the Asian studies had similar weight except for Japanese who have an edge over the present data by 1.5 kg at 7 yr of age, and by 11 and 12 yr of age the differences in weight increased by around 3.0-4.0 kg. At 17 yr Indian boys are closer to Japanese Koreans (differences being 2.2 kg) but much lower than the Japanese in Japan (difference being 4.4 kg). The Japanese as well as Japanese Korean girls are heavier as compared to the Indians and ultimately at 17 yr their weights are 2.0-4.0 kg more as compared to the present data. The Chinese

girls were having lower weight from 10-16 yr of age but at 17 yr their weight is almost similar to the Indian counterparts.

(*c*) *Comparison with Indian Upper Socio-Economic Children*

The data of the present study and Indian upper socio-economic group are presented in *Table XVI*. The data collected by ICMR on upper socio-economic children are much lower as compared to the data reported by Raghavan *et al.*(32) and the present study, both for boys and girls. Further, even after 20 yr the weights both for boys and girls in the present study are similar to those reported by Raghavan *et al.* in 1971. The data based on local studies show that Ludhiana boys and girls(45) are heavier by 2-3 kg from puberty onwards. The Nutrition Foundation of India(33) data for girls from Delhi and Calcutta show that these girls are almost weighing similar to those in the present study by 16 yr of age, However, those from Coimbatore and Bombay are marginally lower.

3. Secular Trend

Secular changes in growth and development are good indicators of improvements in socio-economic and socio-hygienic conditions and in state of health of population. Falkner and Tanner(7) advised that regularly performed height measurement among population in technologically under developed countries are to be preferred than the vague concept such as income per capita, or gross national product for ascertaining accurately whether living conditions and health improvement have occurred due to developmental projects. In comparing the secular changes in different populations one should take into account (*a*) whether a particular population is showing changes according to age, social class, and region, (*b*) attained height, weight (weight/height relationship) and age at which sexual maturation is developed, (*c*) changes in extreme distribution of percentiles, *i.e.,* 3rd and 97th, (*d*) age of adolescent growth spurt, and (*e*) age at which adult height is being attained.

(*a*) *Height*

The secular trend for boys and girls for the present study is being determined as compared to the old ICMR data (upper socio-economic group I (USEG), which was collected from schools all over the country(31), and that reported by Raghavan *et al.*(32) from 14 public schools of the country. On comparing the present data with that of ICMR USEG there is 2-4 cm increase in mean height between the period 1971 to 1989. The ultimate height at the age of 18 yr is 3.2 cm more in 1989 showing 1.6 cm increase in height per decade. However, when the present data are compared with those of Raghavan *et al.*(32) there seems to be no secular trend. In girls secular trend was also observed when the present data were compared with the ICMR study, the average being 1.5 cm per decade at 16 yr of age. However, no such pattern was seen when data were compared with those of Raghavan *et al.*(32).

The present investigators have also collected growth data in Delhi and Varanasi in the year 1971(37, 42). To see whether secular changes have taken place over a period of 18 yr in Delhi, the data of the present study for height and weight have been compared with 1971 data for Delhi boys as well as girls(37). *Fig. 1* shows that means for height of Delhi boys increased from 1971 increase of 2.1 cm per decade. This was more pronounced at the time of onset of puberty, *i.e.,* 12 yr as the increase

in height per decade was 4.0 cm. Similarly in girls secular trend for height was more pronounced during early adolescence being 2.4, 4.0 cm and 2.7 cm at 10, 12 and 14 yr, respectively (*Fig. 2*).

In Varanasi the gain in height for boys per decade is 1.5 cm at the age of 16 yr and it is lesser to that observed for Delhi boys (*Figs. 1 & 3*). In Varanasi girls height gain per decade at the age of 16 yr is 2.1 cm and it is lower as compared to Delhi girls (*Figs. 2 & 4*). This difference in data could be due to better nutrition, health care and other environmental determinants being available in Delhi as compared to Varanasi.

The secular trend during 1960-1980 in Brussels(Belgium) showed 0.8 and 0.9 cm increase in height per decade between 13-

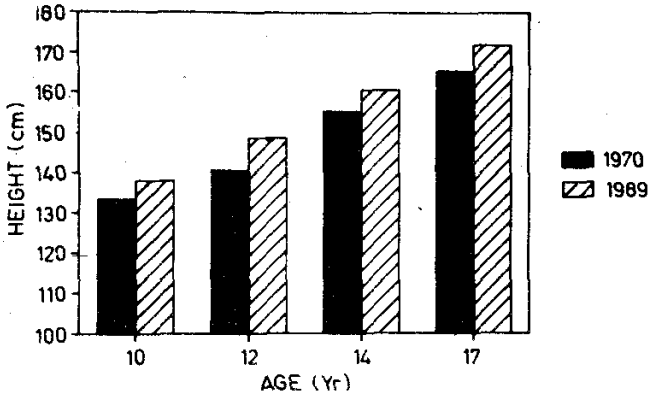

Fig. 1. Secular trend in Delhi boys (height) at 10, 12, 14 and 17 years.

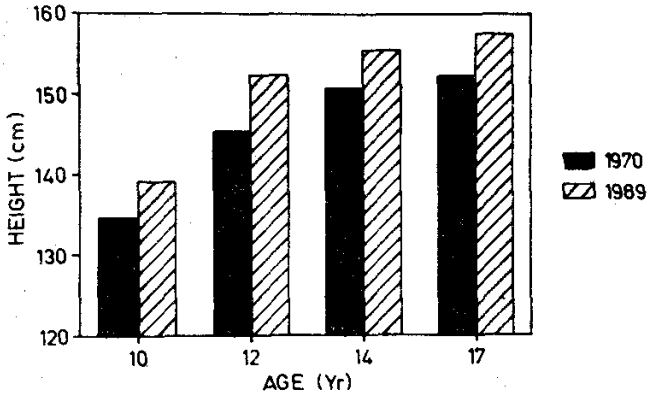

Fig. 2. Secular trend in Delhi girls (height) at 10, 12, 14, 17 years.

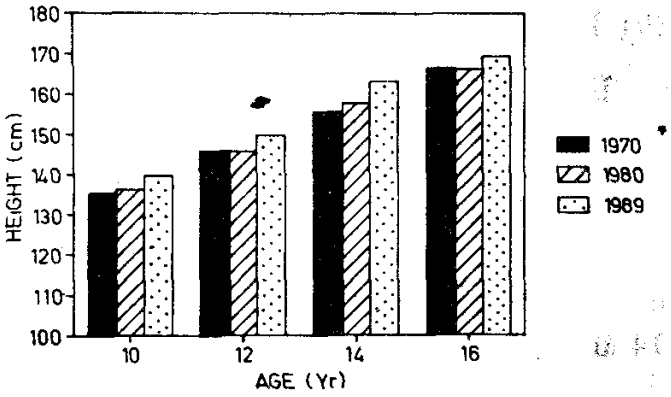

Fig. 3 Secular trend in Varanasi boys (height) at 10, 12, 14, 16 years.

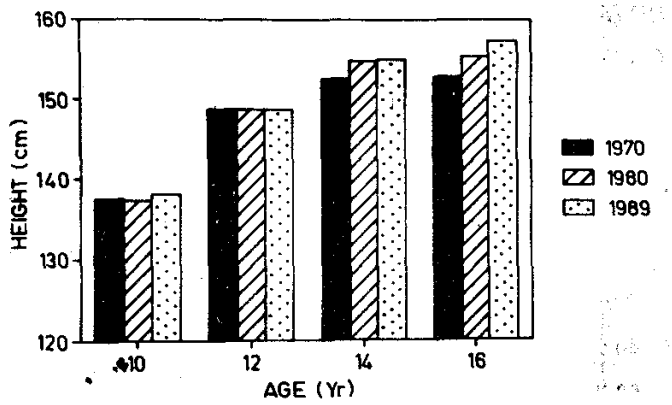

Fig. 4 Secular trend in Varanasi girls (height) at 10, 12, 14, 16 years.

16 yr of age and 1.2 and 1.1 cm at 19 yr for boys and girls, respectively. Several studies from south-east Asia are also available where secular trend has been reported. In Hong Kong during childhood and early adolescence, between 1965-1985 boys became taller by 3.5 cm and girls 2.8 cm per decade(50). In China at 6-7 yr of age urban and rural boys gained 1.5 cm and 2.0 cm, respectively, and girls 2.0 cm in both the groups per decade(22). In 1977 increase in height in Japanese was 2.15 cm for men and 1.35 cm for girls per decade(51). A poor or no secular trend, was observed, *e.g.,* Zapotec of Oaxaca(52) and Xingu of Brazil(53). However, high altitude Puno (Peru) reported a significant secular trend during 1945-80 averaging 2.7 cm per decade at 13 yr of age.

(b) Weight

Delhi boys show secular trend with increase in weight by 4.0, 10.5, 10.8 and 15.0 kg at 10, 12, 14 and 17 yr of age, respectively. The increase at 17 yr of age per decade was 8.2 kg (*Fig. 5*). The girls show increase by 6.7, 7.2, 6.7 and 8.4 kg at 10, 12, 14 and 17 yr of age. The average gain per decade being 4.7 kg at 17 yr of age, comparatively much lower than the weight gain in boys for the corresponding age (*Fig. 6*). The corresponding values for Varanasi boys and girls at 14 yr are 4.2 and 3.0 kg, respectively (*Figs. 7 & 8*).

4. Other Body Measurements

(a) Sitting Height and Leg Length

The sitting height and leg length (stat-

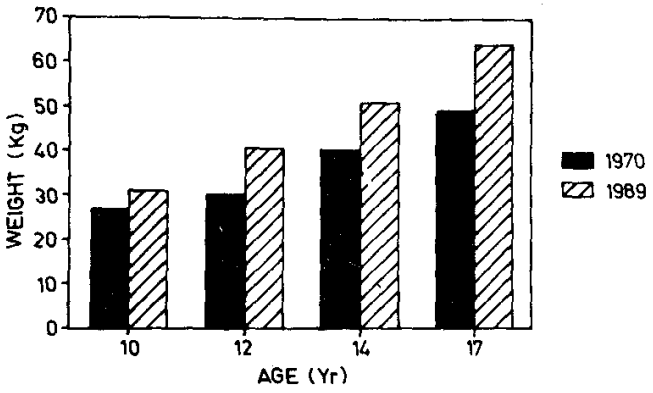

Fig. 5. Secular trend in Delhi boys (weight) at 10, 12, 14 and 17 years.

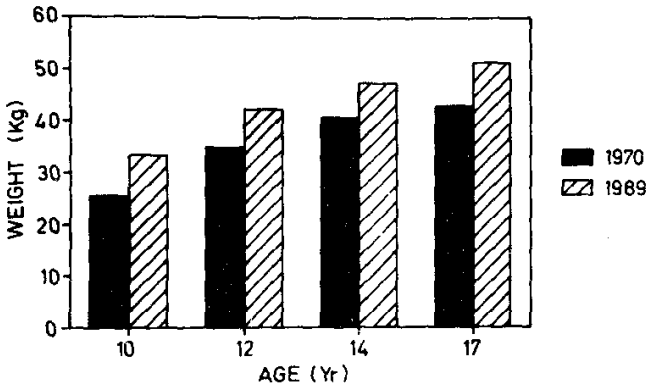

Fig. 6. Secular trend in Delhi girls (weight) at 10, 12, 14 and 17 years.

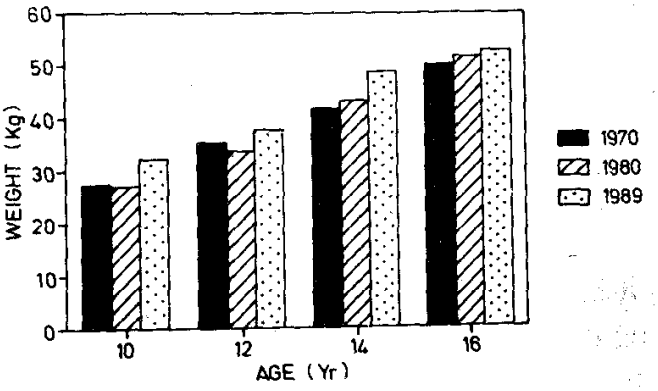

Fig. 7. Secular trend in Varanasi boys (weight) at 10, 12, 14 and 16 years.

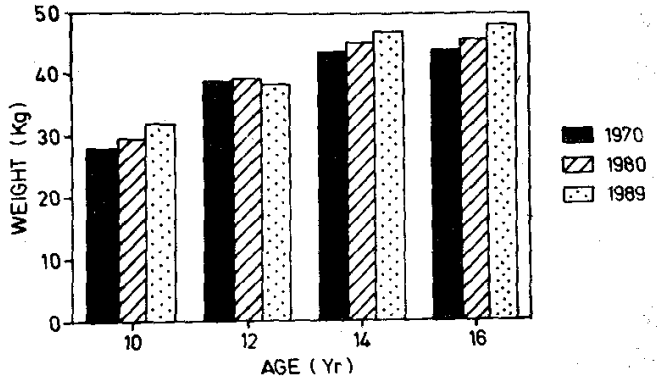

Fig. 8. Secular trend in Varanasi girls (weight) at 10, 12, 14 and 16 years.

ure-sitting height) means for boys and girls are given in *Table XVII*. During 6 to 17 yr of age sitting height increased by 24.3 cm and 20.4 cm for boys and girls, respectively. The leg length increased by 28.2 cm in boys and 22.3 cm in girls. Thus both girls and boys have more increase in leg length as compared to sitting height, the difference being about 2.0 cm in girls and 4.0 cm in boys.

The sitting height of Indian boys as compared to those from Hungary and Norway (European children) is presented in *Table XVIII*(15,16). On comparison at the age of 16 yr the Indian boys are shorter by 5.3 and 6.1 cm, respectively. The Indian girls are shorter by 5.0, 6.7, 5.1 and 8.4 cm as compared to their counterparts in Hungary, Norway, Belgium, and the Nether-

lands, respectively in *Table XVIII*(15,16, 54,55). The data for leg length is not available for these countries but if the leg length is calculated by subtracting sitting height from stature, it appears that leg length of Indian children is almost equal to those of European; perhaps the difference in stature is due to difference in trunk growth, being more in European children.

The data for boys and girls of present study in comparison with Asian children are also shown in *Table XVIII*(22,23,26,28). The means for sitting height of Japanese and Chinese boys (based on national data of Japan and Chinese of 9 cities) show a difference of 2.5 to 6.7 cm and 2.4 to 4.5 cm from 5-17 yr of age. The Japanese boys are taller by 1.9 cm but Chinese children have similar mean height by 17 yr of age. It reflects that the difference in height of Indians and Japanese is mainly due to better trunk growth of the latter. Eveleth and Tanner(11) have pointed out that height increase in Japanese has been entirely due to increase in leg length and as a result body shape in them has altered and similar results have been reported for Chinese(23), but opposite, *i.e.,* more growth in trunk was observed for Philadelphia and Afro-Americans(57).

Sitting height means for present study as compared to the ICMR data of 1972(31) on USEG girls and also with data of Rath *et al.*(39) from Delhi, Qamara *et al.*(48) for Chandigarh and Singh(56) for Punjab girls are also presented in *Table XVIII*(31,39,48,56). The secular change of 3 cm reflected by comparing height of girls at 16 yr in present study as compared to ICMR USEG data is mainly due to more increase in leg growth(3.0 cm). Chandigarh and Delhi girls have more sitting height means at all ages as compared to the present study.

5. *Biacromial and Bicristal Diameters*

Biacromial diameter means are similar for boys and girls until 14 yr of age, thereafter, boys gain 4.4 cm by 18 yr of age and girls 0.8 cm by 17 yr of age. In boys, biacromial diameter increased from 25.1 to 37.9 cm, while bicristal diameter increased from 17.6 to 26.0 cm in the age period 6 to 18 yr (*Table XIX*). Thus, there is proportionately more increase in shoulder width than the hip width. In girls the increase in biacromial and bicrisal is 8.2 cm and 9.4 cm, respectively in age period 6 to 17 yr. There is proportionately more increase in hip width than the shoulder width. The means for bicristal diameter remain similar for boys and girls. The biacromial and bicristal diameter means for European boys and girls are higher than those observed in the present study(15,16,19,53; *Table XX & XXI*). The biacromial means of Hong Kong and Singapore children are similar to those of present study(58,59). The bicristal diameter of Asian children (Hong Kong, Singapore and Thailand) is similar to the children of present study at all age points except in case of Thailand girls, who have little lower bicristal diameter(28,58,59,).

Bicristal diameter means for boys and girls in the present study are also similar to those reported in the ICMR study(31) for upper socio-economic group. The Chandigarh girls reported by Qamra *et al.*(48) have higher means than the present study and possibly are close to European children.

6. **Mid-Arm Circumference**

The mean and centile values for boys are similar and show progressive increase with age, the gain being 8.3 cm between 6 to 18 yr of age in boys (*Table XXII*). A similar pattern was observed in girls, the

increase being 7.0 cm between 6 and 17 yr of age (*Table XXIII*).

As compared to European and NCHS means, the mid arm circumference in the present study boys is lower at all age points and by around 3.0 cm at 17 yr of age(15,16,19,20,54,60,*Table XXIV*). In case girls, the NCHS means are lower than those observed for Belgium and Netherland girls by 1.5 and 2.6 cm, respectively at 17 yr of age. The differences between the means of present study and European and NCHS for boys show a trend of progressive increase in gap with age thus suggesting that Indians are having poor muscle mass development during adolescence. The low mid arm circumference values in the present study may indicate that the level of nutrition is still lower than the optimal for Indian children. They may have, therefore, not achieved full growth potential, as yet.

The mid-arm circumference of boys and girls of present study is comparable with those of Bahrain(61) but is lower than those of Libyan children(63). The data for Egyptian children(62) are available for 6-12 yr of age, their values are lower than those of the present study. The means for mid-arm circumference in boys in the present study are lower than those reported in earlier Indian studies(36,39,46-48,64,65). The gain during 6-16 yr in the present study is of 6.0 cm as compared to 8.0 cm for the same period observed by Pathak(45) from Ludhiana and in all India data by Raghavan *et al.*(32). For girls the mid-arm circumference means are similar in most of the Indian studies, reported (*Table XXIV*).

7. Skin Fold Thickness

The means for tricep and bicep skin fold thickness for boys and girls are presented in *Table XXV*. Girls showed higher means as compared to boys for both the parameters. The gain for tricep and bicep thickness was 4.2 and 1.5 mm in boys during the age period 6-17 yr, respectively. In contrast the girls gained twice or more for those parameters, the increase being 8.4 mm and 3.7 mm, respectively. The gain in girls was more marked after the onset of puberty. At the age of 17 yr the differences between mean tricep and bicep of boys and girls are 5.6 and 2.7 cm, respectively.

The tricep means for boys in the present study are higher as compared to those reported by Buckler(66) in British children (*Table XXVI*). However, for biceps, the values were similar to those in the present study. Asian children also showed lower means for triceps as compared to the present study. Asian children also showed lower means for triceps as compared to the present study (*Table XXVI*).

The mean triceps in Indian upper socio-economic boys reported from different parts of the country are similar to those in the present study excepting Ludhiana(45) data which are much lower. The girls in the present study are close to the means reported in other Indian studies from Haryana(67), Delhi(33,68) and data reported by Raghavan *et al.*(32). In spite of better physical growth, the girls from Punjab showed lower tricep means as compared to the present study.

The means, standard error for subscapular and suprailiac measurements are presented in *Table XXVII*. Girls showed higher means for both the parameters as compared to boys and this difference was significantly higher during adolescence.

The data for European studies on comparison show that subscaplur means for Hungarian boys and girls are close to the present study. However, children from

Norway(16), Poland(19), U.K.(66) Italy(69), Ireland(70) and Belgium(71) had lower means for subscapular. Asian children showed lower subscapluar means for boys as well as girls compared to that observed in the present study (*Table XXVIII*).

Similarly for suprailiac the present study shows boys and girls are higher than the means reported for subscapular and suprailiac measurements, means reported for Ludhiana girls are significantly lower and show no change with age.

8. Genital Development

The percentage distribution according to genital development in relation to age shows that about 75% of the boys are in G-2 during the age period 11.0-13.5 yr, in G-3 during 12.0-15.0 yr, in G-4 between 13.0-16.0 yr and G-5 between 14.5-17.5 yr, respectively. The mean age for G-2, G-3, G-4 and G-5 was 11.9, 13.3, 14.6 and 15.9 yr, respectively. About 77% of the boys had initiated genital development by 13.5 yr of age and by 15.5 yr have crossed G-2 stage. More than 90% of the boys have achieved G-4 or G-5 stage by 16.5 yr of age (*Table XXX*). The mean ages for axillary hair, pubic hair and facial hair appearance are 14.9, 14.2 and 14.8 yr, respectively (*Table XXXI*).

The mean age for different genial development stages in boys from England(74,75), the Netherlands(17), Sweden(76), Switzerland (77) and the USA(78), are similar to those observed in the present study (*Table XXXII*). For the Asian children the data available were from Egypt(79) and found to be similar to the present study. The data on Indian upper socio-economic groups boys are also similar to the present study(43,80,81).

9. Physical Growth in Relation to Sexual Development

After 9 yr of age in girls and 11 yr in boys, the cross sectional data for stature and weight are not reliable, as the peak height velocity in relation to sexual development varies for an individual child. To overcome this, the mean height is presented in relation to age in different genital development groups (*Table XXXIII*). This is important, as during the adolescent growth period such a table will provide mean height for age as well as in relation to sexual development. This can be recommended till longitudinal data are collected for the country. For example a 14 yr old boy will measure in height for G-2, G-3, G-4, and G-5 as 150.3, 155.8, 161.2 and 165.2 cm, respectively. The 50th centile age for G-2, G-3, G-4 and G-5 is 12.0, 13.3, 14.5 and 15.9 yr, respectively. Further at 50th centile, boys in G-2 will correspond to 97th centile of G-4 (*Fig. 9*). Therefore, during sexual development height centiles and means are to be calculated for the stage of sexual development for the age.

Similarly, the weight for age has to be in relation to the genital development stages. A 14-year-old boy has mean weights of 38.0, 42.5, 46.8 and 52.9 kg in stages G-2 to G-5, respectively (*Table XXXIV*). Means

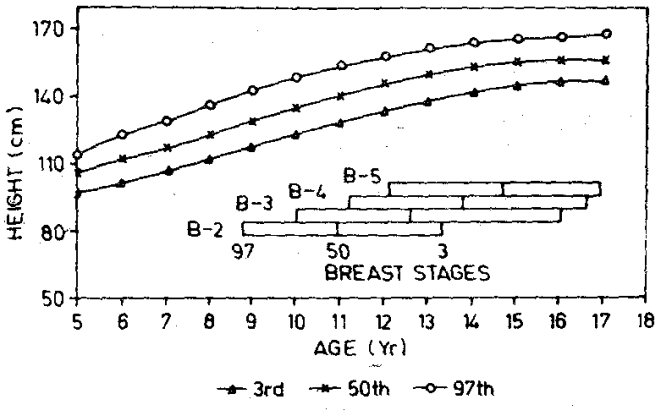

Fig. 9. Standard height centile chart of boys

for sitting height and leg length in different genital stages are given in *Table XXXV*. The means are increasing with age as well as in relation to sexual development. Both the parameters are growing simultaneously during adolescence. These means for sitting height and leg length are close to each other for age as well in genital development groups.

The percentage distribution of girls in different breast development stages at each age shows that about 80% of the girls in B-2 stage were in the age group 10.0-13.0 yr and in B-4 between 13-17 yr, respectively. The mean age for B-2, B-3, B-4 and B-5 was, 10.2, 11.6, 13.5 and 15.5 yr, respectively. (*Table XXXVI*). The percentage distribution of axiallry hair, pubic hair and event of menarche in different breast development stages is given in *Table XXXVII*. About 57% of the girls in B-3, and 97% of the girls in B-5 have attained menarche.

The mean age for different breast development stages and attainment of menarche in European and Asian girls in comparison to the present study is shown in *Table XXXVIIII*(17,74-78,82-84). The pattern for breast development is similar in European, Asian and Indian girls. The mean ages for different breast development stages in Indian upper socio-economic girls are close to those in the present study (86-90; *Table XXXIX*).

Mean height data in relation to age and breast development in *Table XL* show that at 12.5 yr of age (close to mean age of menarche 12.6 yr) the height means are 145.1, 150.0, 152.0 and 153.0 cm for breast stages B-2 to B-5. The corresponding weight means are 35.0, 40.6, 45.4 and 53.6 kg (*Table XLI*). The plotted centile values for height in relation to age show that the B-3, 50th centile is close to 97th centile of B-5 (*Fig. 10*). The sitting height and leg length

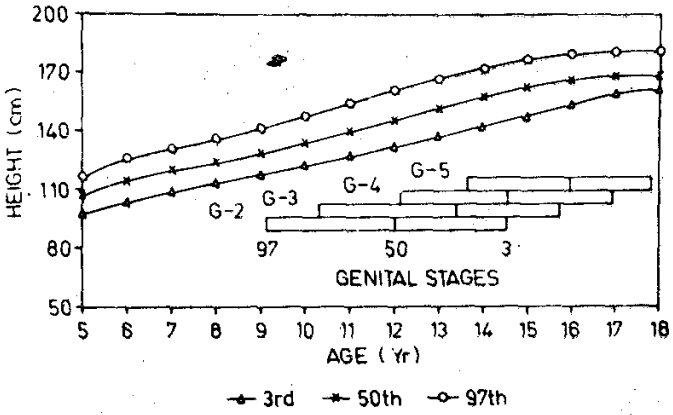

Fig. 10. Standard height centile chart of girls

means in relation to age and breast developments are given in *Table XLII*. At 12.5 yr of age the differences between these two parameters are 2.2, 3.4, 4.4 and 5.5 cm, between B-2 and B-5.

10. Menarche

The mean age of attainment of menarche in different European, Asian and Indian studies is listed in *Table XLIIII & XLIV*. It shows that the means for European, Asian and Indian(110-114) studies are close to each other ranging between 11.5-13.6 yr, except for Madras, 14.8 yr (109) and Punjab, *i.e.*, 14.8 yr (110).

11. Head Circumference

The mean + SD for boys and girls during 6-17 yr of age show that the gain is 4.0 and 4.5 cm, respectively. On comparison with other Indian studies, differences are small (*Tables XLV & XLVI*).

The data show that boys and girls from Ludhiana have higher means for chest circumference. At 6 yr of age Ludhiana and the present study boys and girls have difference of 1.8 and 0.5 cm, which increases to 6.5 cm at 16 yr for boys and to 4.4 cm for girls at 12 yr of age. Thus chest expansion is more in Ludhiana children as compared to those in the present study. The ICMR means for chest circumference are close to

those in the present study (*Table XLVII & XLVIII*).

13. Zone Wise Growth Data

The zone wise data on weight, height, mid arm circumference for boys and girls are given in *Tables XLIX-LXX*. The zone wise height means for boys are similar, values and 15 yr of age ranged between 163.0-164.3 cm and at 17 yr of age of North, West South and Central zones between 168.1-168.9 cm (*Table XLIX*). Girls in North, East and Central zones gain 41.9, 39.0 and 43.0 cm during 6 to 16 yr of age, respectively (*Table L*). The means range between 153.7-155.6 cm, being lower for East and Central zones (153.7 and 154.0 cm, respectively). The zone wise percentiles for boys and girls are given in *Tables LI & LII*.

The pooled 50th centile for height was compared with 50th centiles values of different zones to find the level of variation (AV). The maximum variation for boys and girls in different zones was 1.92% and 2.31% (*Table LIII*), which is within recommended variation of 3%. This is within the limits for the height of affluent class children of different ethnic groups at any age point(59).

Weights during 6-9 yr of age for boys of all zones are close to each other (*Table LIV*). Thereafter North Zone weight means are higher than for the other zones. For girls, means for West-South are comparatively higher than the other zones. The Central zone had the lowest weight (*Table LV*). The 3rd, 50th and 97th centile values for weight of boys and girls are given in *Tables LVI & LVII*.

The maximum variation of zonal weight means as compared to the pooled weight was 8.7% for boys and 16.4% for girls (*Table LVIII*). These variations are higher than those reported by Habicht *et al.*(115) among the affluents of different ethnic groups.

12. Growth Data of 4 Metropolitan Cities

The height for boys and girls of Bombay, Madras, Calcutta and Delhi is presented in *Tables LXI-LXIV*. There is no difference in mean height of boys and girls in all four metropolitan cities except for little higher trend for Delhi girls and boys. The final mean height of boys at 18 yr was 165.1 ± 1.65, 169.3 ± 0.79, 171.0 ± 0.76 for Bombay, Madras and Delhi respectively. For girls mean height was 158.3 ± 1.37, 155.3 ± 0.96, 154.9-0.16 and 156.5 ± 0.48 for Bombay, Madras, Calcutta and Delhi, respectively at 16 yr of age.

The weight of boys and girls of these cities is given in *Tables LXV-LXVIII*.

Conclusion

The anthropometric study of Indian affluent boys has shown that 50th centile height of Indian boys was lying in between 30th-40th centile of NCHS height till 6.5 yr of age. In later years of growth up to 16th yr height continues to be in 20th-30th centile but the final stature falls in 10th-20th centile of NCHS. For girls 50th centile is lying in 30th-40th centile of NCHS till the onset of puberty which later dips to 20th-30th centile and the ultimate height attained of Indian girls is between 10th and 20th centile of NCHS. Thus the Indian affluent children in the present study are shorter by 8.0 cm for boys at 18 yr and 7.0 cm for girls at 17 yr as compared to recent European data. However, the Indian children are similar to their counterparts of Asian origin (China, Hong Kong, Japan, Taiwan and Thailand). This difference has posed questions: (*a*) are there genetic differences between European/American and Asian children or (*b*) we have not ex-

pressed our genetic potential to full, as yet. The performance of children from Punjab to maintain in 50th centile of NCHS puts more weight on the later possibility. Thus continuous attempts should be made to assess growth every fifth year to see the behavior of other children in other states for the affluent class in our country.

The comparison under the present situation with European or NCHS data will always show that our children are undernourished to a very high degree but if we compare our children with 'Indian affluent growth reference data' or the Asian affluent the compiled level of undernutrition may be of much lower degree(116). 'The Pediatricians and the Nutritionists' of the country have to evolve methodologies to collect nationwide growth data at regular cycles to revise our reference standards. The Indian Council of Medical Research should fund such growth studies every 5th yr so as to find out if there is any change in growth parameters of Indian affluent children who are not having any health or nutritional constraints.

The means for sitting height of present study children compared with European, report show that Indian boys are shorter by 5-6 cm, while Indian girls are shorter by 5-8 cm, the leg length (stature-sitting height) being almost equal in both. Thus the difference in stature in European and Indian children is due to better trunk growth in European children. The sitting height is almost comparable to Asians except for the Japanese boys who are taller by 1.9 cm, suggesting better trunk growth in Japanese children also. The height gain during 6 to 17 yr of age being 16.0 cm for Japanese children as compared to 14.3 cm for Indian boys. The difference in anthropometric measurement in Indian and European children is also reflected in mid arm circumference, biacromnical and bicristal diameters. These measurements are higher in European children but are similar to Asians. However, skin fold thickness measurements are close to European children.

As the longitudinal data are not available during adolescent growth, the cross-sectional data are presented for age in different sexual development grades. These tables will provide assessment after 9 yr in girls and 11 yr in boys. At 14 yr of age boys have height values of 150.3, 155.8, 161.2 and 165.2 cm in G2-G5 genital development stages, respectively. For girls at 14 yr of age height means are 145.3, 150.3, 152.1 and 153.8 cm for breast stages B2-B5, respectively. Such data are important in pediatric clinic and school health scheme for proper assessment of growth.

The secular trend could be studied from the earlier data. It was found that in Delhi per decade increase was of 2.1 cm at 17 yr for boys and 2.7 cm for girls at 14 yr of age. While in Varanasi at 16 yr of age boys and girls gained per decade 1.5 and 2.1 cm, respectively.

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TABLE I—*Age and Sex Wise Distribution of School Children*

Age (yr)	Sex			
	Boys	Calcutta*	Girls	Calcutta*
5.0	450	–	381	–
5.5	277	33	245	17
6.0	175	47	241	33
6.5	128	48	251	96
7.0	235	30	294	15
7.5	213	37	319	21
8.0	295	29	328	30
8.5	275	53	349	90
9.0	338	26	399	59
9.5	348	32	429	68
10.0	425	17	487	68
10.5	612	16	452	71
11.0	621	10	503	48
11.5	761	28	490	67
12.0	755	12	435	73
12.5	889	16	489	79
13.0	771	09	455	66
13.5	829	–	456	66
14.0	754	–	391	57
14.5	743	–	350	60
15.0	628	–	291	53
15.5	528	–	204	48
16.0	461	–	176	28
16.5	393	–	182	16
17.0	288	–	116	04
17.5	177	–	–	03
18.0	87	–	–	–
Total	12456	443	8713	1238

*The data have not been included in the pooled observations. It is presented separately later.

TABLE II–*Height (cm) Means, Standard Error and Percentiles for Boys*

Age (yr)	N	Mean	SE	Percentiles						
				3rd	5th	10th	25th	50th	75th	97th
5.0	450	107.1	0.22	97.9	99.1	100.4	103.8	106.7	109.9	116.4
5.5	277	110.4	0.30	100.7	101.9	103.6	107.2	109.9	113.3	119.5
6.0	175	113.7	0.41	103.7	105.5	106.9	112.0	114.2	118.0	125.9
6.5	128	117.5	0.49	106.1	107.5	109.6	113.5	117.3	120.7	128.4
7.0	235	118.6	0.36	108.5	109.8	112.0	115.9	119.7	123.0	130.8
7.5	213	121.6	0.40	110.9	111.3	114.2	117.8	121.6	125.2	133.2
8.0	295	124.1	0.32	113.3	114.0	116.3	119.7	123.6	127.4	135.5
8.5	275	126.4	0.37	115.2	116.2	118.6	121.9	125.7	129.8	138.5
9.0	338	130.4	0.34	118.0	118.5	120.9	124.2	128.2	132.5	141.4
9.5	348	131.5	0.35	120.3	120.9	123.4	126.7	130.8	135.3	144.5
10.0	425	134.7	0.31	122.7	123.4	125.9	129.4	133.6	138.3	147.7
10.5	621	137.6	0.26	125.1	125.9	128.6	132.2	136.6	141.5	151.0
11.0	621	139.6	0.28	127.5	128.5	131.2	135.6	139.6	144.7	154.3
11.5	761	142.3	0.26	129.9	131.1	133.9	138.0	142.7	147.9	157.5
12.0	755	144.7	0.28	132.4	133.8	136.6	141.0	145.8	151.1	160.8
12.5	889	147.9	0.27	134.9	136.5	139.3	143.9	148.9	154.2	163.9
13.0	771	150.3	0.29	137.4	139.2	142.0	146.8	152.0	157.3	166.9
13.5	829	154.9	0.28	140.0	141.8	144.7	149.7	154.9	160.2	169.7
14.0	754	158.0	0.29	142.6	144.5	147.4	152.4	157.6	162.9	172.3
14.5	743	161.4	0.27	145.2	147.2	149.9	155.0	160.2	165.4	174.7
15.0	628	164.3	0.27	148.0	149.8	152.4	157.4	162.5	167.7	176.8
15.5	528	165.5	0.28	150.8	152.4	154.9	159.6	164.6	169.6	178.5
16.0	461	167.1	0.29	153.6	154.9	157.9	161.6	166.3	171.2	179.8
16.5	393	167.9	0.32	156.6	157.4	159.4	163.3	167.7	172.4	180.7
17.0	288	168.6	0.36	159.6	159.8	161.5	165.0	168.7	173.1	181.2
17.5	177	169.4	0.42	162.7	163.1	163.4	167.5	169.3	173.4	181.1
18.0	87	168.9	0.60	161.0	163.5	164.0	168.8	169.8	173.4	181.6

N = Number of subjects; SE = Standard error.

TABLE III—*Height (cm) Means, Standard Error and Percentiles for Girls*

Age (yr)	N	Mean	SE	Percentiles						
				3rd	5th	10th	25th	50th	75th	97th
5.0	381	106.0	0.23	97.2	98.6	100.3	103.1	106.0	108.8	113.8
5.5	245	109.4	0.28	99.6	100.0	103.5	105.0	108.1	112.0	116.4
6.0	241	113.0	0.35	102.1	104.5	106.1	108.8	112.5	115.9	123.3
6.5	251	115.4	0.32	104.5	107.0	108.4	111.1	114.9	118.4	126.0
7.0	294	118.2	0.35	107.1	109.4	110.7	113.7	117.4	121.3	129.3
7.5	319	120.2	0.31	109.7	111.6	113.1	116.4	120.3	124.4	132.8
8.0	328	122.7	0.32	112.3	113.9	115.5	119.3	123.2	127.5	136.4
8.5	349	126.2	0.33	115.0	116.2	118.1	122.2	126.2	130.7	139.8
9.0	399	128.6	0.32	117.8	118.8	120.9	125.1	129.2	133.8	143.1
9.5	429	131.9	0.32	120.6	121.4	123.6	128.0	132.3	136.9	146.2
10.0	487	134.8	0.31	123.4	124.1	126.5	130.8	135.2	139.8	149.0
10.5	452	137.9	0.34	126.1	126.9	129.3	133.7	138.1	142.7	151.7
11.0	503	141.3	0.32	128.8	129.7	132.1	136.4	140.9	145.4	154.2
11.5	490	144.3	0.31	131.4	132.4	134.8	139.0	143.5	147.9	156.5
12.0	435	146.7	0.32	133.9	135.0	137.4	141.5	146.0	150.3	158.5
12.5	489	149.9	0.28	136.3	137.5	139.8	143.8	148.3	152.5	160.4
13.0	455	151.4	0.28	138.5	139.8	142.1	145.9	150.4	154.4	162.1
13.5	456	153.2	0.28	140.6	141.9	144.1	147.8	152.2	156.2	163.5
14.0	391	153.6	0.29	142.4	143.8	145.9	149.4	153.8	157.6	164.7
14.5	350	154.8	0.30	144.1	145.4	147.4	150.8	155.1	158.8	165.8
15.0	291	155.0	0.33	145.5	146.6	148.6	151.8	156.0	159.7	166.5
15.5	204	155.4	0.39	146.6	147.5	149.3	152.6	156.6	160.4	167.4
16.0	176	155.1	0.38	147.5	148.0	149.7	152.9	156.8	160.4	167.4
16.5	182	156.0	0.38	148.0	148.1	149.7	152.9	156.5	160.5	167.6
17.0	116	157.1	0.55	148.3	148.5	149.8	153.0	157.0	160.5	168.0

N = Number of subjects; SE = Standard error.

TABLE IV—*Comparison of Height (cm) of Indian Boys (B) and Girls (G), European and NCHS Data*

Country	Place	Author	Year		Age (yr)													
					5	6	7	8	9	10	11	12	13	14	15	16	17	18
Belgium	Brussels	Vercauteren (12)	1984	B Median	109.5	116.1	122.1	127.5	132.5	137.3	142.2	147.8	153.9	160.5	166.9	171.5	174.1	175.3
				G Median	109.0	115.0	121.0	127.0	132.3	138.0	144.0	150.0	155.8	159.8	162.0	163.0	163.0	
Czechos-lovakia	National	Blaha (13)	1986	B Mean			124.0	129.0	134.0	140.0	146.0	150.0	157.0	165.0	172.0	175.0	177.0	178.0
				G Mean			123.5	128.0	134.0	140.0	147.0	153.0	158.0	161.0	163.0	164.0	165.0	
Denmark	National	Andersen *et al.* (14)	1982	B Mean	111.2		124.1	129.0	134.0	139.1	143.8	148.8	154.8	161.7	168.2	173.8	177.0	179.0
				G Mean	111.0	117.2	123.4	128.1	132.9	138.4	144.1	150.4	165.5	160.5	163.1	164.9	165.6	
Hungary	National	Eiben & Panto (15)	1986	B Mean	109.3	116.2	122.3	127.6	133.2	138.6	143.3	149.0	155.6	162.7	168.8	172.4	174.2	175.3
				G Mean	109.0	116.0	121.4	127.0	132.0	138.3	144.7	150.7	156.0	159.3	161.2	161.9	162.1	
NCHS	USA (10)		1977	B Mean	108.9	116.1	122.6	128.1	131.6	138.1	143.4	149.9	154.2	164.2	167.8	173.3	176.8	177.0
				G Mean	107.9	115.4	120.6	127.4	133.2	138.5	144.0	151.5	157.1	159.1	161.5	163.8	161.4	
Norway	Bergen	Waaler (16)	1983	B Mean	112.4	118.7	124.3	130.0	135.4	139.7	145.4	150.4	156.4	156.4	163.8	169.9	174.9	176.6
				G Mean	110.6	117.3	123.2	128.5	133.9	139.1	145.0	151.4	157.5	162.1	164.5	165.9	165.9	
Nether-land	National	Roede & Van Wieringen (17)	1985	B Mean	112.4	118.8	125.0	131.0	136.6	142.2	147.3	152.1	157.5	165.8	173.2	177.4	179.6	180.9
				G Mean	111.9	118.3	124.4	130.4	135.8	141.4	147.2	154.4	160.6	164.0	166.4	167.7	168.0	
Sweden	Stock-holm	Lindgren & Strandell (18)	1986	B Mean			124.6	127.9	135.4	141.0	144.0	150.6	156.8	165.7	169.7			
				G Mean			124.0	127.0	134.0	141.0	145.0	154.0	158.0	162.5	164.0			
Poland	Warsaw	Kurniewiez-Witezakowa *et al.* (19)	1983	B Mean	110.0	117.8	123.0	128.4	134.2	139.0	144.3	149.2	156.0	162.8	170.0	173.7	176.8	176.8
				G Mean	109.8	116.1	121.5	127.1	132.1	137.7	145.0	152.0	157.8	160.5	162.5	163.0	163.1	
Spain	Bilbao	Hernandez *et al.* (20)	1988	B Mean	108.7	114.1	120.2	126.1	131.7	136.5	141.5	146.7	152.8	160.0	165.5	170.9	173.7	175.6
				G Mean	108.9	114.0	120.0	126.0	131.4	136.6	142.5	148.4	153.7	156.8	158.3	159.9	160.8	
India		Present Study		B Mean	107.1	113.7	118.6	124.1	130.4	134.7	139.6	144.7	150.3	158.0	164.3	167.1	168.6	168.9
				G Mean	106.0	113.0	118.2	122.7	128.6	134.8	141.3	146.7	151.4	153.6	155.0	155.1	157.1	

TABLE V—*NCHS and Present Study Height (cm) Percentiles for Boys*

Age (yr)	Percentile											
	3rd		5th		10th		50th			97th		
	NCHS	PS	NCHS	PS	NCHS	PS	NCHS	PS		NCHS	PS	
5.0	101.3	97.9	102.4	99.1	104.0	100.0	109.9	106.7	(20-30)	118.6	116.4	(90-95)
5.5	104.2	100.7	105.3	101.9	107.0	103.6	113.1	109.9		122.0	119.5	
6.0	107.0	103.7	108.1	105.5	109.9	106.9	116.1	114.2	(30-40)	125.2	125.9	(97)
6.5	109.6	106.1	110.8	107.5	112.6	109.2	119.0	117.3		128.3	128.4	
7.0	112.1	108.5	113.3	109.8	115.2	112.0	121.7	119.7	(30-40)	131.3	130.8	(95-97)
7.5	114.5	110.8	115.9	111.3	117.7	114.2	124.4	121.6		134.2	133.2	
8.0	116.9	113.3	118.2	114.0	120.1	116.3	127.0	123.6	(20-30)	137.0	135.8	(95)
8.5	119.2	115.6	120.5	116.2	122.5	118.6	129.6	125.7		139.9	138.5	
9.0	121.5	118.0	122.8	118.5	124.9	120.9	132.2	128.2	(20-30)	142.8	141.4	(90-95)
9.5	123.7	120.3	125.1	120.9	127.3	123.4	134.8	130.8		145.9	144.5	
10.0	126.0	122.7	127.5	123.4	129.7	125.9	137.5	133.6	(20-30)	149.0	147.7	(95-97)
10.5	128.3	125.1	129.8	125.9	132.1	128.6	140.3	136.6		152.3	151.0	
11.0	130.6	127.5	132.2	128.5	134.7	131.2	143.3	139.6	(20-30)	155.9	154.3	(95)
11.5	133.0	129.9	134.7	131.1	137.3	133.9	146.4	142.7		159.7	157.5	
12.0	135.5	132.4	137.3	133.8	140.0	136.6	149.7	145.8	(30-40)	163.8	160.8	(90-95)
12.5	138.1	134.9	140.0	136.5	142.9	139.3	153.0	148.9		167.9	163.9	
13.0	140.9	137.4	142.9	139.2	145.9	142.0	156.5	152.0	(30-40)	172.0	166.9	(80-90)
13.5	143.8	140.0	145.9	141.8	148.9	144.7	159.9	154.9		175.9	169.7	
14.0	147.0	142.6	149.0	144.5	152.1	147.4	163.1	157.6	(20-30)	179.2	172.3	(80-90)
14.5	150.4	145.2	152.4	147.2	155.4	149.9	166.2	160.2		182.0	174.7	
15.0	153.8	148.0	155.7	149.8	158.7	152.4	169.0	162.5	(20-30)	184.2	176.8	(80-90)
15.5	157.1	150.8	158.9	152.4	161.7	154.9	171.5	164.6		185.8	178.5	
16.0	160.0	153.6	161.7	154.9	164.3	157.9	173.5	166.3	(10-20)	187.1	179.8	(80-90)
16.5	162.3	156.6	163.9	157.4	166.4	159.4	175.2	167.7		188.0	180.7	
17.0	163.9	159.6	165.4	159.8	167.8	161.5	176.2	168.7	(10-20)	188.6	181.2	(70-80)
17.5	164.5	162.7	166.0	163.1	168.4	163.4	176.7	169.3		189.0	181.1	
18.0	164.4	161.0	166.0	163.5	168.4	164.0	176.8	169.8	(10-20)	189.2	181.6	(70-80)

PS = Present study.
Figures in parentheses depict PS centiles as compared to the NCHS centiles.

TABLE VI—*NCHS and Present Study Height (cm) Percentiles for Girls*

Age (yr)	Percentile											
	3rd		5th		10th		50th			97th		
	NCHS	PS	NCHS	PS	NCHS	PS	NCHS	PS		NCHS	PS	
5.0	100.1	97.2	101.1	98.6	102.7	100.3	108.4	106.0	(30-40)	116.7	113.8	(80-90)
5.5	102.8	99.6	103.1	100.0	105.6	103.5	111.1	108.1		120.3	116.4	
6.0	105.4	102.1	106.5	104.5	108.3	106.1	114.6	112.5	(30-40)	123.9	123.3	(95-97)
6.5	107.9	104.5	109.1	107.0	111.0	108.4	117.6	114.9		127.4	126.0	
7.0	110.3	107.1	111.6	109.4	113.6	110.7	120.6	117.4	(20-30)	130.9	129.3	(90-95)
7.5	112.6	109.7	114.0	111.6	116.1	113.1	123.5	120.3		134.3	132.8	
8.0	115.0	112.3	116.5	113.9	118.7	115.5	126.4	123.2	(30)	137.7	136.4	(95-97)
8.5	117.5	115.0	119.0	116.2	121.2	118.1	129.3	126.2		141.1	139.8	
9.0	120.0	117.8	121.5	118.8	123.9	120.9	132.2	129.2	(30-40)	144.5	143.1	(95-97)
9.5	122.6	120.6	124.2	121.4	126.7	123.6	135.2	132.3		147.8	146.2	
10.0	125.4	123.4	127.1	124.1	129.5	126.5	138.3	135.2	(30-40)	151.2	149.0	(90-95)
10.5	128.5	126.1	130.1	126.9	132.6	129.3	141.5	138.1		154.5	151.7	
11.0	131.7	128.8	133.4	129.7	135.9	132.1	144.8	140.9	(20-30)	157.8	154.2	(90-95)
11.5	135.2	131.4	136.8	132.4	139.3	134.8	148.2	143.5		161.2	156.5	
12.0	138.7	133.9	140.3	135.0	142.8	137.4	151.5	146.0	(20-30)	164.4	158.5	(80-90)
12.5	141.9	136.3	143.5	137.5	145.9	139.8	154.6	148.3		167.2	160.4	
13.0	144.6	138.5	146.2	139.8	158.6	142.1	157.1	150.4	(10-20)	169.7	162.1	(70-80)
13.5	146.5	140.6	148.1	141.9	150.5	144.1	159.0	152.2		171.6	163.5	
14.0	147.8	142.4	149.4	143.8	151.8	145.9	160.4	153.8	(10-20)	172.9	164.7	(70-80)
14.5	148.6	144.1	150.2	145.4	152.6	147.4	161.2	155.1		173.9	165.8	
15.0	149.1	145.5	150.7	146.6	153.1	148.6	161.8	156.0	(10-20)	174.5	166.5	(7-80)
15.5	149.5	146.6	151.1	147.5	153.5	149.3	162.1	156.6		174.8	167.1	
16.0	149.9	147.5	151.4	148.0	153.9	149.7	162.4	156.8	(10-20)	175.0	167.4	(70-80)
16.5	150.4	148.0	152.0	148.1	154.4	149.7	162.4	156.5		175.0	167.6	
17.0	151.1	148.3	152.6	148.5	154.9	149.8	163.1	157.0	(10-20)	175.0	168.0	(70-80)

PS = Present study.
Figures in parentheses depic the PS centiles as compared to the NCHS centiles.

TABLE VII—*Comparison of Height (cm) of Indian and Asiatic Boys (B) and Girls (G)*

Country	Place	Author	Year		Age (yr)													
					5	6	7	8	9	10	11	12	13	14	15	16	17	18
China (PRC)	Urban	Zhang (22)	1977	B Mean	108.6	114.7	120.6	125.3	130.6	134.4	139.2	144.2	149.8	156.5	162.0	165.6	167.7	
		Zhang & Huang (23)	1988	G Mean	107.6	113.9	119.3	124.6	129.5	134.8	140.6	146.6	150.7	153.7	155.5	156.8	157.4	
Hong Kong	Southern	Fung *et al.* (24)	1985	B Median			120.6	123.9	128.8	134.9	141.4	148.8	154.1	160.0	164.0	167.4	169.6	170.0
				G Median			119.0	124.0	130.3	136.8	143.1	148.4	152.7	155.6	157.2	157.8	157.6	
	Chinese	Leung *et al.* (25)	1987	B Mean	107.6	113.8	119.4											
				G Mean	106.8	113.0	118.6											
Japan	National	Kikuta & Takaishi (26)	1987	B Mean	106.0	113.0	119.0	125.0	130.0	135.0	140.0	147.0	154.0	161.0	166.0	169.0	170.0	
				G Mean	105.0	112.0	114.0	125.0	130.0	136.0	143.0	149.0	153.0	155.0	156.0	157.0	157.0	
Japan	Koreans	Kim (27)	1982	B Mean			119.0	125.0	130.5	135.5	140.0	147.0	155.0	162.0	166.0	168.0	169.0	
				G Mean			118.5	124.0	130.0	137.0	144.0	149.0	152.5	155.0	156.5	157.5	158.5	
Thailand	Bangkok	Khanjanasthti *et al.* (28)	n.d.	B Median	108.0	113.0	120.0	124.3	130.4	135.5	139.2	142.5	152.3	157.5	161.5	167.4	168.1	168.0
				G Median	107.4	112.7	118.4	122.8	128.4	133.7	139.6	146.2	150.8	153.9	153.9	156.2	156.1	
Taiwan	Chang-hua	Lai & Yaung(29) Yaung & Lai(30)	1987 & 1988	B Mean						135.2	140.1	145.3	150.5	158.7	164.0	166.8	168.2	167.8
				G Mean						135.3	140.6	147.6	152.0	153.9	156.2	156.2	155.2	
India		Present study		B Mean	107.1	113.7	118.6	124.1	130.4	134.7	139.6	144.7	150.3	158.0	164.3	167.1	168.6	168.9
				G Mean	106.0	113.0	118.2	122.7	128.6	134.8	141.3	146.7	151.4	153.6	155.0	155.1	157.1	

TABLE VIII—*Height (cm) of Indian Boys of Upper Socio-economic Status*

Place	Author	Year		Age (yr)														
				5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Delhi	Agarwal *et al.* (35)	1970	Mean	106.0	110.7	116.9	123.3	127.6	133.6	137.6	143.9	151.0	155.2	161.8	166.3	163.7		
	Banik *et al.* (36)	1973	Mean	109.7	115.3	121.6	128.6	133.8	138.6	143.1	143.0	153.8	161.0					
	Tripathi *et al.* (37)	1974	Percentile						133.6	137.2	140.8	147.9	155.7	161.5	162.4	165.6		
	Tripathi *et al.* (38)	1976	Mean						137.4	141.2	145.9	152.7	159.3	161.3	163.9	166.8		
	Rath *et al.* (39)	1978	Percentile	111.1	117.1	124.6	130.8	133.7	137.1	144.0	148.0	156.0	165.0	168.9				
	Ghai(40)	1978	Percentile	104.0	114.1	119.2	124.5	130.0	134.0	140.0	144.0	153.5	156.3	164.8				
	Banik *et al.* (41)	1982	Mean	109.9	116.3	122.6	129.6	134.8	139.5	144.0	149.0	154.8	161.9					
Varanasi	Agarawal *et al.* (42)	1974	Mean					130.6	135.5	139.9	145.8	145.8	149.4	155.6	161.2	160.0		
	Tripathi *et al.* (37)	1974	Percentile						136.4	137.9	144.6	151.0	156.8	161.2	162.0	163.6		
	Katiyar *et al.* (43)								136.3	139.9	145.7	151.0	157.7	162.5	165.4	168.6		
Jabalpur	Kaul *et al.* (44)	1976	Mean					134.6	137.6	141.8	146.5	155.5	155.6	158.9	163.6	167.8	169.2	
Ludhiana	Pathak (45)	1989	Mean		116.9	124.6	129.8	133.5	136.9	143.1	148.8	156.2	162.7	168.5	173.9			
				Age (Yr)														
				5.5	6.5	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5	17.5	18.5	
India	Raghavan *et al.* (32)	1971	Mean	113.5	118.9	123.3	127.7	133.6	138.5	143.5	148.9	154.9	161.7	165.3	168.4			
India	ICMR (31)	1972	Mean	108.9	113.8	119.7	123.9	128.4	135.4	139.6	142.8	152.9	159.9	162.0	163.3	164.5	165.6	

TABLE IX—*Height (cm) of Indian Girls of Upper Socio-Economic Status*

Place	Author	Year		Age (yr)													
				5	6	7	8	9	10	11	12	13	14	15	16	17	18
Delhi	Agarwal *et al.* (35)	1970	Mean	104.9	110.6	115.9	123.0	126.5	132.8	138.0	142.4	146.6	150.2	151.7	151.1	156.1	
	Banik *et al.* (36)	1973	Mean	108.1	114.1	120.3	127.0	132.1	137.1	143.9	150.2	155.4	158.8				
	Tripathi *et al.* (37)	1974	Percentile						134.2	139.1	144.9	149.0	151.0	152.7	153.5	153.3	
	Tripathi *et al.* (38)	1976	Mean						137.3	141.5	146.7	150.5	152.3	153.0	152.1	153.1	
	Rath *et al.* (39)	1978	Percentile	108.9	119.5	123.3	128.3	133.6	141.1	144.0	150.7	154.8	158.8	158.2			
	Ghai (40)	1978	Percentile	103.0	111.6	118.4	124.8	127.0	135.3	139.5	146.0	152.8	153.0	156.5			
	Banik *et al.* (41)	1982	Mean	108.3	115.0	121.2	127.9	133.0	138.0	144.9	150.2	156.5	159.9				
Varanasi	Agarawal *et al.* (42)	1974	Mean				125.7	133.2	137.2	141.4	148.9	150.3	152.7	153.1	152.9	153.0	
	Tripathi *et al.* (37)	1974	Percentile						134.6	139.5	145.5	149.2	150.9	152.6	152.4	152.5	
	Devi (46)	1982	Mean					130.9	134.7	142.4	146.9	152.5	154.9	155.6	155.4	155.6	
	Pereira *et al.* (47)	1983	Mean						137.0	143.9	148.5	152.0	153.8	155.3	155.8	157.5	
Jabalpur	Kaul *et al.* (44)	1976	Mean					134.5	135.1	147.5	147.1	153.4	153.7	155.3	156.1	154.0	
Ludhiana	Pathak (45)	1989	Mean		119.1	123.2	127.6	132.7	140.9	144.3	150.8	155.1	157.9	158.5	159.8		
Delhi			Mean					132.7	139.7	145.0	150.6	154.8	156.4	156.8	157.4	157.9	
Bombay	NFI Report (33)	1989	Mean					128.7	136.3	141.8	147.6	152.4	155.3	156.6	156.9	157.8	
Coimbatore			Mean					131.4	135.4	138.6	143.5	148.9	153.2	155.4	156.9	157.5	
Calcutta			Mean						134.7	142.5	147.9	150.8	153.6	154.6	156.6		
				Age (yr)													
				5.5	6.5	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5	17.5	18.5
India	Raghavan *et al.* (32)	1971	Mean	112.2	117.7	122.6	127.2	133.1	138.9	145.0	151.0	153.4	155.0	156.0	156.0		
Chandigarh	Qamra *et al.* (48)	1990	Mean	109.2	115.5	120.7	126.1	131.6	137.8	144.5	150.0	154.0	156.2				
India	ICMR (31)	1972	Mean	106.6	112.6	116.3	122.8	127.1	132.5	140.6	145.5	149.0	152.4	153.1	153.7	154.0	

TABLE X—*Weight (kg) Means, Standard Error and Percentiles for Boys*

Age (Yr)	N	Mean	SE	Percentiles						
				3rd	5th	10th	25th	50th	75th	97th
5.0	450	17.4	0.10	13.8	14.3	14.9	16.0	17.1	18.4	21.5
5.5	277	18.4	0.12	14.5	15.0	15.8	17.0	18.1	19.5	22.7
6.0	175	19.2	0.20	15.2	15.7	16.2	18.0	19.0	20.7	25.4
6.5	128	20.6	0.25	15.7	16.4	17.4	18.6	20.0	21.9	27.7
7.0	235	21.0	0.21	16.2	16.9	18.2	19.4	21.0	22.9	29.7
7.5	213	22.4	0.24	16.8	17.5	18.7	20.0	22.0	23.9	31.6
8.0	295	23.5	0.22	17.5	18.0	19.1	20.7	22.6	25.0	33.5
8.5	275	24.5	0.27	18.2	18.6	19.7	21.3	23.5	26.3	35.5
9.0	338	26.5	0.26	19.2	19.4	20.3	22.0	24.4	27.7	37.7
9.5	348	26.8	0.26	19.9	20.2	21.2	22.9	25.6	29.4	40.1
10.0	425	28.7	0.26	20.9	21.2	22.3	24.1	27.0	31.3	42.7
10.5	612	30.8	0.25	21.9	22.3	23.5	25.5	28.7	33.4	45.4
11.0	621	31.9	0.27	22.9	23.5	24.9	27.1	30.6	35.6	48.2
11.5	761	33.8	0.27	24.1	24.9	26.3	28.9	32.7	37.9	51.1
12.0	755	35.4	0.25	25.3	26.3	27.9	30.7	34.8	40.3	54.1
12.5	889	37.9	0.28	26.7	27.8	29.6	32.7	37.1	42.7	57.1
13.0	771	39.4	0.32	28.1	29.3	31.3	34.7	39.4	45.1	60.0
13.5	829	43.2	0.33	29.6	31.0	33.1	36.8	41.8	47.6	63.0
14.0	754	44.7	0.34	31.2	32.7	34.9	38.8	44.1	50.0	65.9
14.5	743	48.1	0.35	32.9	34.5	36.7	40.9	46.3	52.4	68.7
15.0	628	51.0	0.37	34.6	36.3	38.6	42.8	48.5	54.6	71.4
15.5	528	52.4	0.43	36.5	38.1	40.3	44.7	50.5	56.8	73.9
16.0	461	55.0	0.49	38.5	40.0	42.1	46.5	52.4	58.8	76.3
16.5	393	54.9	0.47	40.6	41.9	43.8	48.1	54.0	60.6	78.5
17.0	288	56.6	0.55	42.8	43.9	45.9	50.0	55.5	62.3	80.5
17.5	177	56.9	0.66	45.2	45.8	46.9	52.0	57.2	63.7	82.2
18.0	87	59.7	1.20	47.6	47.8	48.3	54.0	58.6	64.9	83.6

N = Number of subjects; SE = Standard error.

TABLE XI—*Weight (kg) Means, Standard Error and Percentiles for Girls*

Age (yr)	N	Mean	SE	Percentiles						
				3rd	5th	10th	25th	50th	75th	97th
5.0	381	17.0	0.11	13.6	13.8	14.6	15.6	16.8	18.2	21.1
5.5	245	17.9	0.13	14.0	14.7	15.2	16.0	17.4	18.8	22.2
6.0	241	18.7	0.19	14.1	15.2	15.7	16.4	17.8	19.2	23.7
6.5	251	19.6	0.20	14.4	15.5	16.1	16.9	18.3	19.9	25.4
7.0	294	20.5	0.20	14.8	15.8	16.4	17.3	19.0	20.9	27.5
7.5	319	21.7	0.24	15.3	16.2	16.9	18.0	19.9	22.2	29.8
8.0	328	23.0	0.24	15.9	16.4	17.2	18.7	20.8	23.6	32.3
8.5	349	24.9	0.28	16.4	16.8	17.8	19.6	22.0	25.3	34.9
9.0	399	25.8	0.26	17.1	17.6	18.7	20.7	23.5	27.2	37.7
9.5	429	27.5	0.29	18.3	18.5	19.7	22.1	25.1	29.3	40.5
10.0	487	29.6	0.31	19.5	19.7	21.0	23.6	26.9	31.4	43.4
10.5	452	31.9	0.34	20.9	21.0	22.4	25.3	28.9	33.7	46.4
11.0	503	34.3	0.36	22.3	22.4	24.0	27.1	30.9	36.0	49.3
11.5	490	36.8	0.37	23.7	24.0	25.6	28.9	32.9	38.4	52.2
12.0	435	38.7	0.41	25.1	25.6	27.3	30.8	35.0	40.7	55.1
12.5	489	41.9	0.40	26.5	27.2	29.0	32.6	37.1	42.9	57.9
13.0	455	42.6	0.40	27.9	28.9	30.7	34.5	39.1	45.1	60.7
13.5	456	45.2	0.44	29.3	30.6	32.4	36.2	41.0	47.1	63.2
14.0	391	45.7	0.45	30.7	32.1	34.0	37.8	42.7	48.9	65.7
14.5	350	46.6	0.45	32.1	33.6	35.5	39.3	44.3	50.5	67.9
15.0	291	48.0	0.54	33.4	35.0	36.9	40.6	45.7	51.8	70.0
15.5	204	48.9	0.64	34.6	36.2	38.2	41.7	46.8	52.9	71.8
16.0	176	49.2	0.69	35.7	37.3	39.3	42.5	47.7	53.6	73.3
16.5	182	49.6	0.62	36.7	38.1	40.1	43.0	48.2	54.0	74.6
17.0	116	49.0	0.72	37.6	38.7	40.7	43.3	48.4	53.9	75.6

N = Number of subjects; SE = Standard error.

TABLE XII—*Comparison on Weight (kg) of Indian Boys and Girls (G) with European and NCHS Data*

Country	Place	Author	Year		Age (yr)												
					5	6	7	8	9	10	11	12	13	14	15	16	17
Belgium	Brussels	Vercauteren (12)	1984	B Median	19.0	21.0	23.5	26.0	29.0	32.0	35.5	39.5	44.5	50.0	55.0	60.0	63.5
				G Median	19.0	21.0	23.5	26.0	29.0	32.0	36.0	41.0	46.5	51.0	54.0	55.5	56.5
Czechoslovakia	National	Blaha (13)	1986	B Mean			24.0	26.5	30.0	33.0	37.0	41.0	46.0	53.0	60.0	64.0	68.0
				G Mean			24.0	26.5	30.0	33.0	37.5	42.0	47.0	51.0	54.0	56.0	57.5
Denmark	National	Andersen *et al.* (14)	1982	B Mean	19.3	21.4	24.8	26.5	29.1	32.2	35.3	39.0	43.5	49.2	55.1	60.0	63.6
				G Mean	19.1	21.2	23.7	26.1	28.7	31.8	35.6	40.4	45.6	49.9	53.2	54.8	56.0
Hungary	National	Eiben & Panto (15)	1986	B Mean	18.0	20.5	22.8	25.4	28.6	32.2	35.3	39.5	44.6	51.3	58.0	62.5	65.4
				G Mean	18.0	20.4	22.6	25.0	28.5	31.3	36.4	41.0	47.0	50.1	53.2	54.2	54.8
Netherlands	National	Roede&Van Wieringen (17)	1985	B Mean	19.6	21.7	24.2	26.8	29.8	33.0	36.3	39.9	44.5	50.9	57.1	67.1	65.9
				G Mean	19.3	21.4	24.1	26.9	29.8	33.2	37.2	42.4	47.8	52.1	55.6	57.5	58.5
Norway	Bergen	Waaler (16)	1983	B Mean	19.8	21.9	24.1	26.9	30.0	32.7	36.7	40.2	44.5	50.3	56.3	61.1	65.1
				G Mean	18.9	21.0	23.3	25.9	28.7	32.3	35.8	40.5	45.8	50.1	53.5	55.8	56.6
Sweden	Stockholm	Lindgren & Strandell (18)	1986	B Median			24.0	25.2	29.4	32.8	34.8	39.0	44.0	53.0	56.2		64.4
				G Median			23.7	25.0	28.8	32.7	35.0	42.0	45.9	52.5	54.0		
Poland	Warsaw	Kurniewiez-Witezakowa *et al.* (19)	1983	B Mean	19.2	21.8	24.7	27.0	30.0	33.0	37.0	41.6	46.2	51.6	57.1	62.0	65.0
				G Mean	18.5	20.9	24.0	27.0	29.3	32.5	37.0	41.5	47.0	51.1	53.5	54.5	55.0
Spain	Bilbao	Hernandez *et al.* (20)	1988	B Median	18.8	20.9	23.6	26.1	28.8	31.8	35.2	38.8	43.3	49.1	56.2	61.5	66.0
				G Median	18.4	20.7	23.3	26.3	29.3	32.5	36.4	40.7	45.4	49.7	51.9	53.1	53.5
NCHS	USA (10)		1977	B Mean	18.6	21.3	24.0	26.4	28.8	33.6	36.9	41.9	45.6	54.7	56.9	63.4	69.9
				G Mean	18.1	21.0	22.2	26.3	30.8	32.6	37.6	44.9	48.9	51.8	55.2	56.7	58.0
India		**Present Study**		B Mean	17.4	19.2	21.0	23.5	26.5	28.7	31.9	35.4	39.4	44.7	51.0	55.0	56.6
				G Mean	17.0	18.7	20.5	23.0	25.8	29.6	34.3	38.7	42.6	45.7	48.0	49.2	49.0

TABLE XIII—*NCHS and Present Study Weight (kg) Percentiles for Boys*

Age (yr)	Percentiles											
	3rd		5th		10th		50th			97th		
	NCHS	PS	NCHS	PS	NCHS	PS	NCHS	PS		NCHS	PS	
5.0	14.7	13.8	15.2	14.3	16.0	14.9	18.7	17.1	(20-30)	23.2	21.5	(80-90)
5.5	15.5	14.5	16.0	15.0	16.8	15.8	19.7	18.1		24.7	22.7	
6.0	16.3	15.2	16.8	15.7	17.7	16.2	20.7	19.0	(20-30)	26.2	25.4	(90-95)
6.5	17.1	15.7	17.7	16.4	18.6	17.4	21.7	20.0		27.9	27.7	
7.0	17.9	16.2	18.5	18.9	19.5	18.2	22.9	21.0	(20-30)	29.8	29.7	(95-97)
7.5	18.7	16.8	19.4	17.5	20.4	18.7	24.0	22.0		31.8	31.6	
8.0	19.5	17.5	20.2	18.0	21.3	19.1	25.3	22.6	(10-20)	34.1	33.5	(95-97)
8.5	20.2	18.2	21.0	18.6	22.3	19.7	26.7	23.5		36.5	35.5	
9.0	21.0	19.2	21.9	19.4	23.3	20.3	28.1	24.4	(10-20)	39.2	37.7	(95-97)
9.5	21.8	19.9	22.8	20.2	24.3	21.2	29.7	25.6		42.1	40.1	
10.0	22.7	20.9	23.8	21.2	25.5	22.3	31.4	27.0	(10-20)	45.2	42.7	(90-95)
10.5	23.7	21.9	24.9	22.3	26.7	23.5	33.3	28.7		48.4	45.4	
11.0	24.8	22.9	26.1	23.5	28.1	24.9	35.3	30.6	(20)	51.7	48.2	(90-95)
11.5	26.1	24.1	27.5	24.9	29.7	26.3	37.5	32.7		51.1	51.1	
12.0	27.6	25.3	29.1	26.3	31.5	27.9	39.8	34.8	(20-30)	58.7	54.1	(90-95)
12.5	29.3	26.7	30.9	27.8	33.4	29.6	42.3	37.1		62.3	57.1	
13.0	31.2	28.1	32.9	29.3	35.6	31.3	45.0	39.4	(20-30)	65.9	60.0	(90-95)
13.5	33.4	29.6	35.2	31.0	38.0	33.1	47.8	41.8		69.5	63.0	
14.0	35.9	31.2	37.7	32.7	40.6	34.9	50.8	44.1	(20)	73.2	65.9	(80-90)
14.5	38.4	32.9	40.3	34.5	43.3	36.7	53.8	46.3		76.7	68.7	
15.0	40.9	34.6	42.9	36.3	46.0	38.6	56.7	48.6	(10-30)	80.1	71.4	(80-90)
15.5	43.4	36.5	45.4	38.1	48.5	40.3	59.5	50.5		83.4	73.9	
16.0	45.7	38.5	47.8	40.0	51.0	42.1	62.1	52.4	(10-20)	86.4	76.3	(80-90)
16.5	47.8	40.6	49.9	41.9	53.1	43.8	64.4	54.0		89.2	78.5	
17.0	49.6	42.8	51.7	43.9	54.9	45.9	66.3	55.5	(10-20)	91.6	80.5	(80-90)
17.5	51.0	45.2	53.1	45.8	56.3	46.9	67.8	57.2		93.7	82.2	
18.0	52.0	47.6	54.1	47.8	57.4	48.3	68.9	58.6	(10-20)	95.3	83.6	(80-90)

PS = Present study.
Figures in parentheses depict PS centiles as compared to the NCHS centiles.

TABLE XIV–*NCHS and Present Study Weight (kg) Percentiles for Girls*

Age (yr)	Percentiles											
	3rd		5th		10th		50th			97th		
	NCHS	PS	NCHS	PS	NCHS	PS	NCHS	PS		NCHS	PS	
5.0	14.0	13.6	14.5	13.8	15.2	14.6	17.7	16.8	(30-40)	22.9	21.1	(80-90)
5.5	14.6	14.0	15.1	14.7	15.9	15.2	18.6	17.4		24.3	22.2	
6.0	15.3	14.1	15.8	15.2	16.6	15.7	19.5	17.8	(20-30)	25.8	23.7	(80-90)
6.5	15.9	14.4	16.5	15.5	17.4	16.1	20.6	18.3		27.6	25.4	
7.0	16.7	14.8	17.3	15.8	18.3	16.4	21.8	19.0	(10-20)	29.7	27.5	(90-95)
7.5	17.4	15.3	18.2	16.2	19.3	16.9	23.3	19.9		32.2	29.8	
8.0	18.3	15.9	19.1	16.4	20.4	17.2	24.8	20.8	(10-20)	35.0	32.3	(90-95)
8.5	19.2	16.4	20.2	16.8	21.6	17.8	26.6	22.0		38.0	34.9	
9.0	20.2	17.1	21.3	17.6	22.9	18.7	28.5	23.5	(10-20)	41.3	37.7	(90-95)
9.5	21.3	18.3	22.5	18.5	24.3	19.7	30.5	25.1		44.7	40.5	
10.0	22.5	19.5	23.8	19.7	25.7	21.0	32.5	26.9	(10-20)	48.2	43.4	(90-95)
10.5	23.8	20.9	25.2	21.0	27.3	22.4	34.7	28.9		51.8	46.4	
11.0	25.2	22.3	26.7	22.4	28.9	24.0	37.0	30.9	(10-20)	55.3	49.3	(80-90)
11.5	26.7	23.7	28.3	24.0	30.7	25.6	39.2	32.9		58.7	52.2	
12.0	28.3	25.1	29.9	25.6	32.5	27.3	41.5	35.0	(10-20)	62.0	55.1	(80-90)
12.5	30.0	26.5	31.7	27.2	34.4	29.0	43.8	37.1		65.1	57.9	
13.0	31.7	27.9	33.5	28.9	36.3	30.7	46.1	39.1	(10-20)	68.0	60.7	(80-90)
13.5	33.5	29.3	35.3	30.6	38.2	32.4	48.3	41.0		70.7	63.2	
14.0	35.2	30.7	37.1	32.1	40.0	34.0	50.3	42.7	(10-20)	73.0	65.7	(80-90)
14.5	36.8	32.1	38.8	33.6	41.7	35.5	52.1	44.3		75.1	67.9	
15.0	38.3	33.4	40.3	35.0	43.2	36.9	53.7	45.7	(10-20)	76.8	70.0	(90-95)
15.5	39.7	34.6	41.6	36.2	44.6	38.2	55.0	46.8		78.2	71.8	
16.0	40.8	35.7	42.7	37.3	45.6	39.3	55.9	47.7	(10-20)	79.1	73.3	(90-95)
16.5	41.6	36.7	43.5	38.1	46.4	40.1	56.4	48.2		79.7	74.6	
17.0	42.3	37.6	44.1	38.7	46.9	40.7	56.7	48.4	(10-20)	80.0	75.6	(90-95)

PS = Present study.
Figures in parentheses depict PS centiles as compared to the NCHS centiles.

TABLE XV—*Comparison of Weight (kg) of Indian and Asiatic Boys (B) and Girls (G)*

Country	Place	Author	Year		Age (yr)													
					5	6	7	8	9	10	11	12	13	14	15	16	17	18
China (PRC)		Zhang (22)	1977 & 1988	GB Mean	17.4	19.2	21.0	23.1	25.3	27.2	30.1	33.0	36.9	42.0	46.9	50.9	53.2	
		Zhang & Huang (23)		G Mean	16.8	18.7	20.3	22.4	24.6	27.0	30.5	34.7	38.5	42.3	45.4	47.4	48.6	
Hong Kong	Chinese	Fung *et al.* (24)	1985	B Median			21.7	23.7	26.5	30.0	33.9	38.0	42.0	46.0	49.5	52.6	55.1	57.0
				G Median			21.5	22.8	25.7	29.5	33.7	37.7	41.3	44.2	46.4	47.7	48.4	
		Leung *et al.* (25)	1987	B Median	16.9	18.7	20.8	20.8										
		Takaishi (26)		G Mean	16.4	18.2	19.9											
Japan	National	Kikuta & Takaishi (26)	1987	B Mean	17.5	20.0	22.5	25.0	28.0	31.5	35.0	40.0	45.0	50.5	56.0	59.0	61.0	
				G Mean	17.0	19.0	22.0	25.0	28.0	31.0	35.0	41.0	45.0	43.0	51.0	52.5	53.0	
Japan	Koreans	Kin (27)	1982	B Mean			22.0	25.0	28.0	31.0	34.2	39.0	45.0	49.5	53.7	57.8	58.8	
				G Mean			22.0	24.0	27.7	33.8	36.0	40.0	43.5	46.8	49.2	50.0	51.0	
Thailand	Bangkok	Khanjanasthti *et al.* (28)	n.d.	B Median	17.2	19.9	21.5	23.8	27.5	31.1	32.7	35.6	39.9	44.2	47.0	50.2	52.1	54.0
				G Median	17.6	18.8	21.0	23.5	25.9	29.1	33.1	37.0	40.3	45.3	46.4	48.4	48.6	
Taiwan	Chang-hua	Lai & Yaung (29)	1987	B Mean						30.2	33.3	35.6	40.6	45.2	50.9	53.6	55.4	55.0
		Yaung & Lai (30)		G Mean						28.9	31.8	37.4	40.2	42.6	46.1	46.3	47.3	
India		Present study		B Mean	17.4	19.2	21.0	23.5	26.5	28.7	31.9	35.4	39.4	44.7	51.0	55.0	56.6	59.7
				G Mean	17.0	18.7	20.5	23.0	25.8	29.6	34.3	38.7	42.6	45.7	48.0	49.2	49.0	

TABLE XVI—*Weight (kg) of Indian Boys (B) and Girls (G) of Upper Socio-Economic Status*

Place	Author	Year		Age (yr)														
				5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Delhi	Agarwal *et al.* (35)	1970	B Mean	16.5	18.2	20.3	22.6	24.9	28.0	30.6	33.8	38.6	41.0	46.2	50.8	50.4	49.8	
			G Mean	15.8	17.9	19.3	22.3	23.5	27.7	30.1	33.2	36.7	40.9	43.1	43.8	47.2		
	Banik *et al.* (36)	1973	B Mean	18.6	20.9	23.6	26.1	28.9	31.6	34.1	36.6	40.5	47.8					
			G Mean	17.9	19.8	22.9	25.5	27.8	30.4	34.5	39.1	42.6	47.2					
	Tripathi *et al.* (37)	1974	B Percentile						27.5	28.5	30.4	34.6	40.4	34.1	46.2	49.1		
			G Percentile						26.6	30.0	34.8	38.4	40.6	42.1	43.5	42.9		
	Tripathi *et al.* (38)	1976	B Percentile						30.3	32.8	36.1	39.8	46.2	48.0	48.4	52.3		
			G Mean						29.4	32.7	38.3	41.4	43.1	43.6	46.2	47.8		
	Rath *et al.* (39)	1978	B Percentile	18.7	20.5	22.6	25.8	28.1	30.3	34.8	37.7	44.6	50.9	53.2				
			G Percentile	17.7	21.4	22.6	25.5	26.8	33.5	36.4	42.0	45.2	46.4	48.9				
	Ghai (40)	1978	B Percentile	17.6	18.9	21.0	23.9	25.5	27.5	31.0	34.3	41.5	44.0	48.4				
	Banik *et al.* (41)	1982	B Mean	19.2	21.6	24.1	27.1	29.2	32.0	35.0	36.9	41.2	48.0					
			G Mean	18.1	20.1	25.0	28.3	28.1	31.2	35.6	40.0	43.1	47.7					
Varanasi	Agarwal *et al.* (42)	1974	B Mean					25.5	27.4	30.8	35.4	37.0	42.0	48.3	50.3	50.0		
			G Mean				24.8	26.9	28.0	33.6	39.0	40.4	43.7	46.9	44.0	42.8		
	Tripathi *et al.* (37)	1974	B Percentile						27.4	28.8	32.1	36.3	42.4	45.6	47.8	49.1		
			G Percentile						27.7	30.4	35.3	37.9	40.8	41.8	41.4	44.4		
	Devi (46)	1982	G Mean					26.7	29.6	33.7	37.4	42.4	45.2	46.5	45.6	48.4		
	Pereia *et al.* (47)	1983	G Mean						28.8	32.7	37.0	40.3	42.8	44.9	46.0	45.9		
	Katiyar *et al.* (43)	1985	B Mean						27.0	30.3	33.8	38.1	43.3	47.9	51.8	52.9	54.8	
	Kumar (49)	1984	B Mean		18.9	20.3	22.2	24.9		25.0								
			G Mean		18.0	19.8	21.5	25.9										

(Contd.)

TABLE XVI *(Continued).*

Place	Author	Year		Age (yr)													
				5	6	7	8	9	10	11	12	13	14	15	16	17	18
Jabalpur	Kaul *et al.* (44)	1976	B Mean					28.3	29.6	31.8	35.6	40.5	41.5	45.1	51.9	48.8	63.3
			G Mean					26.5	27.9	35.9	35.7	40.7	42.3	44.4	46.9	46.2	
Ludhiana	Pathak (45)	1989	B Mean		20.7	23.9	27.7	28.8	34.2	34.2	38.7	44.8	51.3	54.3	57.9		
			G Mean		21.9	22.8	26.5	27.8	33.8	36.9	41.7	45.8	47.7	50.2	52.4		
Delhi			G Mean					28.9	31.9	35.8	40.8	44.6	47.2	48.2	49.7	50.2	
Bombay	NFI, Report (33)	1989	G Mean					26.6	30.9	34.3	38.5	42.2	44.9	46.7	47.4	47.9	
Coimbatore			G Mean					26.9	29.8	33.5	37.3	40.8	43.9	45.4	46.9	48.1	
Calcutta			G Mean							33.3	36.9	40.7	44.5	46.6	48.8	46.9	
				Age (yr)													
				5.5	6.5	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5	17.5	18.5
India	Raghavan *et al.* (32)	1971	B Mean	19.3	22.1	24.5	26.4	30.0	32.3	35.3	38.8	42.9	48.3	52.2	55.5		
			G Mean	18.7	21.6	24.5	26.0	29.8	33.6	37.2	43.0	44.5	46.7	48.8	49.0		
India	ICMR (31)	1972	B Mean	17.0	18.7	21.0	22.0	24.7	25.9	31.0	32.5	39.9	44.5	45.7	49.6	52.1	52.7
			G Mean	16.1	18.1	19.7	21.6	23.6	26.7	31.0	35.2	39.3	41.6	43.4	45.4	44.6	

TABLE XVII—*Means and Standard Error of Sitting Weight (cm) and Leg Length (cm) According to Sex Different Age Points*

Age (yr)	N	Boys					Girls			
		Sitting height		Leg length			Sitting height		Leg Length	
		Mean	SE	Mean	SE		Mean	SE	Mean	SE
6.0	175	61.7	0.30	55.1	0.33	241	60.6	0.23	53.5	0.30
6.5	123	62.3	0.46	56.1	0.59	251	61.5	0.17	55.3	0.22
7.0	235	63.1	0.27	57.3	0.29	294	62.4	0.20	57.1	0.22
7.5	213	64.1	0.21	58.6	0.27	319	63.4	0.17	58.7	0.2
8.0	295	65.4	0.18	60.1	0.22	328	64.4	0.17	60.2	0.21
8.5	275	65.8	0.21	61.5	0.22	349	65.9	0.17	62.4	0.22
9.0	338	66.9	0.18	63.1	0.22	399	67.2	0.17	64.1	0.20
9.5	348	68.1	0.19	64.8	0.22	429	68.9	0.18	65.6	0.19
10.0	425	69.3	0.16	66.5	0.20	487	69.8	0.17	67.2	0.19
10.5	612	70.6	0.14	68.2	0.17	452	71.2	0.18	68.6	0.21
11.0	621	71.9	0.15	70.0	0.19	503	72.5	0.17	69.9	0.20
11.5	761	73.2	0.14	71.1	0.17	490	73.8	0.18	71.1	0.19
12.0	755	74.6	0.15	73.4	0.17	435	75.1	0.19	72.2	0.19
12.5	889	75.9	0.15	75.0	0.16	489	76.2	0.19	73.2	0.18
13.0	771	77.2	0.16	76.5	0.18	455	77.3	0.19	74.0	0.19
13.5	829	78.5	0.16	77.9	0.17	456	78.3	0.25	74.7	0.20
14.0	754	79.8	0.17	79.2	0.17	391	79.2	0.17	75.2	0.21
14.5	743	81.0	0.16	80.4	0.17	350	79.9	0.17	75.5	0.21
15.0	628	82.2	0.16	81.4	0.16	291	80.4	0.20	75.7	0.23
15.5	528	83.3	0.17	82.2	0.18	204	80.8	0.22	75.7	0.28
16.0	461	84.3	0.17	82.8	0.20	176	81.0	0.24	75.8	0.28
16.5	393	85.2	0.18	83.2	0.21	192	81.0	0.22	75.8	0.28
17.0	288	86.0	0.22	83.3	0.26	116	81.0	0.32	75.8	0.38
17.5	177	86.7	0.28	83.3	0.30					
18.0	87	87.2	0.37	83.3	0.45					

N = Number of subjects; SE = Standard error.

TABLE XVIII—*Comparison of Mean Sitting Heght (cm) of Indian Boys (B) and Girls (6) with European and Asian Children*

Country	Place	Author	Year		Age (yr)													
					5	6	7	8	9	10	11	12	13	14	15	16	17	18
Hungary	National	Eiben &Panto(15)	1986	B Mean	64.1	64.4	67.8	69.1	71.3	73.4	75.2	77.4	80.3	84.0	87.3	89.6	90.9	91.7
				G Mean	60.9	63.9	66.3	68.5	70.6	73.0	75.8	78.9	81.9	84.0	85.3	86.0	86.0	
Norway	Bergen	Waaler (16)	1983	B Mean	63.5	65.9	68.2	70.3	72.8	74.6	76.5	78.3	80.7	84.8	87.8	90.4		
				G Mean	61.9	64.7	76.4	69.2	71.6	73.9	75.9	79.1	82.3	85.1	86.6	87.7		
Spain	Bilbao	Hernandez *et al.* (20)	1988	G Mean	61.5	64.3	66.8	69.2	71.1	73.3	75.8	78.4	81.0	83.3				
Nether-lands	Coster-wolde	Grever (54)	1988	G Median	64.1	66.7	69.0	71.2	73.3	75.6	78.2	81.1	84.4	86.8	88.3	89.4	90.3	
Beligium	Flemish	Simonser *al.* (55)	1990	G Mean		64.0	66.0	68.4	70.5	72.9	75.3	78.3	81.4	83.9	85.3	86.1	86.9	
China (PRC)		Zhang (22)	1977	B Mean	61.5	64.5	66.6	68.7	70.7	72.3	74.4	76.7	79.5	83.0	83.6	88.8	90.3	
		Zhang & Huang (23)	1988	G Mean	60.6	63.8	65.8	68.2	70.2	72.5	75.3	78.4	80.7	82.6	84.1	85.0	85.5	
Japan		Kikuta & Takaishi (26)	1987	B Mean		64.5	66.5	69.0	71.0	73.5	75.5	78.5	82.0	85.5	88.0	90.0	90.5	
				G Mean		63.5	66.0	68.5	71.0	74.0	77.0	80.0	82.5	84.0	85.0	85.0	85.0	
Thailand		Khajanasthti *et al.* (28)		B Median	58.7	60.2	61.8	63.5	67.7	69.7	70.4	72.5	78.4	80.5	81.5	85.5	86.4	88.0
				G Median	56.7	58.9	61.2	63.3	66.0	67.7	71.2	74.6	76.8	78.7	79.7	79.9	82.5	
India	Delhi	Rath *et al.* (39)	1978	B Mean	61.4	63.1	66.0	68.4	70.0	71.4	73.2	76.0	79.1	83.1	86.8			
				G Mean	60.0	63.3	65.1	67.3	69.1	73.4	74.5	78.4	80.0	81.7	82.7			
India	Punjab	Singh (56)	1970	B Mean							71.5	74.5	77.2	80.2	82.4	85.9	87.1	87.9
India		Present study		B Mean		61.7	63.1	65.4	66.9	69.3	71.9	74.6	77.2	79.8	82.2	84.3	86.0	87.2
				G Mean		60.6	62.4	64.4	67.2	69.8	72.5	75.1	77.3	79.2	80.4	81.0	81.0	
				Age (yr)	5.5	6.5	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5	17.5	
India		ICMR (31)	1972	B Mean	60.0	61.6	64.5	65.2	67.6	69.9	71.9	73.2	77.9	82.0	82.8	84.1	86.5	
				G Mean	53.6	61.0	62.5	65.5	67.0	69.1	72.9	75.1	77.0	79.2	80.2	81.4		
India	Chandigarh	Qamra *etal.* (48)	1990	G Mean	59.7	62.4	64.7	67.0	69.6	72.1	75.2	78.2	80.4	82.0				

TABLE XIX—*Biacromial and Bicristal Diameter (cm) Means and Standard Error for Boys (B) and Girls (G) at Different Age Points*

Age (yr)	Boys N	Boys Biacromial Mean	Boys Biacromial SE	Boys Bicristal Mean	Boys Bicristal SE	Girls N	Girls Biacromial Mean	Girls Biacromial SE	Girls Bicristal Mean	Girls Bicristal SE
6.0	100	25.1	0.13	17.6	0.11	184	24.4	0.12	17.3	0.09
6.5	101	25.4	0.17	17.7	0.11	237	24.8	0.10	17.4	0.10
7.0	194	25.8	0.12	18.0	0.11	261	25.3	0.10	17.7	0.08
7.5	182	26.2	0.11	18.3	0.11	291	25.8	0.09	18.0	0.14
8.0	286	26.7	0.09	18.8	0.08	325	26.3	0.09	18.4	0.09
8.5	267	27.5	0.11	18.9	0.09	345	27.0	0.10	18.9	0.08
9.0	336	27.5	0.09	19.3	0.08	393	27.6	0.09	19.4	0.08
9.5	345	28.0	0.09	19.7	0.09	417	28.2	0.09	20.0	0.09
10.0	421	28.6	0.09	20.1	0.08	465	28.8	0.10	20.5	0.09
10.5	600	29.2	0.08	20.5	0.07	437	29.4	0.10	21.1	0.10
11.0	603	29.8	0.09	21.0	0.08	482	30.0	0.11	21.7	0.10
11.5	734	30.4	0.08	21.4	0.07	466	30.6	0.10	22.3	0.12
12.0	732	31.0	0.08	21.9	0.08	428	31.2	0.11	22.8	0.12
12.5	834	31.6	0.08	22.3	0.08	481	31.7	0.10	23.4	0.11
13.0	742	32.3	0.09	22.8	0.10	451	32.2	0.09	23.9	0.11
13.5	774	32.9	0.09	23.2	0.08	453	32.6	0.09	24.3	0.12
14.0	700	33.5	0.10	23.6	0.08	388	33.0	0.11	24.7	0.12
14.5	691	34.1	0.09	24.4	0.08	346	33.3	0.10	25.1	0.12
15.0	596	34.7	0.09	24.4	0.09	286	33.6	0.12	25.3	0.13
15.5	513	35.3	0.10	24.8	0.10	203	33.7	0.14	25.5	0.14
16.0	448	35.9	0.11	25.1	0.11	172	33.8	0.13	25.5	0.15
16.5	347	36.4	0.11	25.4	0.10	181	33.8	0.14	25.5	0.15
17.0	242	36.9	0.14	25.6	0.13	113	33.8	0.15	25.5	0.15
17.5	173	37.4	0.15	25.8	0.17					
18.0	84	37.9	0.22	26.0	0.29					

N = Number of subjects; SE = Standard error.

TABLE XX—*Comparison of Mean Diacromial Diameter (cm) of Indian Boys (B) and Girls (6) European and Asian Data*

Country	Place	Author	Year		Age (yr)													
					5	6	7	8	9	10	11	12	13	14	15	16	17	18
Hungary	National	Eiben & Panto (15)	1986	B Mean	24.5	25.9	27.0	28.2	29.3	30.4	31.4	32.5	34.0	35.8	37.6	38.8	39.6	40.1
				G Mean	24.4	25.7	27.0	28.0	29.0	30.2	31.6	33.0	34.3	35.1	35.6	35.9	36.0	
Norway	Bergen	Waaler (16)	1983	B Mean	25.0	26.2	27.3	28.4	29.4	30.4	31.4	32.5	33.6	35.7	37.2	38.4		
				G Mean	24.6	25.8	26.9	27.8	28.8	30.1	31.0	32.2	33.5	35.0	35.7	36.6		
Netherlands		Costerwolde Gerver (54)	1988	B Median	25.0	26.2	27.3	28.3	29.3	30.3	31.3	32.3	33.6	35.2	37.0	38.6	39.6	
Poland	Warsaw	Kurniewcz-witczakowa (19)	1982	B Mean	24.7	26.2	27.2	28.2	29.0	29.9	31.0	32.2	33.9	35.7	37.1	37.9	38.4	38.7
Hongkong		Chang (58)	1969	B Mean		23.8	24.8	25.8	26.8	27.7	28.7	29.8	31.5	33.4	35.0	36.2	36.9	37.4
				G Mean		23.9	24.7	25.6	26.6	27.8	29.1	30.5	32.0	33.1	33.6	33.9	34.0	34.1
Singapore		Wong *et al.* (59)	1972	B Mean		23.9	24.5	25.6	26.5	27.5	28.5	29.4	30.5	32.5				
				G Mean		23.9	24.7	25.3	26.5	27.8	29.1	30.5	31.3	31.9				
India		Present study		B Mean		25.1	25.8	26.7	27.5	28.6	29.8	31.0	32.3	33.5	34.7	35.9	36.9	37.9
				G Mean		24.4	25.3	26.3	27.6	28.8	30.0	31.2	32.2	33.0	33.6	33.8	33.8	

TABLE XXI—*Comparison of Mean Bicristal Diameter (cm) of Indian Boys (B) and Girls (G) with European and Asian Data*

Country	Place	Author	Year		Age (yr)													
					5	6	7	8	9	10	11	12	13	14	15	16	17	18
Hungary	National	Eiben & Panto (15)	1986	B Mean	17.5	18.5	19.1	19.9	20.6	21.5	22.1	22.9	24.1	25.2	26.4	27.1	27.5	27.6
				G Mean	17.4	18.3	18.9	19.6	20.5	21.4	22.6	23.7	25.0	25.7	26.3	26.7	26.8	
Norway	Bergen	Waaler (16)	1983	B Mean	18.1	18.8	19.5	20.3	21.2	21.8	22.5	23.4	24.3	25.8	26.8	27.5		
Netherlands		Costerwolde Grever (54)	1988	B Median	18.0	18.8	19.6	20.3	21.0	21.7	22.4	23.1	24.0	25.2	26.4	27.4	27.8	
Poland	Warsaw	Kurniewcz-witczakowa (19)	1983	B Mean	17.9	18.8	19.6	20.2	21.0	21.7	22.5	23.2	24.2	25.4	26.5	27.2	27.7	27.8
Hongkong		Chang (58)	1969	B Mean		17.7	18.3	19.0	19.6	20.2	21.0	21.8	23.0	24.2	25.3	25.9	26.4	26.4
				G Mean		17.6	18.1	18.8	19.5	20.5	21.6	22.8	24.1	25.2	26.0	26.3	26.4	
Singapore		Wong *et al.* (59)	1972	B Mean		17.5	18.0	18.5	19.4	20.2	21.0	21.5	22.3	22.6				
				G Mean		17.8	18.1	18.5	19.5	20.7	22.3	23.8	24.4	24.9				
Thailand	Bangkok	Khanjanasthti *et al.* (28)	n.d.	B Median		16.6	16.8	17.4	18.1	18.9	19.8	21.1	21.7	22.5	22.9	23.8	23.1	24.3
				G Mean		16.2	17.2	17.8	18.2	19.0	19.8	21.3	21.8	23.2	23.4	23.0	23.4	
India	ICMR (31)		1972	B Mean		17.1	17.6	18.4	18.8	19.4	20.4	21.1	21.3	23.2	24.4	24.8	25.2	26.1
						16.6	17.4	18.2	18.7	19.8	20.2	21.9	22.8	24.0	24.8	25.4	25.8	26.0
India	ChandigarhQaara *et al.* (48)		1990	G Mean		17.5	18.2	18.9	19.8	20.7	21.9	23.3	24.8	26.2	27.3			
India	Present study			B Mean			17.7	18.3	19.9	19.7	20.5	27.4	22.3	23.2	24.0	24.8	25.4	25.8
				G Mean			17.4	18.0	18.9	20.0	21.1	22.3	23.4	24.3	25.1	25.5	25.5	

TABLE XXII—*Midarm Circumference (cm) Means, Standard Error and Percentiles for Boys*

Age (yr)	N	Mean	SE	Percentiles						
				3rd	5th	10th	25th	50th	75th	97th
6.0	175	16.0	0.10	13.8	14.1	14.6	15.3	16.0	16.7	18.3
6.5	128	16.1	0.11	13.8	14.1	14.6	15.3	16.0	16.8	19.1
7.0	235	16.2	0.11	13.8	14.2	14.6	15.3	16.1	17.0	19.9
7.5	213	16.4	0.12	14.0	14.3	14.7	15.3	16.2	17.2	20.7
8.0	295	16.6	0.11	14.1	14.5	14.8	15.5	16.3	17.4	21.7
8.5	275	16.9	0.11	14.1	14.5	14.9	15.6	16.6	17.7	21.7
9.0	338	17.1	0.11	14.3	14.6	15.0	15.7	16.8	18.1	22.2
9.5	348	17.5	0.11	14.4	14.8	15.2	15.9	17.1	18.4	22.7
10.0	425	17.8	0.10	14.6	15.0	15.4	16.2	17.4	18.8	23.2
10.5	612	18.1	0.10	14.9	15.2	15.7	16.2	17.7	19.3	23.7
11.0	621	18.5	0.10	15.1	15.5	16.0	16.8	18.0	19.7	24.2
11.5	761	18.9	0.09	15.4	15.8	16.3	17.1	18.4	20.2	25.0
12.0	755	19.3	0.09	15.7	16.0	16.6	17.5	18.8	20.7	25.0
12.5	889	19.7	0.09	16.0	16.3	16.9	17.8	19.2	21.2	25.5
13.0	771	20.1	0.09	16.3	16.7	17.3	18.2	19.6	21.7	25.9
13.5	829	20.6	0.10	16.6	17.0	17.6	18.6	20.1	22.2	26.4
14.0	754	21.0	0.10	17.0	17.3	18.3	19.0	20.5	22.7	26.9
14.5	743	21.4	0.10	17.3	17.7	18.5	19.4	21.0	23.2	27.4
15.0	628	21.9	0.11	17.7	18.0	18.7	19.9	21.4	23.7	27.9
15.5	528	22.3	0.12	18.0	18.4	19.1	20.3	21.9	24.1	28.4
16.0	461	22.7	0.14	18.4	18.7	19.4	20.7	22.4	24.6	29.0
16.5	393	23.2	0.13	18.7	19.1	19.8	21.1	22.9	25.0	29.7
17.0	288	23.6	0.17	19.1	19.5	20.2	21.5	23.3	25.4	30.3
17.5	177	24.0	0.18	19.4	19.8	20.5	21.9	23.3	25.7	31.1
18.0	87	24.3	0.34	19.8	20.2	20.8	22.3	24.3	26.0	31.9

N = Number of children : SE = Standard error.

TABLE XXIII–*Midarm Circumference (cm) Means, Standard Error and Percentiles for Girls*

Age (yr)	N	Mean	SE	Percentiles						
				3rd	5th	10th	25th	50th	75th	97th
6.0	241	16.0	0.10	13.6	14.0	14.3	15.0	15.9	16.8	19.4
6.5	251	16.2	0.11	13.7	14.0	14.3	15.1	16.0	17.2	20.1
7.0	294	16.5	0.10	13.8	14.1	14.4	15.2	16.2	17.3	20.8
7.5	319	16.8	0.13	13.9	14.1	14.6	15.4	16.4	17.8	21.5
8.0	328	17.2	0.12	14.0	14.1	14.9	15.6	16.8	18.2	22.2
8.5	349	17.5	0.13	14.3	14.7	15.0	15.9	17.1	18.7	22.8
9.0	399	17.9	0.11	14.6	14.9	15.3	16.2	17.4	19.0	23.4
9.5	429	18.4	0.12	14.9	15.2	15.6	16.6	17.9	19.5	24.0
10.0	487	18.8	0.11	15.2	15.5	16.0	16.9	18.3	20.0	24.6
10.5	452	19.3	0.12	15.5	15.8	16.3	17.3	18.8	20.5	25.1
11.0	503	19.8	0.12	15.8	16.1	16.7	17.8	19.2	21.2	25.7
11.5	490	20.2	0.12	16.2	16.5	17.0	18.2	19.7	22.0	26.2
12.0	435	20.7	0.14	16.5	16.8	17.4	18.6	20.2	22.7	26.6
12.5	489	21.1	0.13	16.8	17.1	17.8	19.0	20.6	23.3	27.1
13.0	455	21.5	0.13	17.2	17.5	18.1	19.4	21.1	23.6	27.5
13.5	456	21.9	0.15	17.5	17.8	18.5	19.8	21.5	24.0	28.2
14.0	391	22.2	0.15	17.7	18.1	18.8	20.1	21.8	24.0	28.2
14.5	350	22.5	0.14	18.0	18.4	19.1	20.4	22.1	24.2	28.5
15.0	291	22.7	0.17	18.2	18.6	19.3	20.7	22.4	24.5	28.8
15.5	204	22.9	0.20	18.4	18.8	19.5	20.9	22.6	24.5	29.0
16.0	176	23.0	0.21	18.6	19.0	19.6	21.0	22.7	24.5	29.3
16.5	182	23.0	0.21	18.7	19.2	19.7	21.1	22.8	24.5	29.5
17.0	116	23.0	0.25	18.8	19.3	19.7	21.1	22.8	24.5	29.6

N = Number of subjects; SE = Standard error.

TABLE XXIV—*Comparison of Mean Mid-arm Cricumference (cm) of Indian Boys (B) and Girls (G) with European and Asian Data*

Country	Place	Author	Year		Age (yr)													
					5	6	7	8	9	10	11	12	13	14	15	16	17	18
Hungary	National	Eiben & Panto (15)	1986	B Mean	17.0	17.4	17.8	18.5	19.3	20.1	20.8	21.6	22.5	23.8	25.2	26.2	26.9	25.5
Norway	Bergen	Waller (16)	1983	B Mean	17.3	17.6	18.0	18.8	19.7	20.3	21.2	21.9	22.4	23.5	24.3	25.6		
Poland	Warsaw	Kurniewicz-witczakowa (19)	1983	B Mean	17.3	17.9	18.6	19.2	19.9	20.6	21.4	22.1	23.0	23.8	24.9	26.1	26.8	26.8
Netherlands	Coster-wolde	Grever (54)	1988	B Mean	17.7	17.9	18.2	18.8	19.5	20.0	20.7	21.4	22.5	23.5	24.5	25.5	26.3	
Spain	Bibao	Hernandez *et al.* (20)	1988	B Median	17.2	17.4	17.8	18.2	19.2	20.0	20.4	21.0	21.8	22.5	23.9	25.0	26.0	26.6
USA		Anthony & Robert (60)	1980	B Mean		16.8	17.4	18.2	19.0	19.4	20.3	21.2	22.6	23.2	24.4	26.4	26.2	
				G Mean		17.0	17.7	18.0	18.6	19.8	20.5	21.9	22.0	23.5	23.3	23.8	22.9	
Bahrain		Musaiger *et al.* (61)	1989	B Mean		15.3	15.5	16.3	16.7	17.3	18.1	18.9	20.0	21.2	22.6	23.2	24.1	25.2
				G Mean		16.2	15.8	16.9	16.7	18.3	19.4	20.4	21.3	22.5	22.9	22.7	23.7	
Egypt		Kenouz Nubian (62)	1978	B Mean		15.3	15.4	15.8	15.8	16.7	17.4	17.4						
				G Mean		15.2	15.6	15.9	16.6	16.7	18.4	18.7						
Arab Nubian			1978	B Mean		15.2	15.0	15.4	15.7	16.4	16.4	17.1						
				G Mean		14.9	15.2	15.5	15.7	17.6	17.7	18.6						
Libya	Tripoli	Abounaja (63) Gilmour	1985	B Median		16.7	16.9	17.6	18.1	18.8	19.4	20.6	21.1	22.0	22.9	23.7	24.2	
				G Median		16.7	17.1	17.6	18.1	19.2	20.0	21.3	22.2	23.6	24.3	24.8	25.3	
India	Delhi	Banik (36)	1973	B Mean	16.1	16.3	17.4	17.9	18.6	20.0	20.4	20.9	21.5	22.6				
				G Mean	15.9	16.0	17.2	17.8	18.5	19.6	20.9	21.5	22.7	23.3				

(Contd.)

TABLE XXIV *(Continued)*

Country	Place	Author	Year		Age (yr) 5	6	7	8	9	10	11	12	13	14	15	16	17	18
India	Delhi	Rath *et al.* (39)	1978	B Mean	16.7	16.7	17.6	18.2	18.9	19.4	20.0	20.4	21.5	23.3	23.8			
				G Mean	16.3	17.7	17.6	18.6	18.8	19.6	20.7	21.1	22.1	22.0	23.8			
	Vara-nasi	Mishra (64)	1983	B Mean						17.9	18.9	20.1	20.8	22.2	23.5	24.3	25.4	25.6
				G Mean						18.3	18.4	18.8	21.3	21.3	21.8	22.6		
		Devi (46)	1982	G Mean					18.2	18.7	19.1	19.8	21.9	21.2	21.9	21.8	22.5	
	Lud-hiana	Pathak (45)	1989	B Mean		16.7	17.8	18.4	19.0	19.5	20.1	20.7	21.7	25.2	23.9	24.7		
				G Mean		17.9	18.0	18.8	19.0	19.5	20.8	21.0	22.1	22.6	23.2	23.6		
India		Present study		B Mean		16.0	16.2	16.6	17.1	17.8	18.5	19.3	20.1	21.0	21.9	22.7	23.6	24.3
				G Mean		16.0	16.5	17.2	17.9	18.8	19.8	20.7	21.5	22.2	22.7	23.0	23.0	

					Age (yr) 5.5	6.5	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5	17.5	18.5
India		Raghavan *et al.* (65)	1974	B Mean	16.4	16.7	17.4	17.7	18.6	19.0	19.6	20.3	21.1	22.2	23.2	24.1	24.8	
				G Mean	16.3	17.0	17.7	18.0	18.8	19.3	19.8	21.0	21.4	22.1	22.6	23.2		
	Vara-nasi	Pereira *et al.* (47)	1983	G Mean					18.5	18.9	19.1	20.4	20.7	21.4	21.9			
	Chandi-garh	Qamra *et al.* (48)	1990	G Mean	15.2	15.8	16.5	17.0	17.8	18.6	19.7	20.7	21.5	22.1				

TABLE XXV—*Triceps (mm) and Biceps (mm) Skin Fold Thickness Means Standard Error of Boys and Girls*

Age (yr)	Boys N	Boys Triceps Mean	Boys Triceps SE	Boys Biceps Mean	Boys Biceps SE	Girls N	Girls Triceps Mean	Girls Triceps SE	Girls Biceps Mean	Girls Biceps SE
6.0	111	6.2	0.21	4.0	0.17	184	7.6	0.21	4.5	0.13
6.5	118	6.9	0.25	4.4	0.15	241	8.1	0.22	4.8	0.12
7.0	229	7.5	0.24	4.8	0.16	291	8.6	0.21	5.2	0.14
7.5	208	8.0	0.24	5.1	0.18	316	9.2	0.24	5.7	0.19
8.0	295	8.3	0.21	5.4	0.17	325	9.9	0.24	6.5	0.19
8.5	275	9.0	0.22	5.6	0.16	348	10.2	0.28	6.1	0.18
9.0	338	9.4	0.22	5.8	0.18	397	10.8	0.23	6.4	0.16
9.5	347	9.8	0.24	5.9	0.17	428	11.3	0.25	6.7	0.17
10.0	423	10.0	0.22	6.0	0.16	486	11.9	0.23	7.1	0.15
10.5	605	10.3	0.22	6.1	0.15	450	12.4	0.25	7.4	0.20
11.0	605	10.5	0.22	6.1	0.15	499	13.0	0.25	7.6	0.18
11.5	741	10.6	0.21	6.2	0.14	488	13.5	0.25	7.9	0.19
12.0	732	10.7	0.21	6.2	0.14	435	13.9	0.29	8.1	0.22
12.5	839	10.8	0.19	6.1	0.13	488	14.4	0.27	8.3	0.19
13.0	740	10.8	0.20	6.1	0.12	454	14.8	0.28	8.5	0.19
13.5	774	10.9	0.19	6.0	0.13	453	15.1	0.30	8.7	0.19
14.0	703	10.9	0.19	6.0	0.12	391	15.4	0.29	8.8	0.20
14.5	694	10.8	0.20	5.9	0.13	349	15.7	0.29	8.8	0.20
15.0	601	10.8	0.23	5.8	0.15	289	15.9	0.38	8.8	0.26
15.5	512	10.7	0.23	5.7	0.15	204	16.0	0.42	8.7	0.28
16.0	449	10.6	0.27	5.7	0.17	175	16.0	0.47	8.6	0.32
16.5	349	10.5	0.26	5.6	0.17	182	16.0	0.49	8.4	0.36
17.0	242	10.4	0.31	5.5	0.19	115	16.0	0.50	8.2	0.36
17.5	173	10.3	0.33	5.5	0.19					
18.0	84	10.2	0.55	5.4	0.37					

N = Number of subjects; SE = Standard error.

TABLE XXVI—*Comparison of Mean Triceps Skinfold Thickness (mm) of Indian Boys (B) and Girls (G) with European and Asiatic Children*

Country	Place	Author	Year		Age (yr)												
					6	7	8	9	10	11	12	13	14	15	16	17	18
European																	
U.K.	Leeds	Buckler (66)	1990	B Mean					9.4	9.6	9.7	9.1	8.7	7.8	7.8		
				G Mean					12.5	13.1	12.7	12.6	13.7	13.8	14.3		
Asian																	
Egypt	Kenouz Nubian	El-Nofely (62)	1978	B Mean	7.0	6.4	6.3	5.8	6.8	7.0	7.0						
				G Mean	7.0	7.4	7.5	7.1	7.3	9.0	9.9						
Libya	Tripoli	Abounaja & Gilmour (63)	1985	B Median	7.1	7.2	7.7	7.9	8.1	8.4	9.7	9.5	9.5	9.4	8.8	7.8	
				G Median	8.3	8.7	8.9	9.3	10.6	11.0	12.4	13.0	15.3	16.2	16.8	18.2	
Bahrain		Musaiger *et al.*(61)	1989	B Median	7.4	7.2	7.3	7.6	7.2	7.3	8.4	8.3	7.9	8.9	6.9	7.2	7.4
				G Median	9.5	9.0	9.6	9.6	10.6	10.2	11.6	11.8	14.0	14.6	13.6	16.3	
India	Ludhiana	Pathak (45)	1989	B Mean	5.9	5.6	6.0	6.0	6.4	6.2	6.4	6.6	6.6	5.9	6.2		
				G Mean	6.2	6.1	7.2	7.2	7.4	7.5	7.3	7.4	7.6	7.7	7.6		
	Delhi	NFI	1989	G Mean				12.7	12.7	12.9	12.6	13.5	14.4	15.5	16.0	16.1	
	Coimbatore	report (33)	G Mean					11.2	12.4	13.4	14.4	15.9	16.8	17.4	17.7	18.1	
	Calcutta		G Mean						16.8	16.9	16.1	15.1	14.9	17.9	15.4		
	Haryana	Bhasin *et al.* (67)	1990	B Mean	8.2	8.6	8.8	9.4	9.6	9.6	9.8	9.5	9.1	8.9			
				G Mean	10.1	10.5	10.6	11.1	11.2	11.3	12.5	13.0	14.0	14.2			
	All India	Present study		B Mean	6.2	7.5	8.3	9.4	10.0	10.5	10.7	10.8	10.9	10.8	10.6	10.4	
				G Mean	7.6	8.6	9.9	10.8	11.9	13.0	13.9	14.8	15.4	15.9	16.0	16.0	
				Age (yr)	6.5	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5	17.5	
India		Raghavan *et al.* (65)	1974	B Mean	8.1	8.7	8.7	9.2	9.5	9.6	9.8	9.5	9.1	9.0	9.2	9.3	
				G Mean	10.1	10.7	10.7	11.1	11.2	11.2	12.8	13.2	13.7	14.1	14.5	13.5	
	Chandigarh	Qamra *et al.* (48)	1990	G Mean	6.7	6.6	6.6	7.2	7.7	7.9	8.6	11.0	14.9				
	New-Delhi	Kapoor *et al.* (68)	1991	B Mean						13.8	13.4	10.3	10.8	10.6	12.0	11.0	
				G Mean						16.4	15.6	15.5	17.1	16.6	17.4	16.4	
India		Present study		B Mean	6.9	8.0	9.0	9.8	10.3	10.6	10.8	10.9	10.8	10.7	10.5	10.3	
				G Mean	8.1	9.2	10.2	11.3	12.4	13.5	14.4	15.1	15.7	16.0	16.0		

TABLE XXVII—*Subscapular and Suprailiac Skinfold Thickness (mm) Means, SE of Boys and Girls*

Age (yr)	Boys					Girls				
	N	Subscapular		Suprailiac		N	Subscapular		Suprailiac	
		Mean	SE	Mean	SE		Mean	SE	Mean	SE
6.0	100	5.0	0.22	4.7	0.26	184	5.8	0.19	5.8	0.33
6.5	101	5.3	0.17	5.2	0.24	237	5.9	0.19	5.3	0.25
7.0	194	5.7	0.24	5.8	0.31	261	6.2	0.16	6.2	0.26
7.5	182	6.0	0.19	6.2	0.28	291	6.7	0.26	7.6	0.33
8.0	286	6.2	0.20	6.6	0.31	325	7.4	0.23	8.6	0.35
8.5	267	6.7	0.22	7.4	0.33	345	7.5	0.28	8.8	0.41
9.0	336	7.0	0.23	8.0	0.36	393	8.1	0.26	9.6	0.44
9.5	345	7.3	0.20	8.5	0.36	417	8.7	0.26	10.4	0.36
10.0	421	7.6	0.21	9.0	0.33	465	9.3	0.26	11.1	0.40
10.5	600	7.9	0.22	9.5	0.31	437	10.0	0.30	11.9	0.41
11.0	603	8.2	0.24	9.9	0.34	482	10.7	0.30	12.6	0.45
11.5	734	8.5	0.22	10.4	0.33	466	11.4	0.29	13.3	0.40
12.0	732	8.8	0.25	10.8	0.37	428	12.0	0.33	13.9	0.42
12.5	834	9.1	0.21	11.2	0.32	481	12.6	0.34	14.5	0.43
13.0	742	9.4	0.22	11.6	0.31	451	13.2	0.31	15.0	0.42
13.5	774	9.7	0.22	12.0	0.34	453	13.7	0.36	15.4	0.44
14.0	700	10.0	0.20	12.4	0.30	388	14.1	0.36	15.7	0.50
14.5	691	10.3	0.23	12.7	0.32	346	14.4	0.37	15.9	0.46
15.0	596	10.5	0.26	13.0	0.35	286	14.7	0.41	16.0	0.56
15.5	513	10.8	0.28	13.3	0.40	203	14.8	0.49	16.0	0.65
16.0	448	11.1	0.32	13.6	0.49	172	14.8	0.58	16.0	0.64
16.5	347	11.3	0.32	13.8	0.48	181	14.8	0.56	16.0	0.66
17.0	242	11.6	0.35	14.0	0.61	113	14.8	0.66	16.0	0.72
17.5	173	11.8	0.40	14.2	0.61					
18.0	84	12.1	0.76	14.3	1.28					

N = Number of subjects; SE = Standard error.

TABLE XXVIII—*Comparison of Mean Subscapular Skinfold (mm) of India Boys (B) and Girls (G) with European and Asiatic Child*

Country	Place	Author	Year		Age (yr)												
					6	7	8	9	10	11	12	13	14	15	16	17	18
Hong Kong		Fry *et al.* (72)	1965	B Mean	5.1	5.2	5.3	5.4	5.7	5.9	6.1	6.5	6.7	7.3	7.9	8.4	8.8
				G Mean	5.9	5.8	5.9	6.2	6.4	6.7	7.7	8.8	10.5	11.7	11.8	12.4	
Japan	Nagoya	Kondo & Eto (73)	1972	B Mean		5.9	5.5	6.5	8.2	7.8	8.4	8.1	8.9	8.5	9.3	8.4	9.3
				G Mean		6.7	6.6	7.3	8.7	9.0	10.3	9.3	13.5	12.6	13.3	13.5	
Norway	Bergeb	Waller (16)	1983	B Median	4.8	4.7	5.0	5.1	5.3	5.5	5.5	5.6	5.7	5.9	6.5		
Poland	Warsaw	Kurniewicz-Witczakowa (19)	1983	B Median	6.0	6.3	6.7	6.9	7.1	7.3	7.5	7.7	7.9	8.1	8.2	8.5	8.7
Italy	Turin	Morsio-Guidetti *et al.* (69)	1985	B Median	5.1	5.2	5.3	5.4	5.6	5.8	6.0						
Hungary	National	Eiben & Panto (15)	1986	B Mean	6.1	6.1	6.6	7.4	8.3	8.9	9.5	9.5	9.7	10.1	10.6	11.0	11.4
				G Mean	7.5	7.6	7.7	8.7	9.2	10.2	11.0	12.3		13.1	14.0	14.5	
Ireland	Dublin	Hoey & Cox *et al.* (70)	1987	B Median	5.5	5.4	5.4	5.6	5.8	6.2	6.7	7.2	7.5	7.8	8.1	8.5	8.8
Belgium	National	Beunen *et al.* (71)	1988	G Mean	6.0	6.2	6.5	7.1	8.1	8.6	9.2	10.1	10.8	11.3	11.8	12.0	
U.K.	Leeds	Buckler (66)	1990	B Mean					6.7	6.6	6.9	6.9	7.0	7.1	7.5		
				G Mean					9.2	9.8	9.8	10.8	11.8	11.9	12.7		
	Ludhiana	Pathak (45)	1989	B Mean	4.4	4.5	4.3	4.6	5.0	5.1	5.2	5.4	5.6	5.6	5.7		
				G Mean	5.1	5.1	5.8	5.9	6.2	6.5	6.2	6.7	7.2	7.9	7.9		
	Delhi			G Mean				11.6	10.9	11.7	11.7	12.9	13.9	14.4	15.7	15.2	
	Bombay			G Mean					14.1	13.2	13.3	13.3	13.6	13.9	14.6	11.2	
		NFI Report(33)	1989														
	Coimbatore			G Mean				10.8	11.8	13.2	14.3	14.8	14.7	15.3	15.9	16.1	16.0
	Calcutta			G Mean					20.2	20.1	20.5	21.9	22.4	22.6	23.5		
India		Present Study		B Mean	5.0	5.7	6.2	7.0	7.6	8.2	8.8	9.4	10.0	10.5	11.1	11.6	12.1
				G Mean	5.8	6.2	7.4	8.1	9.3	10.7	12.0	13.2	14.1	14.7	14.8	14.8	

TABLE XXIX—*Comparison of Suprailiac Skinfold Thickness (mm) of Indian Boys (B) and Girls (G) with European Children*

Country	Place	Author	Year		Age (yr)												
					6	7	8	9	10	11	12	13	14	15	16	17	18
UK	Leeds	Buckler(66)	1990	B Mean					6.0	5.7	6.5	6.9	7.1	7.0	7.5		
				G Mean					7.1	8.4	8.5	9.1	11.4	11.6	12.7		
India	Ludhiana	Pathak(45)	1989	B Mean	4.2	4.3	4.1	4.3	4.4	4.5	4.6	4.6	4.6	4.8	4.6		
				SD	1.7	1.9	1.9	1.6	1.6	1.8	1.9	1.7	1.8	2.0	1.9		
				G Mean	5.1	5.2	5.6	5.7	5.9	6.0	6.3	6.1	6.6	6.9	6.9		
				SD	1.7	1.8	1.3	1.4	1.9	1.9	1.4	1.6	1.8	2.0	1.8		
India		Present Study		B Mean	4.7	5.8	6.6	8.0	9.0	9.9	10.8	11.6	12.4	13.0	13.6	14.0	14.3
				SD	2.8	4.2	4.7	5.7	6.0	7.2	9.0	7.6	7.3	7.9	9.2	8.4	10.0
				G Mean	5.8	6.2	8.6	9.6	11.1	12.6	13.9	15.0	15.7	16.0	16.0	16.0	
				SD	4.3	4.1	5.9	7.8	7.7	8.6	7.9	7.9	8.0	8.2	7.2	5.8	

SD = Standard deviation.

Table XXX—*Percentage Distribution of Boys According to Genital Development at Each Age Point*

Age (yr)		Genital stages							
		2		3		4		5	
		N	%	N	%	N	%	N	%
8.0	233	2	0.86						
8.5	213	10	4.69	3	1.41				
9.0	285	34	11.93	13	4.56				
9.5	286	51	17.83	6	2.10	1	0.35		
10.0	386	80	20.73	24	6.22	3	0.78		
10.5	556	127	22.84	33	5.94	3	0.54		
11.0	580	185	31.90	54	9.31	3	0.52		
11.5	662	241	36.40	79	11.93	22	3.32		
12.0	677	265	39.14	115	16.99	24	3.55	3	0.44
12.5	770	275	35.71	197	25.58	76	9.87	3	0.39
13.0	695	215	30.94	214	30.79	139	20.00	10	1.44
13.5	736	142	19.29	241	32.74	227	30.84	42	5.71
14.0	680	76	11.18	225	33.09	272	40.00	79	11.62
14.5	677	48	7.09	157	23.19	289	42.69	166	24.52
15.0	584	19	3.25	88	15.07	249	42.64	220	37.67
15.5	482	7	1.45	57	11.83	198	41.08	217	45.02
16.0	409	1	0.24	32	7.82	158	38.63	218	53.30
16.5	344	1	0.29	27	7.85	92	26.74	224	65.12
17.0	266			7	2.74	72	27.07	187	70.30
17.5	165			6	3.64	24	14.55	135	81.82
18.0				2	2.35	16	18.82	67	78.82
Total		1779		1580		1868		1571	
Age mean		11.3		12.8		14.1		16.4	
SD		1.4		1.5		1.3		1.3	
SE		0.03		0.04		0.03		0.03	

N = Number of subjects.
SD = Standard deviation, SE = Standard error.

TABLE XXXI—*Percentage Distribution of Axillary Hair, Pubic Hair and Facial Hair Presence in Relation to Different Genital Development Stages*

Genital development stages	Axillary hair		Pubic hair		Facial hair	
	N	%	N	%	N	%
2 N = 1779	109	6.13	1059	59.53	168	9.44
3 N = 1580	855	54.11	1532	96.96	797	50.44
4 N = 1868	1833	98.13	1861	99.63	1763	94.38
5 N = 1571	1569	99.87	1569	99.87	1566	99.68
Mean age	14.9		14.2		14.8	
SE	0.02		0.24		0.03	

N = Number of subjects; SE = Standard error.

TABLE XXXII—*Mean age (Yr) for Secondary Sex Characteristics Development in European and Asian Boys*

Country	Place	Author & Year	G2	G3	G4	G5
European						
England	Harpenden	Marshall & Tanner (74) (1970)	11.6	12.9	13.8	14.9
	Leeds	Buckler & Wind (75) (1987)	12.5	13.6	14.3	
Netherland	National	Roede & Van Wieringen (17) (1985)	11.3	13.1	14.0	15.3
Sweden	Stockholm	Taranger *et al.* (76) (1976)	12.2	13.1	14.0	15.1
Switzerland	Zurich	Largo & Prader (77) (1989)	11.2	12.9	13.8	14.7
USA	Mexican-American	Villareal (78) (1989)	12.4	13.5	14.6	16.2
Asian						
Egypt	Cairo	Hafez *et al.* (79) (1981)	11.1	13.6	14.9	16.2
India						
	New Delhi	Bhargava *et al.* (80) (1979)	10.7			
	Jabalpur	Kaul *et al.* (81) (1982)	11.1	11.9	13.0	14.8
	Varanasi	Kaityar *et al.* (43) (1985)	12.5	13.0	13.9	15.1
		Present study	11.3	12.8	14.1	16.4
		N	1779	1580	1868	1571

N = Number of boys.

TABLE XXXIII– Mean Weight (cm) in Relation to Genital Development Stages at Different Age Points

Age (yr)	Genital stages							
	2		3		4		5	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
8.0	130.0	3.08						
8.5	131.8	1.99	136.9	2.37				
9.0	133.4	1.16	138.5	1.55				
9.5	134.9	0.96	140.1	2.78				
10.0	136.0	0.75	141.9	1.48	151.8	5.92		
10.5	139.0	0.54	143.7	1.30	152.8	0.46		
11.0	140.8	0.46	145.7	0.97	154.0	0.84		
11.5	142.7	0.41	147.6	0.82	155.2	1.38		
12.0	144.4	0.38	149.5	0.61	156.6	1.31	164.4	1.93
12.5	146.2	0.39	151.4	0.43	157.7	0.79	164.5	1.88
13.0	147.8	0.43	153.3	0.46	159.0	0.56	164.5	2.16
13.5	149.4	0.46	155.0	0.40	160.3	0.44	164.6	0.90
14.0	150.9	0.68	156.7	0.41	161.6	0.41	165.0	0.68
14.5	152.4	0.89	158.3	0.50	162.8	0.39	166.0	0.49
15.0	153.7	0.84	159.7	0.65	164.0	0.40	166.8	0.41
15.5	154.9	1.40	161.0	0.79	165.0	0.42	167.4	0.39
16.0	155.9	–	162.1	1.14	166.0	0.46	167.6	0.41
16.5	156.8	–	162.9	0.98	166.8	0.63	168.7	0.42
17.0	–	–	163.5	2.60	167.4	0.69	169.5	0.45
17.5	–	–	163.9	1.85	167.8	1.06	170.0	0.47
18.0	–	–	164.0	0.42	168.1	1.64	170.2	0.64

SE = Standard error.

TABLE XXXIV—*Mean Weight (kg) in Relation to Genital Development Stages at Different Age Points*

Age (yr)	Genital stages							
	2		3		4		5	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
8.0	27.2	1.48						
8.5	28.0	1.85	30.9	3.73				
9.0	28.7	0.85	31.3	1.46				
9.5	29.1	0.68	32.0	2.24				
10.0	29.0	0.59	33.1	1.38	37.7	0.05		
10.5	31.8	0.53	34.5	1.06	38.7	0.45		
11.0	32.9	0.47	35.2	0.78	39.8	3.08		
11.5	34.0	0.43	36.6	0.65	40.9	1.35		
12.0	35.1	0.42	38.1	0.66	41.9	1.32	50.6	3.24
12.5	36.2	0.47	39.6	0.54	43.9	0.80	51.4	2.35
13.0	37.3	0.57	41.1	0.55	45.3	0.69	52.0	3.54
13.5	38.5	0.75	42.7	0.50	46.8	0.63	52.5	1.17
14.0	39.6	0.82	44.1	0.53	48.2	0.51	52.8	0.88
14.5	40.8	1.30	45.5	0.64	49.6	0.52	53.5	0.75
15.0	42.0	2.46	46.8	1.01	50.8	0.56	54.0	0.60
15.5	43.2	2.21	47.8	1.20	51.9	0.72	54.6	0.65
16.0	44.3	–	48.7	1.70	52.9	0.75	55.3	0.76
16.5	45.5	–	49.3	1.32	53.6	0.90	56.2	0.63
17.0			49.6	1.96	54.1	1.10	57.2	0.67
17.5			49.7	2.50	54.3	1.51	58.6	0.77
18.0			49.7	1.06	54.3	1.90	60.2	1.39

SE = Standard error.

TABLE XXXV—*Means, Standard Error Sitting Height and Leg Length in Different Genital Stage*

Age (yr)	Genital Stages															
	2				3				4				5			
	Sitting height (cm)		Leg length (cm)		Sitting height (cm)		Leg length (cm)		Sitting height (cm)		Leg length (cm)		Sitting height (cm)		Leg length (cm)	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
8.0	67.9	3.29	62.0	0.21	—	—	—	—	—	—	—	—	—	—	—	—
8.5	68.7	1.63	63.0	0.88	73.2	2.35	64.7	1.25	—	—	—	—	—	—	—	—
9.0	69.5	0.58	64.0	0.76	73.4	0.78	65.9	1.17	—	—	—	—	—	—	—	—
9.5	70.1	0.43	64.8	0.64	73.7	1.61	67.2	1.44	—	—	—	—	—	—	—	—
10.0	70.5	0.38	65.4	0.48	74.3	0.65	68.3	1.02	79.6	1.71	74.7	1.84	—	—	—	—
10.5	71.7	0.29	67.3	0.38	75.0	0.57	69.4	0.81	79.6	0.85	75.2	0.70	—	—	—	—
11.0	72.4	0.28	68.5	0.33	75.0	0.52	71.1	0.59	79.7	0.91	75.8	0.88	—	—	—	—
11.5	73.0	0.20	69.6	0.28	75.5	0.43	72.4	0.58	79.9	1.34	76.8	1.26	—	—	—	—
12.0	73.6	0.20	70.8	0.27	76.1	0.32	73.6	0.39	80.2	0.39	78.8	0.53	80.8	1.19	78.8	1.54
12.5	74.1	0.22	71.9	0.25	76.8	0.29	74.8	0.32	80.8	0.34	78.8	0.41	82.1	2.05	80.1	0.29
13.0	74.6	0.23	73.1	0.28	77.4	0.25	75.9	0.31	81.3	0.25	78.8	0.29	83.1	1.21	81.0	1.22
13.5	75.1	0.27	74.3	0.36	78.1	0.24	76.9	0.26	81.9	0.24	79.6	0.27	83.6	0.50	81.4	0.65
14.0	75.5	0.45	75.5	0.39	78.8	0.24	77.9	0.27	82.5	0.22	80.3	0.28	83.7	0.43	81.3	0.52
14.5	75.8	0.58	76.7	0.58	79.5	0.33	78.7	0.30	83.2	0.22	81.0	0.28	84.6	0.28	82.3	0.30
15.0	76.1	0.77	77.9	0.59	80.2	0.35	79.4	0.44	83.8	0.24	81.6	0.30	84.8	0.28	82.3	0.30
15.5	—	—	—	—	80.9	0.58	80.0	0.49	84.5	0.29	82.0	0.32	85.0	0.22	82.3	0.28
16.0	—	—	—	—	81.5	0.86	80.5	0.70	85.1	0.38	82.3	0.42	85.2	0.23	82.4	0.30
16.5	—	—	—	—	82.1	0.76	80.8	0.56	85.6	0.44	82.4	0.48	85.4	0.23	82.5	0.30
17.0	—	—	—	—	82.7	3.43	80.9	1.77	86.5	0.80	82.4	0.91	85.9	0.24	82.7	0.34
17.5	—	—	—	—	83.1	0.86	80.9	2.14	86.5	0.77	82.4	1.16	86.5	0.32	83.1	0.34
18.0	—	—	—	—	83.6	0.71	80.9	1.13	86.8	0.65	82.4	1.64	87.4	0.44	83.8	0.48

SE = Standard error.

TABLE XXXVI—*Percentage Distribution of Girls According to Breast Development at Each Age Point*

Age (yr)	N	Breast stages							
		2		3		4		5	
		N	%	N	%	N	%	N	%
8.0	240	13	5.42						
8.5	288	25	8.68						
9.0	348	45	12.93	6	1.72				
9.5	398	110	27.64	8	2.01	1	0.25		
10.0	451	166	36.81	40	8.87	1	0.22		
10.5	437	182	41.65	56	12.81	18	4.12	1	0.22
11.0	496	226	45.56	123	24.80	30	6.05	2	0.40
11.5	483	184	38.10	174	36.02	62	12.84	4	0.83
12.0	434	142	32.72	159	36.64	83	19.12	17	3.92
12.5	489	92	18.81	206	42.13	133	27.20	44	9.00
13.0	455	56	12.31	172	37.80	164	36.04	59	12.97
13.5	454	31	6.83	157	34.58	163	35.90	101	22.25
14.0	388	14	3.60	120	30.85	164	42.16	90	23.14
14.5	350	2	0.57	84	24.00	166	47.43	98	28.00
15.0	291	3	1.03	60	20.62	121	41.58	107	36.77
15.5	203			43	21.18	73	35.96	87	42.86
16.0	176			28	15.91	64	36.36	84	47.73
16.5	182			26	14.29	64	35.16	92	50.55
17.0	116			5	4.31	20	17.24	91	78.44
Total		1291		1482		1355		834	
Age mean		10.2		19.6		13.5		15.5	
SD		1.3		1.6		1.6		1.5	
SE		0.04		0.04		0.04		0.05	

N = Number of children.
SD = Standard deviation, SE = Standard error.

TABLE XXXVII—*Percentage Distrbution of Axillary Hair, Pubic Hair and Menarche Appearance in Relation to Different Breast Development Stages*

Breast development stages	Axillary hair		Pubic hair		Menarche attained	
	N	%	N	%	N	%
2 N = 1291	309	23.93	284	22.00	57	4.42
3 N = 1482	1365	92.11	1370	92.44	752	50.74
4 N = 1355	1340	98.89	1338	98.75	1223	90.26
5 N = 834	834	100.00	831	99.64	805	96.52
Mean age	13.6		13.6		12.6	
SE	0.03		0.03		0.04	

N = Number of subjects; SE = Standard error.

TABLE XXXVIII—*Mean age (yr) Secondary Sex Characteristics Development in European and Asian Girls*

Country	Place	Year & Autor	Breast stages				Menarche
			B2	B3	B4	B5	
European							
England	Harpenden	Marshall & Tanner (74) (1978)	11.2	12.2	13.1	14.4	13.5
	Leeds	Buckler & Wind (75) (1987)	11.1	11.9	12.0		13.2
Netherlands	National	Roede & Van Wieringen (17) (1985)	10.5	11.7	12.9	14.2	13.3
Sweden	Stockholm	Taranger *et al.* (76) (1976)	11.0	11.8	13.1	15.6	13.0
Switzerland	Zurich	Largo & Prader (77) (1983)	10.9	12.2	13.2	14.0	13.4
USA	Mexican-American	Villareal (78) (1989)	11.0	12.2	13.9	15.1	
Asian							
Hongkong	All	Lee *et al.* (82) (1963)	10.7				12.8
Turkey	Istanbul	Neyzi *et al.* (83) (1975)	10.0	11.6	12.8	15.2	12.8
Israel	Jerusalem	Belmaker (84) (1982)	10.3	11.0			13.3
		Low *et al.* (85) (1982)	10.5				12.5
India	Present Study	Mean	10.2	11.6	13.5	15.5	12.6

TABLE XXXIX—*Mean Age (yr) for Secondary Sex Characteristics Development in India Girls*

Place	Author	Breast stages					Menarche
		Year	B2	B3	B4	B5	
India	Prabhkar *et al.* (87)	1972	11.1				13.2
Andhra	Indira Bai &	1973	10.3				13.0
Radesh	Vijay Lakshmai (86)						
New Delhi	Bhargava *et al.* (88)	1988	9.7				11.2
Varanasi	Tripathi *et al.* (89)	1985	12.1	12.9	12.9	13.1	12.8
Chandigarh	Qamra *et al.*	1991	9.9	11.4	12.3	13.2	12.1
India	Present Study		10.2	11.6	13.5	15.5	12.6

TABLE XL—*Mean Height (cm) in Relation to Breast Development Stages at Different Age Points*

Age (yr)	Breast stages							
	2		3		4		5	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
8.0	130.6	1.22						
8.5	132.3	1.19						
9.0	134.0	0.93	141.1	2.66				
9.5	135.6	0.62	142.7	1.81	145.7	–		
10.0	137.3	0.44	144.0	0.77	147.9	–		
10.5	139.0	0.43	144.8	0.81	148.4	1.12	150.3	–
11.0	140.7	0.40	145.1	0.44	149.3	1.14	150.3	4.07
11.5	142.4	0.46	147.9	0.39	150.1	0.80	150.8	1.23
12.0	144.1	0.46	149.0	0.44	151.3	0.55	151.9	1.07
12.5	145.1	0.63	150.0	0.37	152.0	0.48	153.0	0.77
13.0	147.4	0.73	150.9	0.44	152.7	0.38	153.0	0.83
13.5	149.0	1.36	151.8	0.43	153.2	0.42	154.0	0.60
14.0	150.5	1.06	152.6	0.54	153.7	0.44	154.9	0.59
14.5	152.0	3.01	153.2	0.57	154.1	0.46	155.8	0.53
15.0	153.5	2.83	154.0	0.64	154.5	0.47	156.5	0.60
15.5			154.7	0.70	154.9	0.61	157.0	0.67
16.0			155.3	0.75	155.3	0.62	157.2	0.55
16.5			155.7	1.00	155.6	0.59	157.1	0.55
17.0			156.5	1.19	156.1	0.87	156.2	0.87

SE = Standard error.

TABLE XLI—*Mean Weight (kg) in Relation to Breast Development Stages at Different Age Points*

Age (yr)	Breast stages							
	2		3		4		5	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
8.0	30.2	1.47						
8.5	30.8	1.04						
9.0	31.4	0.82	38.8	1.95				
9.5	31.9	0.63	39.1	1.93	40.8	—		
10.0	32.4	0.49	39.3	1.01	42.1	—		
10.5	33.0	0.42	39.4	0.97	43.1	1.22	47.7	—
11.0	33.5	0.44	39.3	0.61	43.9	1.43	50.7	0.88
11.5	34.0	0.53	40.1	0.51	44.5	0.96	52.6	1.96
12.0	34.5	0.47	40.3	0.52	45.0	0.73	53.5	1.76
12.5	35.0	0.71	40.6	0.49	45.4	0.61	53.6	1.04
13.0	35.6	0.82	40.8	0.49	45.6	0.54	54.4	1.12
13.5	36.2	1.12	41.1	0.63	45.9	0.57	54.1	0.84
14.0	36.8	1.43	41.4	0.66	46.1	0.59	53.4	0.99
14.5	37.6	0.57	47.7	0.61	46.4	0.53	52.8	0.97
15.0	38.3	1.70	42.1	0.70	46.7	0.69	52.1	0.97
15.5			42.5	0.95	47.2	0.83	51.7	1.13
16.0			42.9	0.94	47.8	1.01	51.7	1.03
16.5			43.2	1.00	48.3	0.90	52.0	0.90
17.0			43.9	0.98	49.6	1.00	53.3	1.15

SE = Standard error.

TABLE XLII—*Means, SE for Sitting Weight and Leg Length in Different Breast Development Stages*

Age (yr)	Breast Stages															
	2				3				4				5			
	Sitting Ht (cm)		Leg Length (cm)		Sitting Ht (cm)		Leg Length (cm)		Sitting Ht (cm)		Leg Length (cm)		Sitting Ht (cm) (cm)		Leg Length (cm)	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
8.0	67.9	0.59	62.4	0.83												
8.5	68.9	0.72	63.2	0.69												
9.0	69.8	0.49	64.2	0.57	73.3	1.99	67.2	1.14								
9.5	70.4	0.37	65.2	0.36	74.0	1.07	68.6	1.23								
10.0	70.9	0.27	66.3	0.28	74.2	0.55	69.6	0.40								
10.5	71.8	0.24	67.5	0.28	74.4	0.49	70.3	0.52	76.5	0.56	71.4	0.79				
11.0	72.4	0.23	68.6	0.25	74.5	0.28	70.6	0.33	76.8	0.66	72.2	0.83	77.4	2.45	72.4	3.30
11.5	72.9	0.28	69.8	0.29	75.6	0.24	72.2	0.28	77.2	0.41	72.9	0.54	77.9	2.33	72.6	1.75
12.0	73.4	0.27	70.8	0.30	76.2	0.27	72.8	0.30	77.6	0.36	73.4	0.39	78.7	0.55	72.9	.81
12.5	74.0	0.41	71.8	0.37	76.7	0.26	73.3	0.29	78.2	0.30	73.8	0.33	79.2	0.45	73.2	0.57
13.0	74.6	0.49	72.8	0.50	77.3	0.31	73.6	0.34	78.7	0.25	74.1	0.28	79.6	0.51	73.7	0.59
13.5	75.3	0.80	73.6	0.80	77.8	0.25	73.9	0.32	79.1	0.30	74.4	0.32	80.0	0.36	74.2	0.42
14.0	76.1	0.70	74.2	0.95	78.3	0.31	74.2	0.37	79.5	0.26	74.6	0.32	80.3	0.35	74.5	0.42
14.5	77.1	2.85	74.8	1.40	78.9	0.34	74.4	0.43	79.5	0.26	74.7	0.31	80.6	0.33	74.9	0.37
15.0	78.2	1.55	75.1	2.45	79.3	0.41	74.6	0.44	80.2	0.29	74.8	0.34	80.8	0.33	75.2	0.43
15.5	—	—	—	—	79.8	0.36	74.8	0.55	80.5	0.35	74.8	0.47	81.0	0.33	75.5	0.44
16.0	—	—	—	—	80.2	0.60	75.1	0.58	80.7	0.39	74.8	0.49	81.4	0.37	76.0	0.44
16.5	—	—	—	—	80.5	0.62	75.4	0.86	80.9	0.36	74.8	0.44	81.6	0.32	76.5	0.41
17.0	—	—	—	—	80.7	0.77	75.8	1.01	80.9	0.48	75.0	0.60	81.9	0.32	76.9	0.40

SE = Standard error.

TABLE XLIII–*Mean Age (yr) of Menarche in Different Countries*

Sl. No.	Country	Place	Author	Year	Mean	SE
1	Singapore		Aw and Tye (91)	1970	12.4	
2	Nigeria	Ibadan	Oduntan *et al.* (92)	1976	13.2	
3	Hong Kong		Low *et al.* (85)	1982	12.4	
4	Sudan	Khartous	Attallah *et al.* (93)	1983	13.4	0.14
5	Hungary	All	Eszter and Eiben (94)	1984	13.1	0.03
6	Denmark	North Zealand	Helm and Helm (95)	1984	13.0	0.05
7	Chile	Santiago all	Jordon and Gutierrez (96) Muniz	1984	12.8	0.07
8	Sri Lanka	Jaffna	Prakash & Pothmanathan (97)	1984	13.4	0.07
9	Yugoslavia	Zagreb	Prebeg (98)	1984	12.7	0.02
10	Holland	All	Roede and Van Wieringen (17)	1985	13.3	0.04
11	Netherlands	National	Roedge and Van Wieringen (17)	1985	13.3	
12	Belgium	Brussels	Vercateren and Susanne (99)	1985	13.1	0.06
13	Poland	Silesia	Bielick Susanne (100)	1986	13.1	0.01
14	Poland	Cracow	Chrzanowska *et al.* (101)	1986	13.1	0.05
15	W. Germany	Bremerhaven	Danker Hopfe (102)	1986	13.3	0.03
16	Spain	Estepone town	Prado (103)	1986	12.8	0.04
17	Italy	Sardinia	Floris *et al.* (104)	1987	12.8	0.06
18	Italy	Turin	Benso *et al.* (105)	1988	12.6	0.05
19	Brazil	Seo Paulo	Colli (106)	1988	12.6	
20	U.K.	Leeds	Buckler (66)	1990	13.4	

TABLE XLIV— *Mean Age (yr) of Menarche in Indian Girls*

Sl. No.	Place	Author	Year	Mean	SE
1	India	Prabhakar *et al.* (87)	1972	13.2	
2	Andhra Pradesh	Indira Bai and Vijayalakshmi (86)	1973	13.3	
3	Kanpur	Bhalla and Srivastava (107)	1974	12.7	
4	Varanasi	Agarwal *et al.* (42)	1974	12.1	
5	Delhi	Tripathi *et al.* (30)	1976	12.8	1.04
6	Madras	Roberts *et al.* (108)	1976	12.9	0.1
7	Madras	Logambal (109)	1979	14.8	
8	Pubnjabi Gujjars	Singh and Ahuja (110)	1979		
9	New Delhi	Bhargava *et al.* (88)	1980	11.5	2.0
10	Jabalpur	Kual *et al.* (111)	1930	13.6	
11	Varanasi	Mishra (64)	1983	12.9	
12	Punjab	Qamra (112)	1984	12.0	
13	Varanasi	Tripathi *et al.* (89)	1985	12.8	1.04
14	Ludhiana	Singh (113)	1986	14.7	
15	Punjab	Singh & Malhotra (114)	1988	12.5	0.13
16	Delhi	NFI Report (33)	1989	12.4	
17	Bombay			12.4	
18	Calcutta			12.9	
19	Coimbatore			13.4	
20	Present Study			12.6	0.04

TABLE XLV—*Means Standard Error of Head Circumference (cm) According to Sex at Different Age Points*

Age (yr)	Boys			Girls		
	N	Mean	SE	N	Mean	SE
6.0	169	50.7	0.11	172	49.5	0.11
6.5	123	50.8	0.13	156	49.7	0.12
7.0	227	50.9	0.09	223	49.9	0.10
7.5	208	51.0	0.09	224	50.1	0.10
8.0	236	51.2	0.09	271	50.3	0.08
8.5	265	51.3	0.09	260	50.8	0.09
9.0	330	51.4	0.08	312	51.1	0.08
9.5	338	51.6	0.08	331	51.3	0.08
10.0	411	51.8	0.10	411	51.6	0.07
10.5	536	52.0	0.06	363	51.9	0.08
11.0	603	52.2	0.06	439	52.1	0.07
11.5	744	52.4	0.06	405	52.4	0.08
12.0	738	52.7	0.06	326	52.6	0.08
12.5	872	52.9	0.05	343	52.9	0.08
13.0	753	53.1	0.06	343	53.1	0.08
13.5	808	53.4	0.06	288	53.3	0.09
14.0	728	53.6	0.06	249	53.5	0.09
14.5	714	53.8	0.06	208	53.6	0.11
15.0	604	54.0	0.06	200	53.7	0.11
15.5	506	54.2	0.07	137	53.8	0.12
16.0	443	54.4	0.07	106	53.9	0.16
16.5	390	54.6	0.07	86	54.0	0.17
17.0	281	54.7	0.09	49	54.0	0.19
17.5	170	54.9	0.11			
18.0	83	55.0	0.15			

N = Number of subjects; SE = Standard error.

TABLE XLVI—*Head Circumference (cm) of Indian Boys (B) and Girls (G)*

Place	Author	Year			Age (yr)												
					6	7	8	9	10	11	12	13	14	15	16	17	18
Delhi	Rath *et al.* (39)	1978	B	Mean	50.9	51.4	51.9	51.9	52.1	53.0	53.3	54.0	54.2	54.8			
				SD	1.4	1.4	1.4	1.3	1.5	1.2	1.4	1.6	1.5	1.5			
			G	Mean	50.3	50.4	51.0	51.1	52.2	52.4	53.0	53.2	53.7	53.8			
				SD	1.3	1.5	1.6	1.3	1.2	1.6	1.3	1.0	1.3	1.4			
Ludhiana	Pathak (45)	1989	B	Mean	50.9	51.5	51.8	51.9	52.1	53.0	53.4	53.9	54.4	54.9	53.3		
				SD	1.4	1.5	1.5	1.4	1.4	1.4	1.5	1.6	1.6	1.7	1.6		
			G	Mean	50.2	50.5	51.0	51.2	52.3	52.5	53.1	53.3	53.7	53.8	53.9		
				SD	1.3	1.3	1.4	1.3	1.4	1.4	1.5	1.4	1.4	1.2	1.4		
India	Present study		B	Mean	50.7	50.9	51.2	51.4	51.8	52.2	52.7	53.1	53.6	54.0	54.4	54.7	55.0
				SD	1.4	1.4	1.5	1.4	2.0	1.4	1.5	1.6	1.6	1.6	1.5	1.5	1.4
			G	Mean	49.5	49.9	50.3	51.1	51.6	52.1	52.6	53.1	53.5	53.7	53.9	54.0	
				SD	1.5	1.5	1.3	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.6	1.3	
			Age (yr)		6.5	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5	17.5	
India	ICMR (31)	1972	B	Mean	49.5	49.9	50.2	50.5	50.8	51.1	51.5	52.2	53.0	53.5	53.8	54.4	
				SD	1.2	1.2	1.6	1.5	1.3	1.5	11.6	1.7	1.2	1.5	1.9	41.9	
			G	Mean	48.1	49.1	49.1	50.1	50.1	51.3	51.1	52.0	52.0	52.1	53.0		
				SD	1.5	1.7	1.4	1.8	1.9	12.0	1.5	1.7	1.4	1.4	1.5		
India	Present study		B	Mean	50.8	51.0	51.3	51.6	52.0	52.4	52.9	53.4	53.8	54.2	54.6	54.9	
				SD	1.4	1.3	1.5	1.5	1.4	1.5	1.5	1.6	1.6	1.6	1.4	1.4	
			G	Mean	49.7	50.1	50.8	51.3	51.9	52.4	52.9	53.3	53.6	53.8	54.0		
				SD	1.5	1.5	1.4	1.4	1.5	1.5	1.4	1.5	1.5	1.4	1.5		

SD = Standard deviation.

TABLE XLVII—*Means, Standard Error of Chest Circumference (cm) According to Sex at Different Age Points*

Age (yr)	Boys			Girls		
	N	Mean	SE	N	Mean	SE
6.0	172	55.1	0.22	156	53.2	0.25
6.5	125	55.4	0.27	119	53.8	0.23
7.0	223	55.8	0.27	158	54.5	0.24
7.5	210	56.5	0.25	138	55.2	0.36
8.0	293	57.5	0.22	187	56.0	0.32
8.5	273	57.8	0.27	171	56.8	0.35
9.0	334	58.6	0.26	186	57.7	0.30
9.5	348	59.6	0.24	181	58.6	0.38
10.0	423	60.7	0.23	181	59.5	0.39
10.5	607	61.8	0.21	130	60.4	0.45
11.0	619	63.0	0.23	116	61.3	0.44
11.5	758	64.2	0.21	59	62.2	0.58
12.0	747	65.5	0.25	33	63.0	1.10
12.5	887	66.8	0.22			
13.0	770	68.1	0.23			
13.5	826	69.5	0.24			
14.0	750	70.8	0.24			
14.5	721	72.1	0.24			
15.0	613	73.4	0.28			
15.5	518	74.7	0.28			
16.0	453	75.9	0.32			
16.5	393	77.1	0.31			
17.0	287	78.2	0.37			
17.5	176	79.3	0.43			
18.0	87	80.2	0.79			

N =Number of subjects; SE = Standard error.

TABLE XLVIII—*Chest Circumference (cm) of Indian Boys (B) and Girls (G)*

Place	Author	Year			Age (yr)												
					6	7	8	9	10	11	12	13	14	15	16	17	18
Delhi	Tripathi *et al.* (38)	1976	B	Mean					64.6	65.9	66.7	70.7	75.5	75.6	75.2	75.4	
				SD					4.6	3.3	4.4	6.2	12.2	13.1	5.4	6.6	
			G	Mean					65.3	67.1	71.6						
				SD					4.8	5.1	6.8						
Varanasi	Pereira *et al.* (47)	1983	G	Mean						62.1	66.0	69.7					
				SD						5.6	6.6	7.0					
	Katiyar *et al.* (43)	1985	B	Mean					60.6	63.8	66.6	68.5	71.6	75.0	76.5	79.3	80.2
				SD					5.2	6.2	6.8	5.7	6.5	6.0	5.3	5.7	5.4
Ludhiana	Pathak (45)	1989	B	Mean	56.9	58.8	61.2	62.6	64.8	66.9	69.6	71.0	74.5	78.6	84.2		
				SD	3.2	2.9	3.2	3.0	3.7	3.8	3.6	3.4	4.1	4.5	4.0		
			G	Mean	53.7	55.5	57.9	59.6	62.4	65.4	67.9						
				SD	2.3	2.8	3.3	3.5	3.9	4.3	4.4						
India	Present Study		B	Mean	55.1	55.8	57.5	58.6	60.7	63.0	65.5	68.1	70.8	73.4	75.9	78.2	80.2
				SD	2.9	4.0	3.7	4.8	4.7	5.8	6.2	5.5	6.5	6.8	6.7	6.2	7.4
			G	Mean	53.2	54.5	56.0	57.7	59.5	61.3	63.0						
				SD	3.1	3.1	4.3	4.1	5.2	4.8	6.3						
			Age (yr)		6.5	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5	17.5	
India	ICMR (31)	1972	B	Mean	54.2	55.0	56.7	60.1	61.5	65.1	66.8	68.7	71.5	74.3	75.2	78.3	
				SD	2.9	3.0	2.3	3.2	3.3	4.8	4.3	7.2	7.7	6.5	5.2	4.1	
			G	Mean	52.5	54.4	55.3	55.8	59.9	63.6	66.5						
				SD	3.5	3.3	4.5	5.1	5.3	5.6	5.4						
India	Present study		B	Mean	55.4	56.5	57.8	59.6	61.8	64.2	66.8	69.5	72.1	74.7	77.1	79.3	
				SD	3.0	3.7	4.5	4.4	5.3	5.9	6.5	6.9	6.3	6.4	6.2	5.8	
			G	Mean	53.8	55.2	56.8	58.0	60.4	62.2							
				SD	3.1	4.2	4.6	5.1	5.1	4.5							

SD = Standard deviatation.

TABLE XLIX–*Zone wise Height (cm) Means, Standard Error for Boys*

Age (yr)	Zones											
	North			East			West South			Central		
	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE
6	67	112.5	0.64	97	114.0	0.59	28	114.3	1.14	131	114.0	0.51
7	52	117.2	0.73	97	118.9	0.62	65	119.7	0.74	285	119.5	0.34
8	69	123.7	0.67	113	124.3	0.57	108	124.2	0.54	293	124.2	0.35
9	73	128.4	0.68	90	129.0	0.61	148	130.4	0.52	330	129.8	0.36
10	123	134.9	0.46	76	133.5	0.76	229	134.2	0.44	433	135.6	0.31
11	211	139.4	0.40	150	139.9	0.38	246	138.6	0.42	687	140.6	0.28
12	278	145.2	0.53	179	145.0	0.55	329	144.1	0.44	800	145.3	0.27
13	285	151.3	0.62	134	151.6	0.81	322	149.3	0.47	826	150.9	0.28
14	267	158.4	0.64	133	158.1	0.67	350	157.6	0.45	733	158.8	0.30
15	269	164.3	0.44	131	164.5	0.58	329	162.9	0.40	528	164.2	0.29
16	241	167.9	0.43	68	166.9	0.69	202	166.8	0.48	380	166.5	0.30
17	174	168.9	0.47	37	168.5	0.96	107	168.3	0.56	239	168.1	0.39
18	48	170.8	0.75	16	170.4	1.25	73	168.9	0.74	48	168.3	0.85

N = Number of children; SE = Standard error.

TABLE L–*Zonewise Height (cm) Means, Standard Error for Girls*

Age (yr)	Zones											
	North			East			West			Central		
	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE
6	215	113.7	0.32	188	114.6	0.39	7	119.9	2.65	112	111.2	0.49
7	231	117.8	0.37	181	118.3	0.46	68	121.1	0.66	180	117.0	0.44
8	211	123.5	0.44	183	123.6	0.48	127	124.1	0.53	198	122.0	0.41
9	269	128.6	0.38	253	129.5	0.43	136	130.4	0.53	235	128.8	0.46
10	327	133.2	0.40	280	134.1	0.39	208	135.4	0.43	223	134.5	0.46
11	344	142.2	0.42	201	142.0	0.46	305	141.7	0.40	222	140.6	0.48
12	335	148.2	0.38	238	146.7	0.40	246	147.4	0.39	217	145.4	0.47
13	328	152.6	0.33	237	150.6	0.36	227	152.3	0.40	239	149.8	0.37
14	318	154.8	0.33	217	152.6	0.40	135	154.7	0.52	228	152.8	0.38
15	186	155.6	0.40	196	153.7	0.37	121	156.5	0.53	174	154.0	0.41
16	128	156.4	0.47	116	154.4	0.46	39	156.7	0.86	139	155.0	0.43
17	133	157.3	0.48	15	157.3	1.04	18	155.5	0.96	73	155.2	0.59

N = Number of children; SE = Standard error.

TABLE LI—*Height (cm) Percentiles for Boys in Different Zones*

Age (yr)	Zones											
	North			East			West-South			Central		
	3rd	50th	97th	3rd	50th	97th	3rd	50th	97th	3rd	50th	97th
6	103.5	112.5	121.0	102.7	114.3	124.3	104.4	113.6	125.5	103.0	114.5	124.0
7	106.6	117.4	128.0	104.0	118.6	127.7	107.9	118.1	129.2	110.3	118.8	130.0
8	113.4	122.8	132.8	113.5	123.5	134.5	115.0	123.0	134.0	113.7	123.4	134.6
9	118.0	128.4	138.4	119.6	128.5	138.8	119.6	128.4	141.5	117.4	128.2	141.9
10	125.5	133.7	143.3	121.9	133.5	146.5	121.9	133.1	145.5	123.0	133.5	145.5
11	128.6	139.5	149.7	127.5	139.0	155.1	126.5	138.1	150.5	127.8	139.0	153.1
12	131.3	145.0	158.2	132.5	144.3	158.0	130.4	143.7	158.4	132.5	155.4	159.5
13	136.5	151.1	164.8	136.5	151.2	167.0	136.3	150.2	165.3	136.5	150.5	164.5
14	144.2	158.0	170.8	142.4	159.0	169.5	142.4	158.0	171.5	142.4	159.0	172.2
15	149.1	164.5	174.5	152.5	164.6	175.0	148.5	163.5	174.5	151.3	164.5	174.6
16	154.6	167.8	178.0	156.0	167.1	175.5	154.6	167.0	177.8	156.0	166.7	177.0
17	158.6	169.7	180.6	157.3	168.0	178.5	159.2	168.4	178.0	159.2	167.9	179.2
18	162.0	170.5	179.0	160.3	168.5	178.5	160.3	168.8	182.2	160.3	167.9	181.0

TABLE LII—*Height (cm) Percentiles for Girls in Different Zones*

Age (yr)	Zones											
	North			East			West-South			Central		
	3rd	50th	97th	3rd	50th	97th	3rd	50th	97th	3rd	50th	97th
6	104.5	113.6	121.5	104.8	114.5	124.6	104.3	115.1	127.5	102.0	114.2	121.5
7	107.2	118.0	127.2	108.2	117.1	128.9	110.0	118.0	131.0	106.1	118.1	127.3
8	111.3	123.2	133.9	111.0	121.6	135.7	114.0	123.0	134.0	112.0	122.6	132.2
9	117.7	128.3	139.4	117.7	127.5	141.7	118.0	128.1	140.9	117.0	128.7	142.4
)	121.3	134.5	147.9	123.0	134.7	146.3	124.5	134.9	147.0	122.0	134.9	145.5
.	127.8	142.1	154.0	129.6	142.1	152.5	129.5	142.0	153.0	126.2	140.9	153.0
;	134.0	148.8	159.2	134.2	146.8	157.1	136.1	147.4	157.3	133.0	146.5	157.1
	140.7	152.3	162.3	139.9	150.7	159.5	140.9	152.5	163.2	139.9	150.1	159.4
	144.0	154.6	164.5	142.5	152.5	163.0	144.0	154.9	164.0	144.0	153.2	162.7
	145.8	155.1	164.5	145.1	153.5	163.5	146.0	155.9	168.0	145.8	154.4	163.6
	146.7	156.0	166.8	146.7	153.5	164.0	149.0	156.5	166.8	146.7	155.3	164.3
	147.1	156.8	167.0	151.5	154.0	165.5	147.8	156.5	161.5	147.8	155.3	164.8

TABLE LIII–*Per cent Variation (50th percentile) Between Pooled and Zonal Data for Height*

Age (yr)	Boys				Girls			
	North	East	West-South	Central	North	East	West-South	Central
6	1.49	0.26	0.53	0.26	0.98	1.78	2.31	1.51
7	1.92	0.92	1.34	0.75	0.51	0.26	0.51	0.60
8	0.65	0.08	0.49	0.16	0.00	1.30	0.16	0.49
9	0.16	0.23	0.16	0.00	0.70	1.32	0.85	0.39
10	0.07	0.07	0.37	0.07	0.52	0.37	0.22	0.22
11	0.07	0.43	1.07	0.43	0.85	0.85	0.78	0.00
12	0.55	1.03	1.44	0.89	1.92	0.55	0.96	0.34
13	0.59	0.53	1.18	0.99	1.26	0.20	1.40	0.20
14	0.25	0.89	0.25	0.89	0.52	0.85	0.72	0.39
15	1.23	1.29	0.62	1.23	0.58	1.60	0.06	1.03
16	0.90	0.48	0.42	0.24	0.38	1.98	0.06	0.83
17	0.59	0.41	0.18	0.47	0.13	1.91	0.32	1.08
18	1.01	0.18	0.00	0.53				

TABLE LIV–*Zone Wise Weight (kg) Means, Standard Error for Boys*

Age (yr)	Zones											
	North			East			West South			Central		
	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE
6	67	19.0	0.30	97	19.3	0.30	28	20.4	0.52	131	19.5	0.26
7	52	20.5	0.34	97	21.5	0.39	65	22.5	0.49	285	21.2	0.18
8	69	23.3	0.43	113	23.1	0.44	108	24.5	0.42	293	23.5	0.24
9	73	26.0	0.51	90	25.7	0.46	148	27.6	0.41	330	25.8	0.25
10	123	30.6	0.57	76	27.6	0.68	229	29.3	0.38	433	30.0	0.25
11	211	33.1	0.50	150	30.2	0.46	246	31.7	0.42	687	32.7	0.27
12	278	37.4	0.53	179	34.7	0.51	329	36.0	0.30	800	35.5	0.26
13	285	42.5	0.62	134	39.3	0.81	322	39.7	0.52	826	39.5	0.28
14	267	48.2	0.64	133	43.1	0.62	330	45.7	0.55	733	44.8	0.33
15	269	53.7	0.67	131	48.9	0.65	329	50.7	0.36	528	49.2	0.36
16	241	57.7	0.70	68	53.5	1.17	202	54.2	0.79	380	53.1	0.47
17	174	59.4	0.75	37	54.8	1.41	107	55.5	0.79	239	54.4	0.54
18	48	63.6	1.77	16	53.6	2.09	73	58.3	1.14	48	55.2	1.32

N = Number of children ; SE = Standard error.

TABLE LV—*Zone Wise Weight (kg) Means, Standard Error for Girls*

Age (yr)	Zones											
	North			East			West South			Central		
	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE
6	215	19.1	0.19	188	19.7	0.27	7	21.9	1.04	112	17.9	0.25
7	231	20.4	0.24	181	20.8	0.30	68	22.7	0.45	180	20.2	0.25
8	211	23.6	0.37	183	23.5	0.37	127	24.5	0.43	198	22.5	0.28
9	269	26.8	0.32	253	26.7	0.38	136	28.7	0.51	235	25.6	0.33
10	327	30.1	0.39	280	29.1	0.38	208	31.5	0.49	223	29.1	0.43
11	344	35.3	0.47	201	34.4	0.51	305	36.6	0.49	222	32.2	0.42
12	335	40.4	0.50	238	38.3	0.47	246	41.1	0.58	217	36.2	0.53
13	328	45.0	0.51	237	41.9	0.51	227	45.2	0.60	239	39.9	0.44
14	318	47.1	0.50	217	44.3	0.52	135	49.8	0.88	228	43.1	0.51
15	186	48.8	0.60	196	47.1	0.56	121	52.6	1.04	174	45.6	0.56
16	128	51.1	0.87	116	48.5	0.81	39	52.1	1.31	139	47.6	0.67
17	133	51.0	0.77	15	47.5	1.60	18	52.6	1.33	73	46.9	0.73

N = Number of children ; SE = Standard error.

TABLE LVI—*Weight (kg) Percentiles for Boys in Different Zones*

Age (yr)	Zones											
	North			East			West-south			Central		
	3rd	50th	97th	3rd	50th	97th	3rd	50th	97th	3rd	50th	97th
6	15.0	18.6	23.9	14.6	19.1	24.7	16.1	20.0	25.0	14.9	19.0	25.8
7	15.7	20.3	24.3	16.1	20.5	29.4	16.0	21.6	30.4	16.8	20.3	27.2
8	18.1	22.5	30.4	16.7	22.2	32.4	19.1	23.5	34.0	18.0	22.6	31.8
9	19.8	25.5	34.6	18.8	24.7	33.8	20.4	25.4	38.5	19.3	25.0	34.6
10	22.7	28.8	42.7	20.7	27.2	40.9	21.0	27.2	41.6	21.0	27.1	40.3
11	24.2	32.0	48.9	22.4	30.1	41.2	22.4	30.2	44.1	23.3	30.2	46.6
12	25.1	35.6	53.6	25.3	35.8	48.0	24.3	34.1	54.4	25.0	34.0	49.5
13	27.8	40.4	64.2	26.1	37.5	60.4	26.5	38.3	57.4	27.1	38.3	54.2
14	32.1	46.2	69.0	32.1	42.5	65.2	29.8	44.4	64.6	29.8	44.0	61.6
15	36.2	51.6	73.9	37.6	47.4	68.3	35.5	48.8	70.7	34.7	48.6	66.3
16	41.7	55.4	78.2	41.8	51.0	73.7	39.6	52.0	71.4	40.6	52.2	71.3
17	41.7	58.0	79.0	44.3	53.2	74.0	43.8	55.0	72.1	43.8	53.5	72.4
18	46.5	58.8	84.9	45.3	53.5	81.5	45.3	56.0	75.4	46.1	53.8	72.8

TABLE LVII—*Weight (kg) Percentiles for Girls in Different Zones*

Age (yr)	Zones											
	North			East			West-South			Central		
	3rd	50th	97th	3rd	50th	97th	3rd	50th	97th	3rd	50th	97th
6	15.1	18.7	24.9	15.0	18.8	27.3	17.7	19.7	25.7	14.1	17.9	22.8
7	15.6	19.9	27.9	15.6	20.1	28.2	17.9	20.9	30.3	15.5	19.7	26.6
8	16.2	21.5	35.9	16.6	21.6	33.6	17.3	23.4	33.0	16.6	21.5	31.3
9	18.9	24.5	36.9	18.4	24.3	38.1	19.4	26.1	40.0	17.8	24.2	36.8
10	20.7	28.6	44.5	20.5	28.1	41.7	21.8	30.0	43.7	20.3	27.4	41.3
11	23.0	33.6	51.6	23.6	33.2	49.1	24.1	34.9	52.8	22.1	31.1	44.1
12	26.6	38.8	58.5	26.8	37.6	50.9	26.9	40.4	57.2	24.5	34.8	50.0
13	30.2	42.7	63.2	29.5	41.7	57.0	31.6	45.5	62.8	27.4	39.0	50.5
14	33.9	45.5	63.7	31.9	44.2	59.9	34.4	48.7	70.5	31.7	42.9	57.7
15	36.2	47.5	66.1	35.2	46.1	61.3	36.6	50.0	70.3	35.4	45.7	60.0
16	38.1	48.7	69.4	36.4	47.4	64.8	42.5	50.2	69.4	37.1	46.9	64.4
17	37.5	49.5	71.1	37.8	47.5	68.9	40.3	50.4	68.2	37.6	46.9	65.9

TABLE LVIII—*Per cent Variation (50th percentile) Between Pooled End Zonal Data for Weight*

Age (yr)	Boys				Girls			
	North	East	West-South	Central	North	East-South	West	Central
6	2.11	0.53	5.26	0.00	5.06	5.62	10.67	0.56
7	3.33	2.38	2.86	3.33	4.74	5.79	10.00	3.68
8	0.44	1.77	3.98	0.00	3.37	3.85	12.50	3.37
9	4.51	1.23	4.10	2.46	4.26	3.40	11.06	2.98
10	6.67	0.74	0.74	0.37	6.32	4.46	11.52	1.86
11	4.58	1.63	1.31	1.31	8.74	7.44	12.94	0.65
12	2.30	2.87	2.01	2.30	10.86	7.43	15.43	0.57
13	2.54	4.82	2.79	2.79	9.21	6.65	16.37	0.26
14	4.76	3.63	0.68	0.23	6.56	3.51	14.05	0.47
15	6.39	2.27	0.62	0.21	3.94	0.88	9.41	0.00
16	5.73	2.67	0.76	0.38	2.10	0.63	5.24	1.68
17	4.50	4.14	0.90	3.60	2.27	1.86	4.13	3.10
18	0.34	8.70	4.44	8.19				

TABLE LIX—*Zone Wise Mid-arm Circumference (cm) Means, Standard Error for Boys*

Age (yr)	Zones											
	North			East			West South			Central		
	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE
6	67	16.2	0.15	97	15.6	0.18	28	16.4	0.22	131	16.0	0.12
7	52	15.9	0.15	97	16.0	0.19	65	17.0	0.27	285	16.2	0.09
8	69	16.4	0.15	113	16.7	0.21	108	17.2	0.20	293	16.7	0.11
9	73	17.1	0.21	90	17.5	0.22	148	18.0	0.17	330	17.2	0.11
10	123	18.2	0.24	76	17.5	0.30	229	18.3	0.15	433	17.8	0.10
11	211	18.7	0.18	150	17.6	0.17	246	18.8	0.16	687	18.7	0.10
12	278	19.7	0.18	179	18.6	0.17	329	19.5	0.16	800	19.1	0.08
13	285	20.8	0.18	134	19.4	0.23	322	21.0	0.15	826	19.9	0.09
14	267	21.9	0.19	133	20.2	0.19	350	21.0	0.15	733	20.8	0.09
15	269	23.1	0.20	131	21.5	0.18	329	21.9	0.16	528	21.8	0.11
16	241	23.9	0.19	68	22.6	0.32	202	22.5	0.21	380	22.8	0.13
17	174	24.1	0.21	37	22.8	0.40	107	23.1	0.25	239	22.9	0.16
18	48	25.6	0.44	16	22.6	0.63	73	24.0	0.27	48	23.4	0.44

N = Number of children; SE = Standard error.

TABLE LX—*Zone Wise Mid-arm Circumference (cm) Means, Standard Error for Girls*

Age (yr)	Zones											
	North			East			West South			Central		
	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE
6	215	16.7	0.12	188	16.0	0.14	7	16.4	0.33	122	15.6	0.13
7	231	16.7	0.12	181	16.3	0.15	68	17.7	0.28	180	16.1	0.12
8	211	17.7	0.17	183	16.9	0.17	127	18.0	0.21	198	16.8	0.13
9	269	18.0	0.14	253	18.0	0.17	136	19.1	0.23	235	17.7	0.12
10	327	18.7	0.14	280	18.5	0.15	208	19.6	0.18	223	18.5	0.15
11	344	19.8	0.16	201	19.8	0.17	305	20.5	0.17	222	19.3	0.14
12	335	21.2	0.17	238	20.5	0.15	246	21.2	0.20	217	20.9	0.15
13	328	22.3	0.18	237	21.2	0.17	227	21.9	0.20	239	20.9	0.15
14	318	22.9	0.18	217	21.6	0.17	135	23.2	0.28	228	21.3	0.15
15	186	23.0	0.20	196	22.4	0.18	121	23.9	0.31	174	22.0	0.17
16	128	23.3	0.26	116	22.8	0.24	39	23.4	0.43	139	22.5	0.23
17	133	23.5	0.26	15	22.5	0.70	18	23.5	0.37	73	22.5	0.29

N = Number of children; SE = Standard error.

TABLE LXI—*Height (cm) Means, Standad Error for Boys of Bombay, Madras, Calcutta and Delhi*

Age (yr)	Cities											
	Bombay			Madras			Calcutta			Delhi		
	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE
6				28	114.3	1.14	79	113.9	0.65	62	112.4	0.65
7	15	121.3	1.47	50	119.2	0.85	69	119.1	0.78	6	116.2	0.93
8	33	124.7	0.97	75	123.0	0.65	81	125.3	0.67			
9	51	129.9	0.82	97	130.7	0.66	67	129.4	0.73			
10	114	133.7	0.55	115	134.9	0.67	38	134.1	1.02	54	136.7	0.70
11	131	138.3	0.59	115	139.0	0.60	39	139.9	1.09	146	139.3	0.49
12	164	144.9	0.57	165	143.3	0.65	32	144.4	1.30	217	145.6	0.53
13	142	149.0	0.70	180	149.5	0.63	16	151.2	2.38	216	151.7	0.56
14	155	158.6	0.68	195	156.9	0.60				221	158.4	0.50
15	146	164.5	0.63	183	162.1	0.51				219	164.6	0.49
16	69	166.2	0.78	133	167.1	0.60				191	168.3	0.46
17	23	167.7	1.08	84	168.6	0.65				148	169.0	0.50
18	7	165.1	1.65	66	169.3	0.79				43	171.0	0.76

N = Number of children; SE = Standard error.

TABLE LXII—*Height (cm) Means, Standard Error for Girls of Bombay, Madras, Calcutta and Delhi*

Age (yr)	Cities											
	Bombay			Madras			Calcutta			Delhi		
	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE
6				6	118.6	2.77	89	115.0	0.55	203	113.7	0.33
7	60	121.1	0.73	8	120.5	1.43	74	118.1	0.75	158	118.8	0.44
8	111	124.2	0.55	16	123.3	1.69	76	125.7	0.70	142	124.8	0.53
9	117	130.4	0.57	19	130.5	1.51	147	130.2	0.53	173	129.4	0.46
10	181	135.5	0.47	27	134.7	1.02	136	135.4	0.57	207	137.1	0.48
11	265	141.6	0.42	40	142.7	1.16	121	142.0	0.62	263	143.4	0.45
12	214	147.8	0.42	32	145.0	1.02	142	147.7	0.49	259	149.1	0.42
13	201	152.5	0.44	26	150.7	1.00	143	151.2	0.45	251	153.3	0.38
14	105	155.1	0.59	30	153.3	1.08	114	152.6	0.52	291	155.1	0.34
15	95	157.0	0.59	26	154.8	1.17	108	154.3	0.53	179	155.6	0.41
16	19	158.3	1.37	20	155.3	0.96	68	154.9	0.61	126	156.5	0.48
17				17	155.2	0.96	8	156.9	1.13	132	157.4	0.48

N = Number of children; SE = Standard

TABLE LXIII—*Height (cm) Percentiles of Bombay, Madras, Calcutta and Delhi Boys*

Age (yr)	Cities											
	Bombay			Madras			Calcutta			Delhi		
	3rd	50th	97th	3rd	50th	97th	3rd	50th	97th	3rd	50th	97th
6				104.4	112.6	125.5	102.7	114.3	126.7	103.5	112.0	121.0
7	111.5	120.0	132.2	107.9	117.5	129.2	104.0	118.7	129.5	112.0	117.0	118.5
8	113.0	123.5	136.5	115.1	122.6	134.6	113.5	123.5	135.2			
9	120.9	128.2	141.0	119.0	127.7	141.5	121.3	129.0	138.9			
10	122.5	133.0	143.5	121.9	132.1	147.3	125.0	133.9	146.5	127.0	134.2	147.0
11	125.5	138.1	152.0	128.1	137.5	149.5	128.8	138.4	155.6	128.6	139.1	149.7
12	131.3	143.1	158.5	128.8	142.7	157.3	132.5	143.6	158.3	131.4	145.1	158.2
13	135.5	150.0	166.0	136.5	149.0	164.4	136.5	150.3	166.2	136.5	151.5	165.3
14	143.5	160.0	172.0	142.4	156.6	170.7				144.8	158.0	170.5
15	149.0	165.0	176.6	148.5	162.6	172.5				149.1	165.0	174.5
16	154.6	166.9	177.0	154.6	167.0	178.6				157.3	167.9	178.0
17	157.3	168.0	176.0	159.2	168.4	178.1				159.2	169.5	180.6
18	160.3	169.0	177.0	160.3	169.0	182.2				162.2	170.5	179.0

TABLE LXIV—*Height (cm) Percentiles of Bombay, Madras, Calcutta, Delhi Girls*

Age (yr)	Cities											
	Bombay			Madras			Calcutta			Delhi		
	3rd	50th	97th	3rd	50th	97th	3rd	50th	97th	3rd	50th	97th
6				109.3	117.7	127.4	105.0	112.9	125.8	105.0	112.5	122.1
7	111.8	118.8	133.5	114.6	119.0	131.1	106.5	117.2	131.3	108.5	116.5	128.4
8	114.5	122.2	136.5	108.5	122.9	138.2	113.0	122.0	137.2	113.9	121.9	137.4
9	118.2	127.5	141.8	116.5	129.2	144.5	119.1	127.6	142.6	119.0	127.7	140.7
10	123.6	132.8	148.5	125.8	134.8	147.0	124.7	133.5	148.5	124.5	134.7	150.5
11	129.3	139.5	155.3	130.7	140.5	156.5	128.4	140.7	154.3	128.5	141.6	156.0
12	136.8	146.0	161.0	133.5	146.0	155.5	135.6	146.3	157.4	134.0	147.5	162.0
13	141.0	150.7	164.0	136.8	149.5	159.0	140.3	149.6	161.3	141.4	151.5	153.6
14	144.0	153.9	167.0	141.3	152.3	164.3	142.4	151.5	163.2	144.0	153.5	165.5
15	147.0	156.0	168.0	145.8	153.5	167.0	144.8	152.5	165.5	145.8	154.3	165.5
16	149.5	157.0	168.5	146.7	154.4	167.5	147.4	153.0	166.5	146.7	154.4	167.3
17				147.8	155.0	168.5	151.5	153.1	167.1	147.1	155.0	168.9

TABLE LXV—*Weight (kg) Means Standard Error for Boys of Bombay, Madras, Calcutta and Delhi*

Age (yr)	Cities											
	Bombay			Madras			Calcutta			Delhi		
	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE
6				28	20.4	0.52	79	19.7	0.33	62	18.9	0.30
7	15	25.0	1.21	50	21.7	0.47	69	22.4	0.49	6	19.3	0.17
8	33	26.3	0.93	75	23.7	0.42	81	24.2	0.55			
9	51	28.0	0.75	93	27.4	0.48	67	26.4	0.53			
10	114	29.8	0.62	115	28.8	0.44	38	30.1	1.09	54	33.1	1.02
11	131	32.6	0.64	115	30.7	0.51	39	31.3	1.15	146	33.5	0.64
12	164	38.4	0.81	165	33.8	0.52	32	36.2	1.51	217	38.2	0.63
13	142	40.4	0.86	180	39.1	0.63	16	43.6	2.71	216	43.6	0.73
14	155	47.5	0.90	195	44.3	0.66				221	48.9	0.72
15	146	53.1	0.94	183	48.7	0.64				219	54.7	0.76
16	69	54.2	1.49	133	54.2	0.91				191	59.0	0.79
17	23	52.8	1.93	84	56.2	0.83				148	59.8	0.83
18	7	51.8	1.48	66	59.1	1.22				43	63.8	1.84

N = Number of children; SE = Standard error.

TABLE LXVI—*Weight (kg) Means, Standard Error for Girls of Bombay, Madras, Calcutta and Delhi*

Age (yr)	Cities											
	Bombay			Madras			Calcutta			Delhi		
	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE
6				6	21.8	1.21	89	20.7	0.44	203	19.1	0.20
7	60	22.8	0.50	8	21.7	0.66	74	21.8	0.52	158	20.9	0.31
8	111	24.7	0.46	16	22.9	1.02	76	25.5	0.57	142	24.7	0.47
9	117	29.0	0.57	19	26.6	0.96	147	28.2	0.53	173	26.6	0.42
10	181	31.9	0.54	27	28.3	0.88	136	30.9	0.57	207	32.0	0.52
11	265	36.8	0.52	40	35.4	1.34	121	35.8	0.70	263	36.9	0.55
12	214	41.5	0.62	32	38.4	1.51	142	39.6	0.63	259	41.9	0.57
13	201	45.5	0.64	26	42.8	1.54	143	42.8	0.66	251	46.6	0.60
14	105	50.4	1.05	30	47.9	1.47	114	45.8	0.76	291	47.6	0.53
15	95	53.1	1.19	26	50.7	2.06	108	49.3	0.79	179	48.9	0.61
16	19	53.6	1.98	20	50.7	1.68	68	49.7	1.06	126	51.3	0.88
17				17	52.5	1.40	8	47.8	1.84	132	51.0	0.77

N = Number of children; SE = Standard error.

TABLE LXVII—*Weight (kg) Percentiles of Bombay, Madras, Calcutta and Delhi Boys*

Age (yr)	Cities											
	Bombay			Madras			Calcutta			Delhi		
	3rd	50th	97th	3rd	50th	97th	3rd	50th	97th	3rd	50th	97th
6				16.1	20.4	25.0	15.6	19.4	25.6	15.0	19.5	23.9
7	18.0	24.2	32.8	16.0	21.5	29.6	16.1	21.0	30.4	18.9	22.0	20.1
8	19.4	24.6	37.5	17.9	23.2	29.4	18.0	23.0	35.2			
9	20.4	26.4	39.5	20.3	25.0	37.8	20.0	25.5	33.8			
10	20.5	28.5	43.5	22.0	27.3	39.0	22.4	27.7	47.3	22.9	29.8	50.3
11	21.4	30.8	48.4	23.1	29.5	42.0	22.8	30.8	46.3	24.1	32.4	49.8
12	24.4	35.0	58.9	24.0	32.9	45.3	24.1	34.0	53.4	25.2	36.5	56.5
13	26.0	41.0	59.4	27.3	37.5	56.2	25.7	36.1	62.0	27.3	41.7	64.5
14	29.7	46.2	70.1	29.8	42.6	63.4				32.1	46.6	69.0
15	35.5	49.7	77.3	36.3	47.3	67.4				36.2	52.1	76.0
16	37.2	52.0	83.0	39.6	53.1	73.2				42.3	55.9	82.3
17	41.8	53.8	70.1	43.8	55.8	73.0				42.7	58.0	79.5
18	45.3	54.5	67.2	45.2	57.0	75.4				46.5	59.7	84.8

TABLE LXVIII—*Weight (kg) Percentiles of Bombay, Madras, Calcutta and Delhi Girls*

Age (yr)	Cities											
	Bombay			Madras			Calcutta			Delhi		
	3rd	50th	97th	3rd	50th	97th	3rd	50th	97th	3rd	50th	97th
6				17.7	20.0	25.7	15.7	18.7	28.4	15.1	18.0	24.9
7	17.9	21.1	31.5	19.3	21.0	25.6	16.0	21.0	33.6	15.7	20.0	29.5
8	18.1	22.9	33.2	15.8	22.3	30.8	18.8	23.5	34.9	17.2	22.3	36.6
9	19.4	25.4	41.2	18.3	24.4	36.6	19.4	26.5	39.6	19.7	25.3	38.3
10	21.8	28.7	44.8	20.7	27.1	36.6	21.2	29.7	44.1	21.3	28.9	46.9
11	24.1	33.4	53.1	23.8	31.0	49.8	24.2	33.5	49.9	23.6	33.0	53.0
12	26.9	38.0	57.3	26.9	35.0	55.4	28.0	37.4	51.8	27.7	37.2	59.9
13	31.6	41.4	63.7	34.3	38.5	59.7	30.6	40.6	58.6	30.5	41.1	64.2
14	33.1	44.0	70.5	36.3	41.5	66.1	31.9	43.5	60.9	33.9	43.9	64.6
15	36.6	45.3	73.3	36.3	44.0	68.2	36.5	45.4	64.0	36.3	46.0	66.2
16	43.0	46.0	75.5	36.7	46.0	64.4	37.5	46.0	65.4	38.1	46.8	69.4
17				40.3	47.0	68.2	39.3	46.3	64.5	37.5	47.5	71.1

TABLE LXIX—*Mid-arm Circumference (cm) Means, Standard Error for Boys of Bombay, Madras, Calcutta and Delhi*

Age (yr)	Cities											
	Bombay			Madras			Calcutta			Delhi		
	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE
6				28	16.4	0.22	79	15.9	0.19	62	18.9	0.30
7	15	18.5	0.74	50	16.6	0.24	69	16.6	0.23	6	19.3	0.17
8	33	18.3	0.52	75	16.7	0.16	81	17.4	0.25			
9	51	18.2	0.33	97	17.9	0.19	67	18.1	0.24			
10	114	18.6	0.25	115	18.0	0.16	38	18.9	0.47	54	19.3	0.44
11	131	19.2	0.26	115	18.3	0.16	39	18.6	0.41	146	18.9	0.23
12	164	20.3	0.27	165	18.7	0.15	32	19.9	0.49	217	20.0	0.20
13	142	20.3	0.25	180	19.7	0.17	16	21.3	0.77	216	21.2	0.21
14	155	21.5	0.25	195	20.5	0.17				221	22.1	0.21
15	146	22.8	0.27	183	21.2	0.16				219	23.5	0.23
16	69	22.9	0.43	133	22.2	0.23				191	24.4	0.23
17	23	22.5	0.62	84	23.2	0.27				148	24.3	0.23
18	7	23.1	0.87	66	24.1	0.28				43	25.8	0.46

N = Number of children; SE = Standard error.

TABLE LXX—*Mid-arm Circumference (cm) Means, Standard Error for Girls of Bombay, Madras, Calcutta and Delhi*

Age (yr)	Cities											
	Bombay			Madras			Calcutta			Delhi		
	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE
6				6	16.5	0.37	89	16.6	0.22	203	16.7	0.12
7	60	17.9	0.31	8	16.6	0.46	74	17.0	0.27	158	17.2	0.15
8	111	18.1	0.23	16	16.7	0.46	76	17.8	0.29	142	18.4	0.21
9	117	19.4	0.25	19	17.5	0.35	147	18.5	0.23	173	18.6	0.18
10	181	19.8	0.20	27	18.2	0.32	136	19.1	0.22	207	19.5	0.19
11	265	20.6	0.18	40	19.8	0.41	121	20.2	0.23	263	20.4	0.18
12	214	21.3	0.21	32	20.8	0.46	142	20.8	0.20	259	21.8	0.19
13	201	21.9	0.21	26	21.4	0.48	143	21.6	0.23	251	23.0	0.20
14	105	23.3	0.33	30	22.5	0.43	114	22.2	0.24	291	23.1	0.18
15	95	24.2	0.36	26	22.8	0.47	108	23.0	0.23	179	23.0	0.20
16	19	23.6	0.67	20	23.2	0.56	68	23.1	0.30	126	23.4	0.26
17				17	23.7	0.38	8	23.5	1.00	132	23.5	0.26

N = Number of children ; SE = Standard error.