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**GJMR-I Classification** : *NLMC Code: QT 200, WA 19*



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# Study of Growth of Pre - School Children in Urban Slums of Bijapur City

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**Abstract** - A randomized study was carried out to determine the changes during the growth period in 1-6 years groups. The study consists of 350 children from different slum in Bijapur city. The different parameters were measured and compared with national centre for Chronic Disease prevention and health promotion Committee 2000(CDC) standards. Most of the parameters like Height, Weight and Head circumference were reduced significantly in Study groups in comparison to CDC standards in both sexes. The Significant change in the values of different parameters in Study group may be due to illiteracy, poor sanitation and nutrition etc.

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## I. INTRODUCTION

Growth is a complex phenomenon that is normally accompanied by an orderly sequence of maturation changes. It involves accretion of protein and increase in length and size, not just an increase in weight, which may be due to formation of fat or retention of salt and water<sup>4</sup>. Growth and development begin at conception and end at maturity. They are characteristic of children and any obstacle in this process at any stage can possibly result in aberration of growth and development<sup>8</sup>.

Studies on growth and physical development of infants and children are important as they provide determinants of a nation's health. Measurements of height and weight are still the simplest and one of the reliable means by which the progress of a normal child is evaluated and gross abnormalities detected even when no other clinical sign of illness is detected<sup>5</sup>.

It is difficult to derive norms of Indian children due to wide variation in socioeconomic status, nutrition conditions, and ethnical and regional differences in India<sup>1</sup>. A number of workers in India have studied the nutritional anthropometry of urban school children in the past (Udani<sup>12</sup> 1963, Currimbhoy<sup>3</sup> 1963, Mukerjee and Kaul<sup>7</sup> 1970). With the accent on community pediatrics and realizing the vast potentials of research in rural areas, some samples have been surveyed in rural areas too (Prabhakar A. and Naik et al<sup>10</sup> 1975, Indirabai et al<sup>6</sup> 1979, Rao et al<sup>11</sup> 1984).

Numerous attempts were made in the last four decades or more to utilize the data on body measurements for the evaluation of nutritional status and the general health of children in this country. But no concerted efforts were made to establish norms of height, weight and other anthropometric measurements. Certain isolated observations were on record, but their significance was difficult to judge for lack of accurate background information and uniformity in the methods adopted in obtaining data. Hence a study was undertaken to access the growth pattern of preschool children of certain slums in Bijapur urban area and the results were compared with standard growth pattern.

## II. MATERIALS AND METHODS

A cross sectional study was conducted in preschool children from 3 different slums situated in Bijapur urban area 3 slums selected are

1. Sanjay Gandhi slums.
2. Minimadar Oni.
3. Sunagar Galli.

Total population of these slums is about 2900 and preschool children are about 368 i.e. 12% of population. The children having any evidence of chronic infections, congenital anomalies, tuberculosis are excluded from the studies.

Following physical measurements were carried out on selected preschool children of these slum areas:

1. Height (in cm.)
2. Weight (in Kg.)
3. Head Circumference (in cm.)

## III. STATISTICAL ANALYSIS

Statistical analysis was done using software SPSS version 9. The z score worked out for both boys and girls of different age groups and the score obtained have been more than the tabled value at 0.05 level of significance indicating the observed results were significant.

## IV. RESULTS

Results of present study are narrated in table 1 to 3 and graphs 1 to 6.

Table -1 and graphs 1 as well as 2 depicts the height in centimeters of preschool children (boys and

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girls) of the selected slum areas and corresponding CDC reference values in the age group of 1- 2 years, 2-3 years, 3-4 years, 4-5 years and 5-6 years. As evident from the table that the observed values are significantly lower in both boys and girls of all the age groups included in the present study as compared to CDC reference values.

Table -2 and graphs 3 as well as 4 shows the weight in kgs of preschool children (boys and girls) of the selected slum areas and corresponding CDC reference values in the age group of 1- 2 years, 2-3 years, 3-4 years, 4-5 years and 5-6 years. As seen from the table the observed values are significantly lower in both boys and girls of all the age groups included in the present study as compared to CDC reference values.

Table -3 as well as graphs 5 and 6 gives the head circumferences of preschool children (boys and girls) of the selected slum areas and corresponding CDC reference values in the different age groups included in the present study : 1- 2 years, 2-3 years, 3-4 years, 4-5 years and 5-6 years. As evident from the table the observed values are significantly lower in both boys and girls of all the age groups included in the present study as compared to CDC reference values.

## V. DISCUSSION

There is great paucity of literature in our country on growth and development in preschool children. It is only in recent years that Udani <sup>12</sup> first discussed the effect of different socio – economic factors on various parameters of growth in children, from birth to eleven years. Later I.C.M.R (Indian Council for Medical Research)<sup>5</sup> also gave a statistical report of data on growth from 0 -21 years of age.

Recent work tends to suggest that environmental influences, especially nutrition, are of greater importance than genetic background or other biological factors. Physical dimensions of the body are much influenced by nutrition, particularly in the rapidly growing period of early childhood.

In a vast country like India where people have different ethnic, religious, social and cultural background and a variety of customs and dietary habits, one can expect to find influence of these factors on growth and physical development of children. So, the result of anthropometric surveys should be expressed in relation to local standards that have been constructed from measurement of apparently healthy subjects of same ethnic group.

Bijapur city is included in urban area. It is a city situated in North Karnataka. Present cross sectional study is an effort to study the growth of preschool children selected randomly from three different slums in urban area.

Observations of ICMR (1972) <sup>5</sup> and Phadake <sup>9</sup> (1968) indicate the average values of growth of city children are better than those of children from villages. It

is difficult to say which of the various environmental factors, such as illiteracy, state of hygiene, wearing habits, and understanding of nutritional requirements may be responsible for this difference between the rural and urban children.

Our observation shows a significant decrease of approximate 5% in heights in different age groups and both sexes, as compared to CDC standards (Table – I, Graphs 1 & 2 ). This observed decrease in height may be due to the same factors as that suggested by ICMR & Phadake studies. Further our study indicates, there is significant decrease of approximate 10% in weight in different age groups and in both sexes (Table 2, Graphs 3 & 4 ) as compared to CDC standards.

According to ICMR,<sup>5</sup> the head circumference at the age 1 year is 44.4cms and 43.5cms in boys and girls respectively. At the age of 5 years, it is 48.5cms and 47.8cms in boys and girls respectively. The total increase in the head circumference was 4.1cms and 4.2cms in boys and girls respectively. Therefore, it appears that there is definite reduction in head circumference. In our study group, mean Head circumference is measured in different age groups and both sexes separately (Table – 4, Graphs7 & 8). The mean head circumference in boys has increased by 2.07cm between 1 – 6 years. This increase is less as compared to CDC standards of 4.92cms in the same age group in boys. It is observed in girls that the mean head circumference has increased by 4.59cms between 1 – 6 years. This increase is less as compared to CDC standards of 5.80cms in the same age group in girls.

The results of present study show significant decrease in different parameters including head circumference as compared to American standards also.<sup>2</sup> Hence the observed difference may be due to racial factors and also due to the improved standards of nutrition and environment in the later.

## VI. CONCLUSION

In conclusion decrease in height , weight and head circumference of both sexes of preschool children of selected Bijapur slum areas in all the age groups is suggestive of chronic malnutrition may be due to over population, illiteracy, poor nutrition, poor sanitation and poor socioeconomic status.

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*Table 1 :* Table showing height in centimeter of preschool children of different age groups with approved CDC reference values

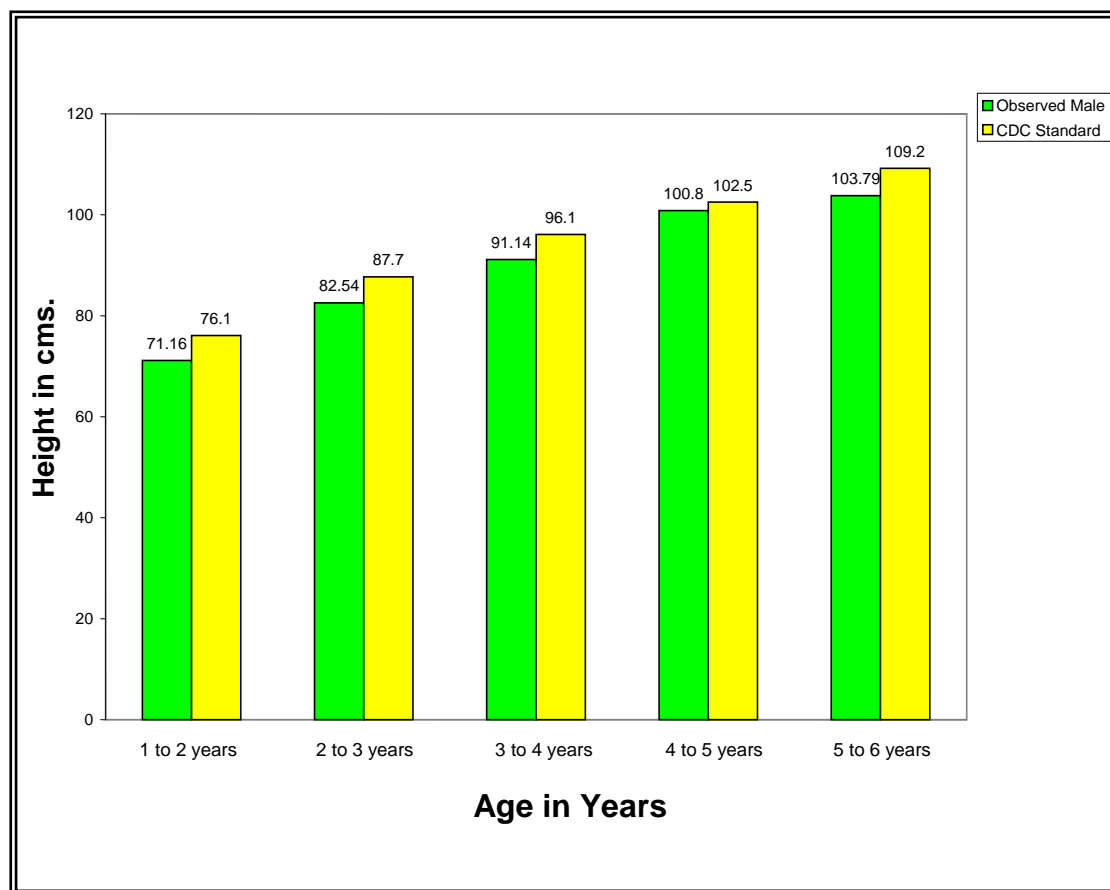
| Age group  | BOYS      |               |           |               |         | GIRLS     |               |           |               |         |
|------------|-----------|---------------|-----------|---------------|---------|-----------|---------------|-----------|---------------|---------|
|            | Frequency | Observed data |           | CDC Standards | Z-score | Frequency | Observed data |           | CDC Standards | Z-score |
|            |           | Mean          | STD. DEV. |               |         |           | Mean          | STD. DEV. |               |         |
| 1 to 2 Yrs | 09        | 71.16         | 1.16      | 76.1          | 12.77   | 06        | 72.00         | 4.6       | 74.4          | 1.27    |
| 2 to 3 Yrs | 39        | 82.54         | 6.13      | 87.7          | 5.26    | 20        | 79.75         | 5.7       | 86.2          | 5.06    |
| 3 to 4 Yrs | 34        | 91.14         | 11.19     | 96.1          | 2.58    | 33        | 91.09         | 6.9       | 95.0          | 3.26    |
| 4 to 5 Yrs | 34        | 100.8         | 15.43     | 102.5         | 0.64    | 30        | 96.95         | 5.3       | 101.0         | 4.19    |
| 5 to 6 Yrs | 109       | 103.79        | 9.81      | 109.2         | 5.76    | 36        | 101.2         | 5.5       | 108.0         | 7.39    |

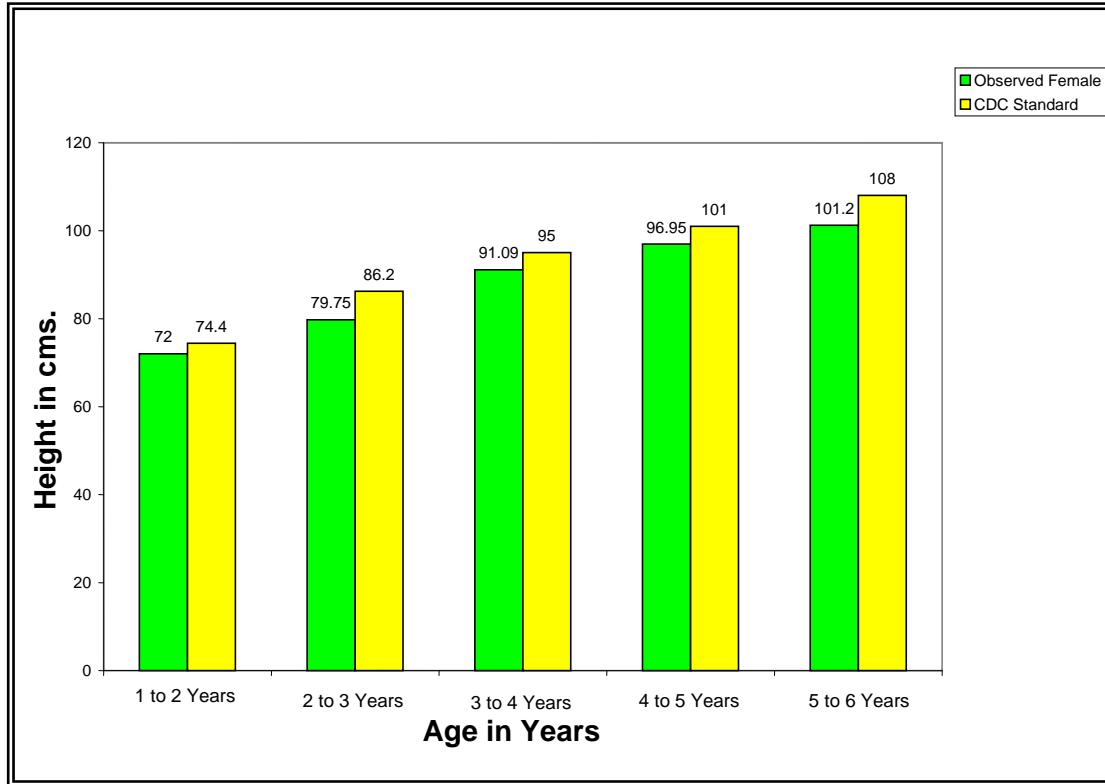
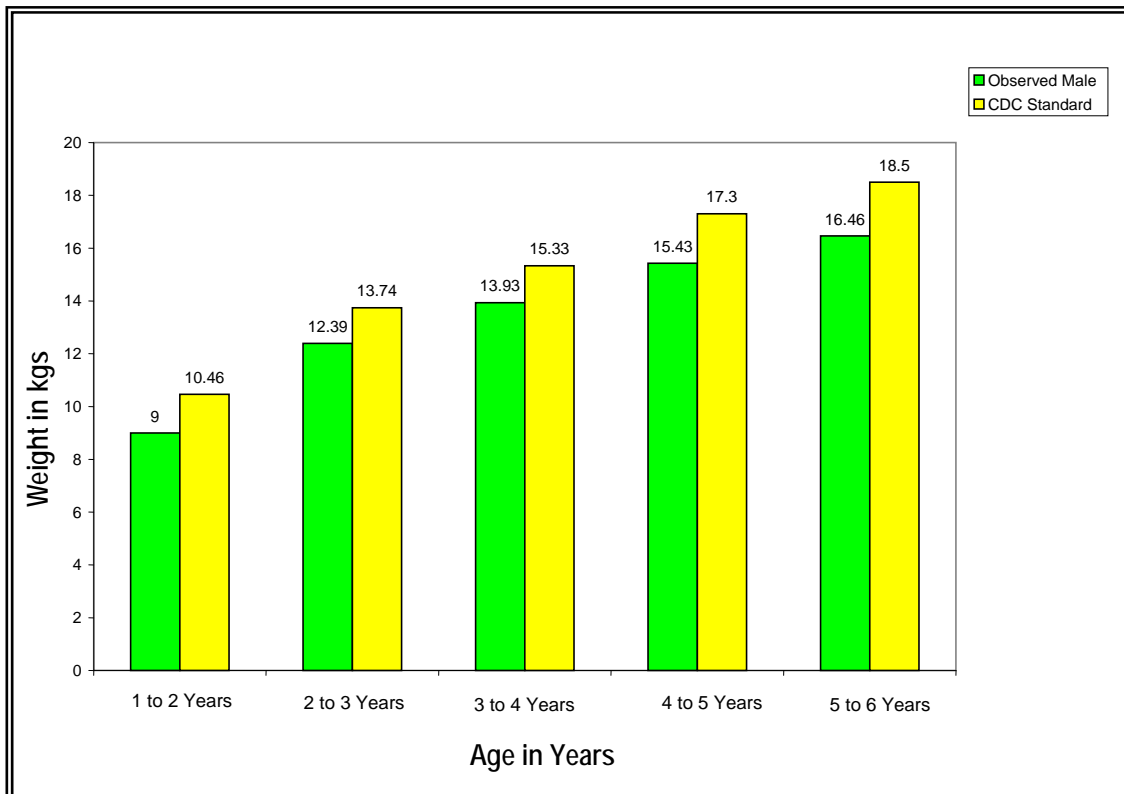
*Table 2 :* Table-2 showing weight in kg's of preschool children of the different age groups with approved CDC reference values.

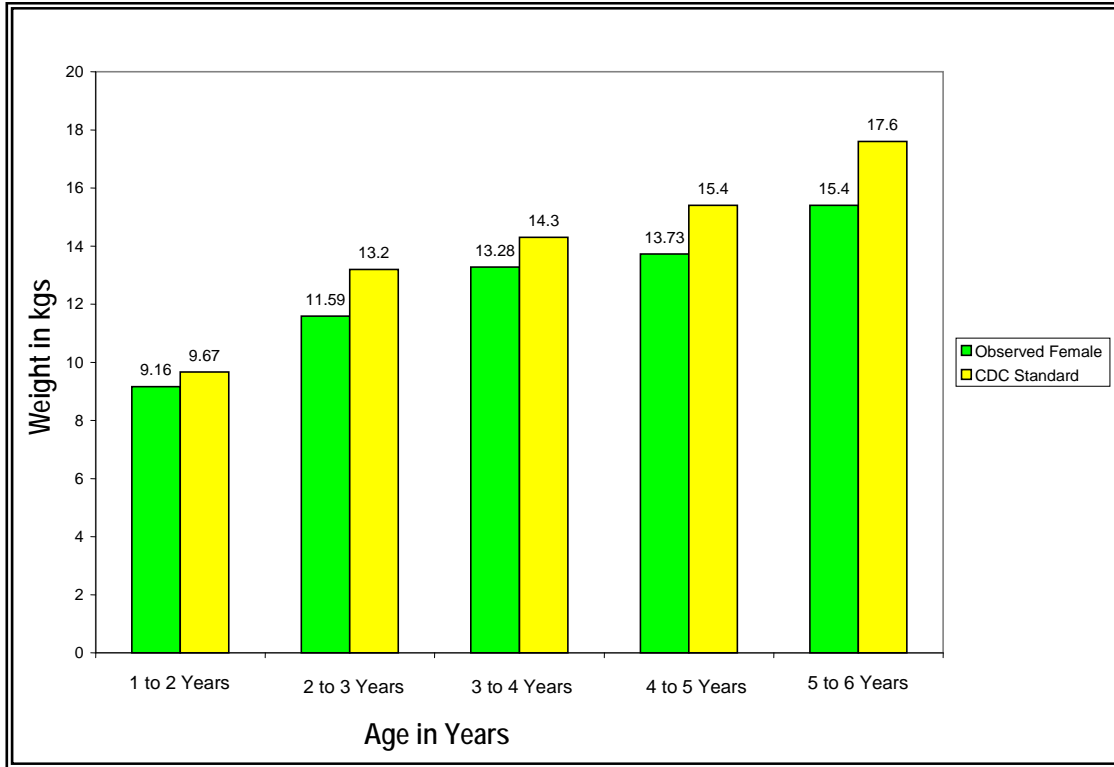
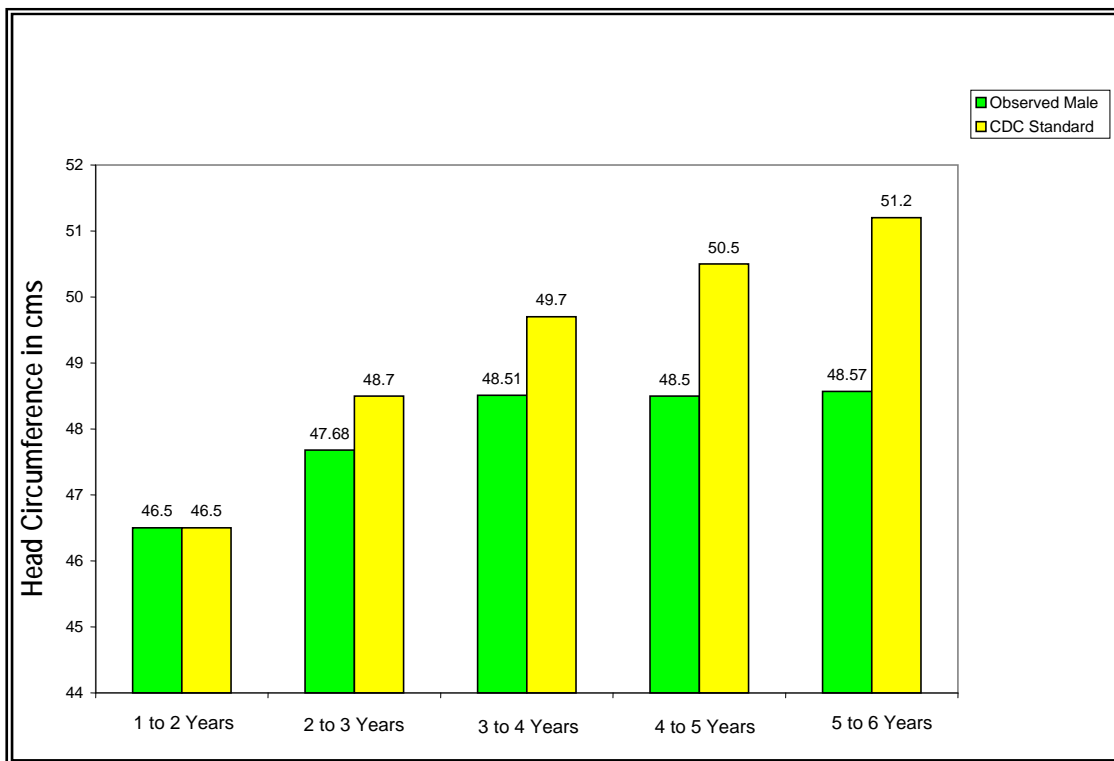
| Age group  | BOYS      |               |           |               |         | GIRLS     |               |           |               |         |
|------------|-----------|---------------|-----------|---------------|---------|-----------|---------------|-----------|---------------|---------|
|            | Frequency | Observed data |           | CDC Standards | Z-score | Frequency | Observed data |           | CDC Standards | Z-score |
|            |           | Mean          | STD. DEV. |               |         |           | Mean          | STD. DEV. |               |         |
| 1 to 2 Yrs | 09        | 09            | 0.89      | 10.46         | 4.92    | 06        | 9.16          | 1.7       | 9.67          | 0.73    |
| 2 to 3 Yrs | 39        | 12.39         | 1.42      | 13.74         | 5.94    | 20        | 11.59         | 1.91      | 13.2          | 3.77    |
| 3 to 4 Yrs | 34        | 13.93         | 2.26      | 15.33         | 3.61    | 33        | 13.28         | 2.12      | 14.3          | 2.76    |
| 4 to 5 Yrs | 34        | 15.43         | 5.07      | 17.3          | 2.15    | 30        | 13.73         | 1.94      | 15.4          | 4.71    |
| 5 to 6 Yrs | 109       | 16.46         | 2.53      | 18.5          | 8.42    | 36        | 15.4          | 1.66      | 17.6          | 7.95    |

*Table 3 :* Table showing head circumference of preschool children of different age groups with CDC reference values.

| Age group  | Boys      |               |           |               |         | Girls     |               |           |               |         |
|------------|-----------|---------------|-----------|---------------|---------|-----------|---------------|-----------|---------------|---------|
|            | Frequency | Observed data |           | CDC Standards | Z-score | Frequency | Observed data |           | CDC Standards | Z-score |
|            |           | Mean          | STD. DEV. |               |         |           | Mean          | STD. DEV. |               |         |
| 1 to 2 Yrs | 09        | 46.5          | 1.22      | 46.5          | 0       | 06        | 43.16         | 7.46      | 45.2          | 0.66    |
| 2 to 3 Yrs | 39        | 47.88         | 2.18      | 48.7          | 2.92    | 20        | 45.55         | 4.98      | 47.5          | 1.75    |
| 3 to 4 Yrs | 34        | 48.51         | 1.71      | 49.7          | 4.06    | 33        | 47.04         | 4.76      | 48.6          | 1.88    |
| 4 to 5 Yrs | 34        | 48.5          | 1.89      | 50.5          | 6.17    | 30        | 47.36         | 2.63      | 49.7          | 4.87    |
| 5 to 6 Yrs | 109       | 48.57         | 4.26      | 51.2          | 6.45    | 36        | 47.75         | 2.29      | 51.0          | 8.52    |

*Graph 1 :* Graph showing height in centimeters of preschool children (boys) with CDC reference values.

*Graph 2 :* Graph showing height in centimeters of preschool children (girls) with CDC reference values.*Graph 3 :* Graph showing weight in kg of preschool children (boys) with CDC reference values.

*Graph 4 :* Graph showing weight in kg of preschool children (girls) with CDC reference values.*Graph 5 :* Graph showing head circumference of preschool children (boys) with CDC reference values.

*Graph 6 :* Graph showing head circumference of preschool children (girls) with CDC reference values.

