CHAPTER – 5

Result -2

Age, area and sex variations of anthropometric characteristics of studied children

5.1: Age and area variations of anthropometric characteristics among girls

5.2: Age and area variations of anthropometric characteristics among boys

5.3: Age and sex variations in anthropometric characteristics among studied children of nonindustrial area

5.4: Age and sex variations in anthropometric characteristics among studied children of industrial area

5.1: Age and area variations of anthropometric characteristics among girls

Table 5.1.1 and figure 5.1 represent mean, stander deviation of height. This table also presents age specific area differences in mean height. Mean (110.78 cm) height among nonindustrial girls were significantly different ($t = -2.62$, $p < 0.01$) from industrial area at the age of 6 years. Mean (113.40 cm for nonindustrial area, 116.93 cm for industrial area) values of height of nonindustrial girls were also significantly ($t = -2.34$, $p<0.05$) different from industrial area at the age of 7 years. Industrial girls were taller than nonindustrial area at the age of 6 and 7 years. Significant age variations were observed ($F = 80.29$ & $F = 123.95$, $p<0.001$) in nonindustrial area and industrial area respectively.

Mean weight of girls is presented in 5.1.2 table and 5.2 figure. Mean weight among girls were significantly different ($t = -2.52$, $p<0.01$) at the age of 7 years. In respect of age mean weight of girls were significantly ($F = 59.80$, and $F = 67.25$, $p<0.001$) increase in both areas nonindustrial and industrial.

Table 5.1.3 and figure 5.3 represent mean values of sitting height among girls. Nonindustrial girls had lower mean (53.36 cm) values of sitting height than (56.15 cm) industrial girls at the age of 3 years. Mean values of sitting height among girls were significantly different ($t = -2.11$, -2.14 & -2.16, $p<0.05$) at the age of 3, 8 and 9 years. Mean values of sitting height were significantly ($F = 37.71$ & $F = 47.53$, $p<0.001$) increasing in respect of growing age of both areas.

Table 5.1.4 and figure 5.4 show mean values of Knee height. Higher mean (33.77 cm) was found in 6 years girls of industrial area than (31.89 cm) nonindustrial area. Significant ($t = -2.44$, $p<0.01$) mean difference was found between 6 years aged children of two areas. Significant ($t = 2.16$, $p<0.05$) mean difference was observed between 9 years aged children of two areas also. In respect of age mean values of knee height were significantly ($F = 41.46$, $p<0.001$ for nonindustrial area & $F = 68.63$, $p<0.001$ for industrial area) increase of both areas.

Table 5.1.5 and figure 5.5 represent mean and stander deviation of MUAC among studied children of two areas. Higher mean (17.83±3.17cm) value was observed in industrial area than (16.48 ±1.69cm) nonindustrial area at the age of 9 years. Significant mean differences ($t = -2.11$, $p<0.05$ and $t = -2.45$, $p < 0.01$) were found between 9 and 12 years aged girls of two areas. Mean

values of MUAC of the girls of two studied areas were significantly (F = 15.73 & F = 19.73, p<0.001 nonindustrial area and industrial area respectively) increasing in respect of growing age.

Table 5.1.6 and figure 5.6 represent mean and stander deviation of hip circumference (HC) among studied children. Industrial girls had lower mean (53.14±2.86cm) than nonindustrial (54.92 ±3.20cm) at the age of 5 years. Industrial girls had higher mean (61.03±6.46cm) than nonindustrial girls (58.16 ±5.24cm) at the age of 8 years. Mean values of HC among children were significantly different (t = 2.38 & -1.92, p<0.05 respectively) at the age of 5 and 8 years. In respect of age means of hip circumference were significantly (F = 29.04 & F = 38.15, p<0.001 nonindustrial and industrial area) increase.

Table 5.1.7 and figure 5.7 show that mean and stander deviation of Waist Circumference (WC). Higher mean (53.89 ±4.47cm) was observed in 9 years aged industrial girls than nonindustrial (51.32 ±4.12cm) girls. Mean of WC among 9 years children were significantly different (t= -2.27, p<0.05) from each other. In respect of growing age mean values of WC were significantly increase (F = 19.97, F = 22.40, p<0.001) in nonindustrial area and industrial area respectively.

Table 5.1.8 and figure 5.8 show that mean and stander deviation of BMI among the studied children. Higher mean (13.67 ±1.15 kg/m²) value of BMI was found in nonindustrial girls than industrial girls (12.55±1.53kg/m²) at the age of 5 years. Significant area differences (t = 3.32, p<0.001and t = -2.29, p<0.05) were observed at the age of 5 and 9 years respectively. Mean value of BMI among girls of two areas were significantly increasing (F = 10.51 of nonindustrial area & F = 9.10 of industrial area, p<0.001) in respect of their age.

Table 5.1.9 and figure 5.9 represent mean value of conicity index of studied children. Higher mean (17.33±1.44) of CI was found in 5 years aged nonindustrial girls than industrial girls (16.46±1.74). Mean value of CI among 9 years aged girls were showed opposite that is industrial girls had higher mean (21.06±3.02) than nonindustrial girls (19.30±2.58). Significant (t = 2.19p<0.05 & t = 2.46p<0.01) differences were observed at the age of 5 and 9 years aged girls of nonindustrial and industrial area. Mean value of CI was significantly increasing (F = 48.28 & F = 34.31, p<0.001 nonindustrial area and industrial area respectively) in respect of growing age.

Table 5.1.10 and figure 5.10 represent mean and stander deviation of Waist Hip Ratio (WHR) among the school going children. No significant differences were found between mean values of WHR of girls of two areas. In respect of age mean values of WHR among girls were significantly increase ($F = 6.59$, $F = 8.30$, $P<0.001$ nonindustrial and industrial area).

Mean and stander deviation of WHtR among girls of two areas is represented in table 5.1.11 and figure 5.11. Significant mean differences ($t = 2.47$, $p<0.01$ and $t = 2.05$, $p<0.05$) were observed between two areas children at the age of 9 and 7 years. In respect of age mean values of WHtR were significantly ($F = 7.22$ & $F = 7.92$, $p<0.001$ nonindustrial and industrial area) increase.

Table 5.1.12 and figure 5.12 represent mean and stander deviation of triceps skin fold. Significant ($t = -2.68$, $p<0.01$) mean difference was found between 6 years aged girls of two areas. Significant age variations were observed ($F = 4.85$, $p<0.001$) in nonindustrial area but not in industrial area.

Mean of biceps skin fold among girls of two areas is represented in 5.1.13 table and 5.13 figure. Higher mean (5.16mm) of biceps skin fold was found in 5 years aged girls of nonindustrial area than industrial area (4.19mm). But 9 years aged industrial girls had higher mean (5.28±1.97mm) value of biceps skin fold than nonindustrial girls (4.12±0.96mm). Significant ($t = 2.95$ & $t = 2.92$, $p = 0.01$) area differences were found at the age of 5 and 9 years. Significant age variations were observed ($F= 4.01$, $p<0.01$) in nonindustrial area but not in industrial area.

Mean and stander deviation of sub scapular skin fold among girls is represented in 5.1.14 table and figure 5.14. Higher mean (6.95±2.59mm) value of sub scapula was observed in 5 years aged nonindustrial girls than industrial girls (5.56±0.86mm). In this table it is also showed that 8 years aged industrial girls had higher mean (6.97±1.95mm) than the nonindustrial girls (6.15±1.07mm). Statistically significant ($t = 2.89$, $p<0.01$ and $t = -2.08$, $p<0.05$) area differences were observed at the age of 5 and 8 years respectively. Significant age variations were observed ($F = 6.00$, $p<0.001$) in nonindustrial area but not in industrial area.

5.2: Age and area variations of anthropometric characteristics among boys

Table 5.2.1 and figure 5.1 represent mean and stander deviation of height among boys. 3 years aged industrial boys had greater mean (101.53 cm) than nonindustrial boys (98.04 cm). Lower mean (120.22± 6.58cm for 8 years, 129.14±9.63cm for 10 years) values of height were found in nonindustrial boys than industrial boys (124.16±6.62cm for 8 years, 134.14± 7.45cm). Significant area difference ($t = -2.64$, $p<0.01$) between mean height were observed in 3years aged group of boys. Mean values of height of nonindustrial boys were significantly different ($t = -2.32$ & $t = -2.28$, $p<0.02$) from industrial boys at the age of 8 and 10 years. Significant age variation was observed ($F = 139.99$ & $F = 124.02$, $p<0.001$) in nonindustrial and industrial area.

Table 5.2.2 and figure 5.2 show that mean and stander deviation of weight among boys. Greater mean value of weight (13.60 ± 1.60kg) was observed in industrial boys than nonindustrial (12.42±1.84kg) at the age of 3 years. Industrial boys had greater mean weight (21.82±3.20 for 8 years, 31.18± 8.57 for 11years) than nonindustrial boys (19.53 kg and 2.48 for 8 years, 27.25 kg and 4.66 for 11 years). Mean values of weight among industrial boys were significantly different ($t = -2.26$, $p<0.01$) from nonindustrial boys at the age of 3 years. Significant area differences of mean weight ($t = -2.05$, $t = -2.10$ & $t = -2.26$, $p<0.05$) were also observed in 6, 10 and 11 years aged boys. Mean weight among 8 years aged boys were significantly different ($t = -3.12$, $p<0.01$). Significant age variation was observed ($F = 78.54$ & $F = 67.92$, $p<0.05$) in nonindustrial and industrial boys.

Table 5.2.3 and figure 5.3 represent mean and stander deviation of sitting height among boys. Greater mean values were found in industrial boys (55.76±3.06cm, 69.04± 4.34cm and 70.51±5.92cm) than nonindustrial boys (49.04±3.42cm, 66.73±4.77cm, and 68.01±3.46cm) at the age of 3, 10 and 11 years respectively. Mean value of sitting height among 3 years aged boys of two areas were significantly different ($t = -8.07$, $p<0.001$). Significant area difference ($t = -2.64$, $p<0.01$) in mean value of sitting height was observed in 4 years aged boys. Mean of Sitting height among 10 and 11 years aged boys of two areas were also significantly different ($t = -1.99$ & $t = -2.05$, $p<0.05$ respectively). Mean values of sitting height of boys were significantly increasing ($F = 90.20$ & $F = 61.49$, $p<0.001$ nonindustrial and industrial boys) in respect of growing age.

Table 5.2.4 and figure 5.4 represent mean and stander deviation of knee height among boys. Mean of Knee height of 3 and 8 years aged industrial boys were significantly different ($t = -4.16$, $p<0.001$ and $t = -2.50$, $p<0.01$) from nonindustrial boys. Mean values of knee height were significantly increasing ($F = 99.48$ & $F = 76.53$, $p<0.001$ nonindustrial and industrial boys) in respect of age.

Table 5.2.5 and figure 5.5 represent mean and stander deviation of MUAC among boys. 3years aged industrial boys had greater mean (15.94 ±1.99cm) than nonindustrial boys (14.99±1.13cm). Higher mean value of MUAC was observed in 6 years aged industrial boys (17.44±2.15m) than nonindustrial boys (15.97±1.17cm). 12 years aged industrial boys had greater mean (20.50± 2.45cm) value of MUAC than nonindustrial boys (19.13±1.77 cm). Mean of MUAC of 3 years aged nonindustrial boys were significantly different ($t = -2.31$, $p<0.05$) from industrial boys. Mean values of MUAC of nonindustrial boys were also significantly different ($t = -3.38$, $p<0.001$ for 6 years, $t = -2.25$, $p<0.05$ for 8 years and $t = -2.54$, $p<0.01$ for 12 years) at the age of 6, 8 and 12 years aged industrial boys. Significant age variations were observed ($F = 22.28$ & $F = 13.01$, $p<0.001$) in nonindustrial area and industrial area.

Table 5.2.6 and figure 5.6 represent mean of HC among boys of two areas. Nonindustrial 3 years aged boys had lower (50.35±2.58 cm) mean value than industrial boys (52.32± 2.96 cm). Mean value of HC of boys of two areas were significantly different ($t = -2.78$, <0.01) at the age of three years. Mean value of HC of industrial boys (61.47 ± 4.58 cm) was greater than the mean (57.90cm and 5.16 cm) value of nonindustrial boys at the age of 8 years. This difference was statistically significant ($t =-2.85$, $p<0.01$). Significant age variations were observed ($F = 48.56$ & $F = 36.93$, $p<0.001$) in nonindustrial area and industrial area.

Table no. 5.2.7 and figure 5.7 represent mean and stander deviation of WC among boys of two areas. 8 years aged industrial boys had greater mean (54.08± 3.50cm) than nonindustrial boys (52.03 ±4.40 cm). Mean values of WC of boys of two areas were significantly different ($t = -2.02$ & -2.21, $p<0.05$) at the age of 8 and 11 years. In respect of growing age mean values of WC of boys were significantly increase ($F = 22.18$ & $F = 18.27$, $p<0.001$for nonindustrial area and industrial area respectively).

Table 5.2.8 and figure 5.8 show that mean and stander deviation of BMI among boys. Industrial boys had greater mean (14.14 ±1.54 kg/m², 16.07±2.76kg/²) value of BMI than the mean (13.10±1.29 kg/m² and 14.79±1.40kg/m²) of nonindustrial boys at the age of 6 and 11 years. Whereas mean of BMI of 6 ($t = -2.60$, $p<0.01$) and 11 ($t = -2.32$, $p<0.05$) years aged boys of two areas were significantly different. Mean values of BMI were significantly increasing ($F = 9.75$ for nonindustrial area & $F = 8.84$ for industrial area, $p<0.001$) in respect of age.

Table 5.2.9 and figure 5.9 depict mean and stander deviation of CI among boys. Industrial boys had greater mean values of CI (16.52±1.90, 20.77±2.13, 19.25±2.75 and26.67±5.69) than the mean (15.63±1.64, 17.97±1.83, 19.24±2.29, and 23.06±3.10) values of nonindustrial boys at the age of 3, 6, 8 and 11years. Boys of nonindustrial area were significantly different ($t = -1.97$ & $t = -2.17$, $p<0.05$ respectively) from industrial area at the age of 3 and 6 years in respect of mean of CI. 8 and 11 years aged boys of nonindustrial area were significantly different ($t = -2.71$ & $t = -2.46$, $p<0.01$ respectively) from boys of industrial area on the basis of mean of CI. Significant age variations were observed ($F = 38.40$ & $F = -2.46$, $p<0.001$) in nonindustrial area and industrial area respectively.

Table 5.2.10 and figure 5.10 represent mean and stander deviation of WHR among boys. There was no significant difference of mean WHR of all aged boys in both areas. In respect of age mean values of WHR among boys were significantly increase ($F = 8.92$ & $F = 8.13$, $p<0.001$for nonindustrial area and industrial area respectively).

Table 5.2.11 and figure 5.11 represent mean and stander deviation of WHtR among boys. Significant area differences ($t = 2.47$, $p<0.01$and $t = -2.00$, $p<0.05$) were found between mean WHtR at the age of 9 and 11 years. Mean values of WHtR of boys were statistically significant ($F = 17.08$ for nonindustrial area & $F = 12.13$ industrial area, $p<0.05$) in respect of growing age.

Table 5.2.12 and figure 5.12 show that mean and stander deviation of triceps skin fold of boys. Nonindustrial 4 years aged boys (6.73± 1.27mm) had greater mean than (6.13±1.17) industrial boys and this difference was also statistically significant ($t = 1.39$, $p<0.05$). This table is also represented that industrial 8 years aged boys had greater mean than (5.73±1.13mm) nonindustrial boys. This difference was also statistically significant ($t = -2.32$, $p<0.05$). Significant age variation was not found in two areas.

Table 5.2.13 and figure 5.13 represent about mean and SD of biceps skin fold among boys. Maximum difference of mean was observed in 8 years (mean = 3.92±0.93mm for nonindustrial area and mean = 2.25± 2.18mm for industrial area) and 11 (mean = 3.92±1.02mm for nonindustrial area and mean = 5.3±2.19mm for industrial area) years aged boys. That was also statistically significant ($t = -3.13$, $p<0.01$ for 8 years and $t = -340$, $p<0.001$for11 years). No significant age variation was observed in two areas.

Table 5.2.14 and figure 5.14 present mean and SD of sub-scapular skin fold of studied boys. Industrial boys had greater mean (6.41mm for 5 years and 6.40mm for 6 years) than mean (5.69mm for 5 years and 5.70mm for 6 years) of nonindustrial boys. This table is also showed that this differences were also statistically significant ($t = -1.95$, $p<0.05$ for 5 years and $t = -2.09$, $p<0.05$ for 6years). In respect of age mean values of sub scapular skin fold were significantly increase ($F = 3.69$ for nonindustrial area & $F = 3.18$ for industrial area, $p<0.001$).

Age and sex variations in anthropometric characteristics among studied children of nonindustrial area

Table 5.3.1 and figure 5.1 present mean and SD of height among children. Mean values (101.07±8.12 cm of 3 years and 104.58±7.05 cm of 4 years) of height among boys were higher than the girls (98.04±3.80 for 3 years and 101.41±6.52 cm for 4 years). Mean of height was sexually dimorphic ($t =-2.08$, $p<0.05$) at the age of 7 years. In respect of age mean values of height among boys and girls were significantly increase ($F = 139.99$ for boys and $F = 82.29$ for girls $p<0.001$).

Table 5.3.2 and figure 5.2 represent sex difference of mean and SD of weight in respect of age. Higher mean (23.92±4.95 kg) of weight was observed in boys at the age of 9 years than mean (20.94±5.27) value of girls. That was significantly ($t =-2.29$, $p<0.05$) different. Significant age variation was observed ($F = 78.54$ for boys and $F = 59.80$ for girls, $p<0.001$) in both sexes.

Table 5.3.3 and figure 5.3 present mean and SD of sitting height among school going children. Among 3 years aged girls had higher mean (53.36±3.42 cm) value than the boys (49.04±3.42cm). In this age group children were sexually dimorphic ($t = 3.31$, $p<0.01$). 4 years aged girls had higher mean (55.80±5.60cm) than the boys. In this group among children were

sexually different ($t = 2.14$, $p<0.05$). In respect of age mean of sitting height of boys and girls were significantly increase ($F = 90.20$, for boys and $F = 37.71$, for girls $p<0.001$respectively).

Table 5.3.4 and figure 5.4 represent mean of knee height among school going children. Mean of knee height was sexually dimorphic at the age of 3 years ($t = 2.28$, $p<0.05$) and 9 years ($t = -2.59$, $p<0.01$). Among three years aged girls had higher mean value (28.11cm) of knee height than the (26.53 cm) boys. But 9 years aged boys had higher mean (37.57 cm) than the girls (35.00cm). Mean and SD of knee height among boys and girls were significantly ($F = 99.48$ for boys and $F = 41.46$ for girls $p<0.001$) increase in respect of age

Table 5.3.5 and figure 5.5 represent mean of MUAC among school going children. Among 9 years aged girls had low mean (16.48±1.69 cm) of MUAC than the boys (17.82±2.22cm). Children of this age group were also sexually dimorphic ($F = -2.70$, $p<0.01$). Sex specific significant age variation was observed ($F = 22.28$ for boys and $F = 15.73$ for girls).

Table 5.3.6 and figure 5.6 represent mean and SD of HC of school going children. Maximum sex difference of mean of HC was found in children at the age of 9 years that was boys had higher mean (63.23±5.39 cm) than the girls (58.28±3.37cm). Nine years aged children were sexually dimorphic ($t =-3.37$, $p<0.01$). In respect of age mean and SD of HC among boys and girls were significantly increase ($F =48.56$ for boys and $F = 29.04$ for girls $p<0.001$respectively).

Table 5.3.7 and figure 5.7 depict mean and SD of WC among the studied children. Maxim sex difference of mean of WC was observed among school going children at the age of 9 years. Higher mean (55.04±4.94cm) was found in boys than the girls (51.32±4.12cm).This difference was statistically significant ($t = -3.23$, $p<0.01$). Sex specific significant age variation was found ($F = 22.18$ for boys and $F = 19.97$ for girls $p<0.001$).

Table 5.3.8 and figure 5.8 depict mean of BMI among school going children. Maximum difference of mean of BMI was found in 9 years aged children. Boys had higher mean (15.00±2.11 kg/m²) of BMI than (13.67±1.51 kg/m²) girls. At this age children were sexually dimorphic ($t = -2.89$, $p<0.01$). In respect of age mean of BMI of children were significantly increase ($F = 9.75$ for boys and $F = 10.51$ for girls, $p<0.001$) respectively

Table 5.3.9 and figure 5.9 represent mean of CI among school going children. Boys had higher mean (22.00±3.59) than the girls (19.30±2.58) at the age of 9 years. This difference was sexually dimorphic ($t = -3.42$, $p<0.01$). Sex specific significant age variation was observed ($F = 38.40$ for girls and $F = 48.28$ for boys, $p<0.001$ respectively).

5.3.10 table and figure 5.10 represent mean of WHR of the studied children. No sexual difference was found in all age groups. Sex specific significant age variation was found ($F = 8.92$ for boys and $F = 6.59$ for girls, $p<0.00$ respectively) in nonindustrial area.

Table 5.3.11 and figure 5.11 represent that mean of WHtR among school going children. Maximum sex differences of mean WHtR were observed at 4 and 9 years aged children. Boys had higher mean (0.49±0.04 for 4 years and 0.44±0.04 for +9 years) than girls (0.47±0.05 for 4 years and 0.42±0.04 for 9 years). In respect of growing age mean of WHtR were statistically significant ($F = 17.08$ for boys and $F = 7.22$ for girls, $p<0.00$ respectively).

Table 5.3.12 and figure 5.12 present mean of triceps skin fold of school going children. Low mean (6.17±2.16mm) of triceps skin fold was found in boys than (7.81±3.61mm) girls at the age of 10 years. But maximum difference was observed between mean of triceps skin fold in 11 years. That was girls had higher mean (7.80±2.60mm) than the boys (5.88±1.79). Significant sex differences were seen at the age of 10 ($t = 2.16$, $p<0.05$) and 11 ($t = 3.41$, $p<0.01$) years. Significant age variation was found ($F =4.85$, $p<0.001$) in girls not in boys.

Table 5.3.13 and figure 5.13 show that mean of biceps among school going children. Mean of biceps skin fold was sexually different at the age of 5, 10 and 11 years. At this age group girls had higher mean (5.16±1.70mm, 5.84±2.92mm, and 5.56±3.90mm respectively) than (4.22±0.72 mm, 4.48±1.65mm, and 3.92±1.02mm respectively) boys. Children of this age group were also statistically different ($t = 2.88$, $p<0.01$, $t = 2.32$, $p<0.05$ and $t = 3.90$, $p<0.01$) respectively. Significant age variation was found ($F = 4.01$,$P<0.001$) in girls not in boys.

Table 5.3.14 and figure 5.14 represent mean of sub scapular skin folds among the studied children. Mean values of sub scapular skin fold were sexually different at 5, 10 and 11 years aged children. At this age group girls had higher mean (6.95±5.59 mm, 8.43±3.64mm, and 8.09±2.93mm respectively) than boys (5.69±0.92mm, 6.86±1.82mm, and 6.81±1.54mm). This differences were sexually dimorphic ($t = 2.59$, $p<0.01$, $t = 2.23$, $p<0.05$ and $t = 2.18$, $p<0.05$

respectively). Sex specific significant age variation was found (F = 3.69 for boys and F = 6.00 for girls, p<0.001 respectively) in nonindustrial area.

5.4: Age and sex variations in anthropometric characteristics among school going children of industrial area

Table 5.4.1 and figure 5.1 represent mean of height among the studied children. Sex differences of height were found at the age of 9 and 10 years. 10 years aged children were sexually dimorphic (t = -2.73, p<0.01) in respect of mean height. In respect of growing age mean of height among the children were significantly increase (F = 124.02 for boys and F = 123.95 for girls, p<0.001).

Table 5.4.2 and figure 5.2 represent mean of weight among school going children. No significant sex differences were found at all age groups. Sex specific significant age variation was found (F = 67.92 for boys and F = 67.25 for girls, p<0.001 separately) in industrial area.

Table 5.4.3 and figure 5.3 present mean of sitting height among the children. Sex differences of sitting height of the children were observed at the age of 6, 9, and 10 years. Boys had higher mean (61.66±3.23 cm, 66.83±4.37cm, and 69.04±4.34cm) than the mean value (59.74±3.03cm, 64.07±3.71cm, and 66.64±4.32cm) of girls in same age groups. Children of that age groups were sexually dimorphic (t = 2.44, p<0.05 for 6 years, t = -2.64, p<0.01 for 9 years and t = -2.22, p<0.05 for 10 years). Sex specific significant age variation was found (F = 61.49 for boys and F = 47.53 for girls, p<0.001) in industrial area.

Table 5.4.4 and figure 5.4 show mean of knee height among school going children. Significant sex difference was observed at 8 years aged children (t = -2.04, p<0.05). Mean and SD of knee height were statistically significant (F = 76.53 for boys and F = 68.36, p<0.001) in respect of growing age.

Table 5.4.5 and figure 5.5 show mean of MUAC among studied children. Maximum sex difference (17.44±2.15 cm for boys and 15.82±1.68 cm for girls) of mean MUAC was found at the age of 6 years. That was also statistically significant (t = -3.33, p<0.01). Sex specific significant age variation was found (F = 13.01 for boys and F = 19.73 for girls, p<0.001) in industrial area.

Table 5.4.6 and figure 5.6 represent mean of HC among school going children. Sex differences (55.53±5.15cm for boys and 53.14±2.86cm for girls) of mean of HC were observed at the age of 5 and 6 years. Mean values of HC of that children were sexually dimorphic ($t = -2.25$, $p<0.05$ for 5 years and $t = -2.55$, $p<0.01$ for 6 years). Mean of HC were significantly increase ($F = 36.93$ for boys and $F = 38.15$ for girls, $p<0.001$) in respect of growing age.

Table 5.4.7 and figure 5.7 present mean of WC of school going children. Sex differences of mean WC were found at the age of 6 (52.28±4.57 cm for boys and 49.49±3.65cm for girls) and 7 (52.57±5.12cm for boys and 50.28±4.54 cm for girls) years. 6 years aged children were significantly different ($t = -2.67$, $p<0.01$) in respect of mean WC. Sex specific significant age variation was found ($F = 18.27$ for girls and $F = 22.40$ for girls, $p<0.001$) in industrial area.

The 5.4.8 table shows mean of BMI among the studied children (figure 5.8). Sex differences of mean BMI were found at the age of 5 and 11 years aged children. Greater value of mean of BMI was observed in boys (13.53±1.90kg/m² for 5 years, 16.07±2.76kg/m² for 11 years) than the girls (12.55±1.53kg/m² for 5years and15.27±1.37kg/m² for 11 years). Sex specific significant age variation was found ($F = 8.84$ for boys and $F = 9.10$ for girls $p<0.001$) in industrial area.

Table 5.4.9 and figure 5.9 present mean and SD of CI among the studied children. Sex specific mean differences of CI among the children were found at the age of 5 (17.56±2.98 for boys, 16.46±1.74 for girls) 6 (19.25±2.75 for boys, 17.84±2.75 for girls) and 11 (26.67±7.69 for boys and 24.23±3.48 for girls) years. In respect of mean of CI 6 years children were sexually dimorphic ($t = -2.04$, $p<0.05$). In respect of growing age mean of CI were statistically significant ($F = 29.49$ for boys and $F = 34.31$ for girls, $p<0.001$).

Table 5.4.10 and figure 5.10 represent mean of WHR among children. Sex specific mean differences of WHR among children were observed at the age of 5 (0.90±0.04 for boys, 0.91±0.03 for girls) and 11 (0.90±0.10 for boys and 0.86±0.05) years. Significant sexual difference ($t = -2.24$, $p<0.05$) was found in 11 years aged children. In respect of growing age WHR of children were significantly increase ($F = 8.13$ for boys and $F = 8.30$ for girl, $p<0.001$).

Table 5.4.11 and figure 5.11 present mean of WHtR among the children. Sex specific differences of mean WHtR among participants were observed at the age of 6 (0.46±0.04 for boys

and 0.43±0.05 for girls), 9 (0.42±0.03 for boys and 0.43±0.03 for girls), and 11 (0.44±0.06 for boys and 0.42±0.02) years. 9 years aged girls had greater mean of WHtR than the boys. Significant sex differences were found in 6 and 9 years aged children. Sex specific significant age variation was found ($F = 12.13$ for boys and $F = 7.92$ for girls, $p<0.001$) in industrial area.

Table 5.4.12 and figure 5.12 represent mean of triceps skin fold of the studied children. No significant sex differences were found in all age groups. Sex specific significant age variation was not found ($F = 1.11$, $p<0.35$ for boys and $F = 1.06$, $p<0.38$ for girls) in industrial area.

Table 5.4.13 and figure 5.13 present mean of biceps skinfold among the studied children. Sex specific mean differences (4.64±1.10mm, 4.41±1.29mm for boys and 4.19±0.79mm, 5.28±1.97mm) of biceps skinfold were observed at the age of 5 and 9 years. 9 years aged girls had greater value than the boys. That was also statistically significant ($t = 2.01$, $p<0.05$). Sex specific significant age variation was not found ($F = 1.39$, $p<0.18$ for boys and $F = 1.75$, $p<0.07$ for girls) in industrial area.

Table 5.4.14 and figure 5.14 represent mean of sub-scapula skinfold of the school going children. Sex specific mean differences of sub-scapular skinfold were found at the age of 5, 9, 10 years. 5 and 9 years aged children were sexually dimorphic. Mean of sub-scapula skinfold were significantly increase ($F = 3.18$, $p<0.001$for boys, $F = 5.69$, $p<0.001$ for girls) in respect of growing age.

Summary of Results

The important of this chapter are summarized below

- Industrial girls were taller than nonindustrial girls at the age of 6 and 7 years. Industrial girls were heavier than nonindustrial girls at the age of 7 years.
- Higher mean values of sitting height were seen in industrial girls than nonindustrial at the age of 3, 8 and 9 years. Lower values of knee height were observed at 6 and 9 years aged girls of nonindustrial area than industrial area.
- Industrial girls had higher mean values of MUAC than nonindustrial area at the age of 9 and 12 years.
- Significant area differences of mean HC were found in 5, 8 and 9 years aged girls.

- Mean value of WC of 9 years aged industrial girls were significantly different from nonindustrial area.
- Mean value of BMI among industrial girls were significantly different from nonindustrial area at the age of 5 and 9 years.
- Significant area differences were observed in 5 and 9 years aged girls in respect of mean value of CI.
- Mean vales of WHtR among girls of nonindustrial area were significantly different from industrial area at the age of 7 and 9 years.
- Significant difference was found between mean values of triceps skin fold among 6 years aged girls of two areas.
- There was significant area differences were found in 5 and 9 years aged girls in respect of mean biceps skin fold.
- Significant differences were found between mean values of sub-scapular skin fold among 5 and 8 years aged girls of two areas.
- It was found that in most of the anthropometric characteristics, the mean values were higher in boys of industrial area compare to nonindustrial area.
- 3, 8 and 10 years aged industrial boys were taller than nonindustrial area.
- 6, 8, 10 and 11years aged boys of industrial area were heavier than nonindustrial area.
- Higher mean values of sitting height (for 3, 4, 10 and 11 years) and knee height (for 3 and 8 years) were observed in industrial boys compare to nonindustrial area.
- Mean and SD of MUAC among 3, 6, 8 and 12 years aged boys of two areas were significantly different.

- It was found that most of the anthropometric characteristics except skin fold the mean values were higher in boys than girls. Mean value of MUAC, HC, WC, BMI, and CI of 9 years aged children were sexually dimorphic in nonindustrial area.
- Mean value of triceps, biceps and sub scapular skin fold of boys and girls were significantly difference at the age of 5, 10 and 11 years. It was found that in most of the anthropometric characteristics, the mean values were higher among the boys compare to girls in nonindustrial area.
- 10 years aged children were sexually dimorphic in respect of mean of height. Sexual differences of sitting height of the children were observed at the age of 6, 9 and 10 years.

- Sex difference of knee height was occurred at the age of 8 years.
- Children were sexually dimorphic at the age of 6 years in respect of mean values of MUAC. Difference between mean of HC was observed at the age of 5 and 6 years and 6 years children were sexually dimorphic in respect of mean of WC.
- 5 and 9 years children were sexually dimorphic in respect of mean sub scapula skin fold.
- Sexual difference was observed at the 5 years aged children in industrial area, in respect of mean value of BMI.
- Significant age variation was not found in most of the anthropometric characteristics.

Tables:

Age and area variations of anthropometric characteristics among girls

Table 5.1.1: Age specific area differences in height (cm)

Age in Years	n		Height in cm				t test
			Nonindustrial area		Industrial area		
	Nonindustrial area	Industrial area	Mean	SD	Mean	SD	t
3	31	30	101.07	8.12	100.56	6.25	**0.27**
4	30	31	104.58	7.05	103.88	7.92	**0.36**
5	32	34	107.01	6.50	109.27	5.88	**-1.48**
6	31	31	110.78	5.85	113.91	3.13	**-2.62****
7	30	31	113.40	4.23	116.93	7.18	**-2.34***
8	31	32	119.82	9.16	121.82	5.96	**-1.02**
9	32	30	122.79	9.91	124.29	6.73	**0.69**
10	34	33	130.22	9.90	129.15	7.14	**0.05**
11	32	31	133.79	9.87	137.04	9.08	**-1.35**
12	30	31	142.59	9.36	142.77	8.15	**-0.07**
ANOVA			**F= 80.29,p<0.001**		**F = 123.95,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.1.2: Age specific area differences in weight (kg)

Age in Years	n		Weight in kg				t test
			Nonindustrial area		Industrial area		
	Nonindustrial area	Industrial area	Mean	SD	Mean	SD	t
3	31	30	12.97	2.70	13.12	2.09	**-0.24**
4	30	31	14.44	2.39	14.08	2.40	**0.59**
5	32	34	15.69	2.17	15.08	2.77	**0.98**
6	31	31	16.46	1.81	17.64	3.73	**-1.58**
7	30	31	17.02	1.95	19.19	4.36	**-2.52***
8	31	32	19.41	3.70	21.02	4.01	**-1.65**
9	32	30	20.94	5.27	22.54	3.74	**-1.37**
10	34	33	24.80	6.27	25.30	5.86	**-0.33**
11	32	31	27.31	6.57	28.99	5.75	**-1.08**
12	30	31	32.20	6.88	32.40	6.67	**-0.11**
ANOVA			**F=59.80,p<0.001**		**F =67.25,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*=p<0.05, t**=p<0.01, t***=p<0.001

Table 5.1.3: Age specific area differences in sitting height (cm)

Age in Years	n		Sitting Height in cm				t test
			Nonindustrial area		Industrial area		
	Nonindustrial area	Industrial area	Mean	SD	Mean	SD	t
3	31	30	53.36	6.40	56.15	3.57	**-2.11***
4	30	31	55.8	5.60	57.56	3.98	**-1.41**
5	32	34	58.63	3.15	57.67	3.54	**1.16**
6	31	31	59.61	3.20	59.74	3.03	**0.15**
7	30	31	60.24	3.72	61.70	5.70	**-1.18**
8	31	32	60.95	5.40	63.31	2.97	**-2.14***
9	32	30	63.97	5.99	64.07	3.71	**-2.16***
10	34	33	65.20	5.99	66.64	4.32	**-1.13**
11	32	31	68.23	5.39	69.30	5.89	**-0.75**
12	30	31	72.24	5.26	71.79	4.82	**-1.65**
ANOVA			**F= 37.71,p<0.000**		**F = 47.53,p<0.000**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*=p<0.05, t**=p<0.01, t***=p<0.001

Table 5.1.4: Age specific area differences in knee height (cm)

Age in Years	n		Knee Height in cm				t test
			Nonindustrial area		Industrial area		
	Nonindustrial area	Industrial area	Mean	SD	Mean	SD	t
3	31	30	28.11	3.56	28.51	2.94	**-0.47**
4	30	31	29.92	4.01	29.32	3.60	**0.61**
5	32	34	31.18	2.79	30.68	3.62	**0.62**
6	31	31	31.89	2.42	33.77	3.55	**-2.44****
7	30	31	33.38	2.14	33.84	3.58	**-0.61**
8	31	32	34.45	4.24	35.48	2.62	**-1.15**
9	32	30	35.00	4.50	37.00	2.55	**-2.16***
10	34	33	37.50	5.34	38.46	3.03	**-0.90**
11	32	31	40.61	4.12	41.33	4.05	**-0.70**
12	30	31	41.63	3.97	43.17	3.31	**-1.65**
ANOVA			**F= 41.46,p<0.001**		**F = 68.63,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*=p<0.05, t**=p<0.01, t***=p<0.001

Table 5.1.5: Age specific area differences in MUAC (cm)

Age in Years	n		MUAC in cm				t test
			Nonindustrial area		Industrial area		
	Nonindustrial area	Industrial area	Mean	SD	Mean	SD	t
3	31	30	15.48	1.41	15.49	1.77	**-0.01**
4	30	31	15.76	1.17	15.20	1.40	**1.67**
5	32	34	16.18	1.61	15.63	0.89	**1.70**
6	31	31	16.21	1.52	15.82	1.68	**0.95**
7	30	31	15.71	1.50	15.94	1.82	**-0.53**
8	31	32	16.51	1.55	17.26	1.97	**-1.67**
9	32	30	16.48	1.69	17.83	3.17	**-2.11***
10	34	33	18.48	2.58	18.74	3.29	**-0.35**
11	32	31	18.81	2.55	19.23	3.25	**-0.58**
12	30	31	18.87	2.49	20.40	2.38	**-2.45****
ANOVA			**F= 15.73,p<0.001**		**F = 19.73,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.1.6: Age specific area differences in HC (cm)

Age in Years	n		HC in cm				t test
			Nonindustrial area		Industrial area		
	Nonindustrial area	Industrial area	Mean	SD	Mean	SD	t
3	31	30	51.28	6.18	52.07	5.17	**-0.54**
4	30	31	51.94	3.22	53.26	5.59	**-1.13**
5	32	34	54.92	3.2	53.14	2.86	**2.38***
6	31	31	55.55	4.71	54.22	4.69	**1.10**
7	30	31	56.59	3.7	55.85	5.69	**0.60**
8	31	32	58.16	5.24	61.03	6.46	**-1.92***
9	32	30	58.28	6.13	61.19	5.8	**-1.92***
10	34	33	64.16	6.3	64.16	7.54	**0.00**
11	32	31	65	8.65	67.51	7.51	**-1.23**
12	30	31	68.74	8.94	69.9	5.71	**-0.60**
ANOVA			**F= 29.04,p<0.001**		**F = 38.15,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.1.7: Age specific area differences in WC (cm)

Age in Years	n		WC in cm				t test
			Nonindustrial area		Industrial area		
	Nonindustrial area	Industrial area	Mean	SD	Mean	SD	t
3	31	30	48.56	5.17	48.06	4.26	**0.4**
4	30	31	48.37	2.89	49.01	4.17	**-0.7**
5	32	34	49.42	2.36	48.48	2.79	**1.47**
6	31	31	49.99	4.27	49.49	3.65	**0.49**
7	30	31	51.24	3.26	50.28	4.54	**0.94**
8	31	32	52.07	4.19	54.08	6.25	**-1.5**
9	32	30	51.32	4.12	53.89	4.77	**-2.27***
10	34	33	56.16	5.79	55.18	5.96	**0.67**
11	32	31	56.79	6.42	57.52	4.62	**-0.51**
12	30	31	58.72	5.49	60.28	7.16	**-0.94**
ANOVA			**F= 19.97,p<0.001**		**F = 22.40,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.1.8: Age specific area differences in BMI (kg/m^2)

Age in Years	n		BMI in kg/m^2				t test
			Nonindustrial area		Industrial area		
	Nonindustrial area	Industrial area	Mean	SD	Mean	SD	t'
3	31	30	12.59	1.26	12.99	1.91	**-0.98**
4	30	31	13.15	1.17	13.05	1.70	**0.26**
5	32	34	13.67	1.15	12.55	1.53	**3.32*****
6	31	31	13.48	1.80	13.57	2.61	**-0.15**
7	30	31	13.24	1.37	13.90	2.11	**-1.45**
8	31	32	13.43	1.23	14.10	2.01	**-1.58**
9	32	30	13.67	1.51	14.53	1.44	**-2.29***
10	34	33	14.37	1.85	15.05	2.55	**-1.24**
11	32	31	15.04	2.14	15.27	1.37	**-0.50**
12	30	31	15.66	2.04	15.75	2.22	**-0.16**
ANOVA			**F= 10.51,p<0.001**		**F = 9.10,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.1.9: Age specific area differences in CI

Age in Years	n		CI				t test
			Nonindustrial area		Industrial area		
	Nonindustrial area	Industrial area	Mean	SD	Mean	SD	t
3	31	30	15.86	2.03	15.93	2.16	**-0.11**
4	30	31	16.44	1.53	16.55	2.26	**-0.20**
5	32	34	17.33	1.44	16.46	1.74	**2.19***
6	31	31	17.70	2.21	17.84	2.75	**-0.21**
7	30	31	18.19	1.58	18.62	3.04	**-0.69**
8	31	32	19.15	2.07	20.67	3.99	**-1.90**
9	32	30	19.30	2.58	21.06	3.02	**-2.47****
10	34	33	22.32	3.47	22.44	4.56	**-0.12**
11	32	31	23.37	3.67	24.23	3.48	**-0.95**
12	30	31	25.44	3.38	26.40	5.26	**-0.84**
ANOVA			**F= 48.28,p<0.001**		**F = 34.31,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.1.10: Age specific area differences in WHR

Age in Years	n		WHR				t test
			Nonindustrial area		Industrial area		
	Nonindustrial area	Industrial area	Mean	SD	Mean	SD	t
3	31	30	0.95	0.03	0.93	0.06	**1.85**
4	30	31	0.93	0.03	0.92	0.05	**0.73**
5	32	34	0.90	0.05	0.91	0.03	**-1.17**
6	31	31	0.90	0.06	0.91	0.04	**0.96**
7	30	31	0.91	0.06	0.90	0.03	**0.43**
8	31	32	0.90	0.04	0.89	0.06	**0.71**
9	32	30	0.89	0.07	0.88	0.03	**0.25**
10	34	33	0.88	0.05	0.86	0.04	**1.21**
11	32	31	0.88	0.07	0.86	0.05	**1.45**
12	30	31	0.86	0.07	0.86	0.08	**-0.06**
ANOVA			**F=6.59 ,p<0.001**		**F = 8.30,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.1.11: Age specific area differences in WHtR

Age in Years	n		WHtR				t test
			Nonindustrial area		Industrial area		
	Nonindustrial area	Industrial area	Mean	SD	Mean	SD	t
3	31	30	0.48	0.06	0.48	0.06	**0.19**
4	30	31	0.47	0.05	0.47	0.04	**-0.66**
5	32	34	0.46	0.03	0.44	0.03	**2.47****
6	31	31	0.45	0.05	0.43	0.03	**1.68**
7	30	31	0.45	0.03	0.43	0.05	**2.05***
8	31	32	0.44	0.05	0.44	0.05	**0.55**
9	32	30	0.42	0.04	0.43	0.03	**-1.48**
10	34	33	0.43	0.05	0.43	0.04	**0.51**
11	32	31	0.43	0.05	0.42	0.02	**0.62**
12	30	31	0.41	0.05	0.42	0.04	**-0.75**
ANOVA			**F=7.22 ,p<0.001**		**F = 7.92,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.1.12: Age specific area differences triceps skinfold (mm)

Age in Years	n		Triceps Skinfold in mm				t test
			Nonindustrial area		Industrial area		
	Nonindustrial area	Industrial area	Mean	SD	Mean	SD	t
3	31	30	6.37	1.37	5.99	1.57	**1.02**
4	30	31	6.39	1.27	6.19	1.84	**0.47**
5	32	34	6.58	1.75	6.22	1.12	**0.99**
6	31	31	5.57	1.43	6.72	1.88	**-2.68****
7	30	31	6.18	1.42	6.43	1.52	**-0.64**
8	31	32	5.97	1.12	6.27	1.35	**-0.95**
9	32	30	5.99	1.18	6.73	2.12	**-1.67**
10	34	33	7.81	3.61	7.09	2.68	**0.92**
11	32	31	7.80	2.60	6.87	1.84	**1.64**
12	30	31	6.91	1.84	6.74	2.65	**0.29**
ANOVA			**F=4.85 ,p<0.001**		**F = 1.06,p=0.38**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.1.13: Age specific area differences in biceps skinfold (mm)

Age in Years	n		Biceps Skinfold in mm				t test
			Nonindustrial area		Industrial area		
	Nonindustrial area	Industrial area	Mean	SD	Mean	SD	t
3	31	30	4.59	0.92	4.17	1.05	**1.66**
4	30	31	4.78	0.99	4.76	1.32	**0.06**
5	32	34	5.16	1.70	4.19	0.79	**2.95****
6	31	31	4.38	1.22	4.64	1.48	**-0.74**
7	30	31	4.41	1.01	4.84	1.39	**-1.37**
8	31	32	4.43	1.14	4.75	1.19	**-1.10**
9	32	30	4.12	0.96	5.28	1.97	**-2.92****
10	34	33	5.84	2.92	5.02	2.12	**1.30**
11	32	31	5.56	2.15	5.10	1.49	**0.97**
12	30	31	4.88	1.20	4.71	1.81	**0.42**
ANOVA			**F=4.01 ,p<0.001**		**F = 1.75,p=0.07**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.1.14: Age specific area differences in sub-scapular skinfold (mm)

Age in Years	n		Sub scapular Skin fold in mm				t test
			Nonindustrial area		Industrial area		
	Nonindustrial area	Industrial area	Mean	SD	Mean	SD	t
3	31	30	5.87	1.35	5.81	1.17	**0.17**
4	30	31	6.18	1.10	6.37	1.47	**-0.57**
5	32	34	6.95	2.59	5.56	0.86	**2.89****
6	31	31	6.29	1.24	6.33	2.25	**-0.08**
7	30	31	6.17	1.17	6.18	1.42	**-0.03**
8	31	32	6.15	1.07	6.97	1.95	**-2.08***
9	32	30	6.63	1.54	7.55	2.25	**-1.85**
10	34	33	8.43	3.64	7.91	3.16	**0.63**
11	32	31	8.09	2.93	7.87	1.90	**0.36**
12	30	31	7.20	1.31	7.12	2.38	**0.15**
ANOVA			**F=6.00 ,p<0.001**		**F = 5.69,p=0.07**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Age and area variations of anthropometric characteristics among boys

Table 5.2.1: Age specific area differences in height (cm)

Age in Years	n		Height in cm				t test
			Nonindustrial area		Industrial area		
	Nonindustrial area	Industrial area	Mean	SD	Mean	SD	t
3	31	30	98.04	3.80	101.53	6.18	**-2.64****
4	32	30	101.41	6.52	102.02	6.41	**0.36**
5	30	30	109.81	6.23	109.05	5.64	**0.49**
6	31	32	113.35	4.69	113.53	5.47	**-0.14**
7	30	31	115.67	4.18	116.21	6.90	**-0.37**
8	30	31	120.22	6.58	124.16	6.62	**-2.32***
9	30	30	125.89	7.56	128.10	8.81	**-1.04**
10	31	31	129.14	9.63	134.14	7.45	**-2.28***
11	31	32	135.38	8.80	138.02	9.85	**-1.12**
12	32	30	142.34	7.18	142.25	8.02	**0.04**
ANOVA			**F=139.99,p<0.001**		**F = 124.02,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.2.2: Age specific area differences in weight (kg)

Age in Years	n		Weight in kg				t test
			Nonindustrial area		Industrial area		
	Nonindustrial area	Industrial area	Mean	SD	Mean	SD	t
3	31	30	12.42	1.84	13.60	1.60	**-2.66****
4	32	30	13.72	2.80	14.13	2.13	**0.65**
5	30	30	15.99	1.88	16.20	3.44	**0.29**
6	31	32	16.87	2.34	18.28	3.03	**-2.05***
7	30	31	17.93	2.12	19.00	3.65	**-1.41**
8	30	31	19.53	2.48	21.82	3.20	**-3.12****
9	30	30	23.92	4.95	23.68	3.93	**0.20**
10	31	31	24.24	6.16	27.25	5.03	**-2.10***
11	31	32	27.25	4.66	31.18	8.57	**-2.26***
12	32	30	31.06	5.69	32.07	5.82	**-0.69**
ANOVA			**F=78.54,p<0.001**		**F = 67.92,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.2.3: Age specific area differences in sitting height (cm)

Age in Years	n		Sitting Height in cm				t test
			Nonindustrial area		Industrial area		
	Nonindustrial area	Industrial area	Mean	SD	Mean	SD	t
3	31	30	49.04	3.42	55.76	3.06	**-8.07*** **
4	32	30	53.03	4.53	55.83	3.73	**-2.64** **
5	30	30	57.86	4.09	58.95	4.29	**-1.01**
6	31	32	61.30	3.67	61.66	3.23	**-0.42**
7	30	31	61.85	4.20	60.78	4.14	**1.00**
8	30	31	63.01	4.50	64.68	3.20	**-1.67**
9	30	30	65.47	3.75	66.83	4.37	**-1.29**
10	31	31	66.73	4.77	69.04	4.34	**-1.99***
11	31	32	68.01	3.46	70.51	5.92	**-2.05***
12	32	30	71.76	4.21	71.36	3.80	**0.39**
ANOVA			**F=90.20,p<0.001**		**F = 61.49,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.2.4: Age specific area differences in knee height (cm)

Age in Years	n		Knee Height in cm				t test
			Nonindustrial area		Industrial area		
	Nonindustrial area	Industrial area	Mean	SD	Mean	SD	t
3	31	30	26.53	1.52	28.69	2.43	**-4.16*** **
4	32	30	28.43	2.75	28.11	2.67	**0.74**
5	30	30	31.27	2.11	30.90	2.37	**0.63**
6	31	32	32.20	1.86	32.93	2.17	**-1.41**
7	30	31	33.59	2.05	33.75	2.98	**-0.23**
8	30	31	34.94	3.22	36.85	2.73	**-2.50** **
9	30	30	37.57	3.13	37.95	3.91	**-0.41**
10	31	31	38.50	4.30	39.97	3.83	**-1.42**
11	31	32	40.23	3.47	41.27	4.23	**-1.05**
12	32	30	42.51	3.30	42.03	4.03	**0.51**
ANOVA			**F=99.48,p<0.001**		**F=76.53,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.2.5: Age specific area differences in MUAC (cm)

Age in Years	n		MUAC in cm				t test
			Nonindustrial area		Industrial area		
	Nonindustrial area	Industrial area	Mean	SD	Mean	SD	t
3	31	30	14.99	1.13	15.94	1.99	**-2.31***
4	32	30	15.46	1.75	15.34	1.04	**0.34**
5	30	30	15.58	1.01	16.03	1.72	**-1.23**
6	31	32	15.97	1.17	17.44	2.15	**-3.38*****
7	30	31	15.95	1.69	16.57	2.79	**-1.04**
8	30	31	16.71	1.15	18.06	3.10	**-2.25***
9	30	30	17.82	2.22	17.08	1.25	**1.59**
10	31	31	18.56	2.85	18.08	2.24	**0.73**
11	31	32	18.56	2.19	19.58	4.43	**-1.16**
12	32	30	19.13	1.77	20.50	2.45	**-2.54****
ANOVA			**F=22.28,p<0.001**		**F=13.01,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.2.6: Age specific area differences in HC (cm)

Age in Years	n		HC in cm				t test
			Nonindustrial area		Industrial area		
	Nonindustrial area	Industrial area	Mean	SD	Mean	SD	t
3	31	30	50.35	2.58	52.32	2.96	**-2.78****
4	32	30	52.83	5.04	52.00	3.57	**0.74**
5	30	30	54.99	3.37	55.53	5.15	**-0.48**
6	31	32	55.51	3.38	56.90	3.59	**-1.58**
7	30	31	56.79	4.36	57.56	5.85	**-0.58**
8	30	31	57.90	5.16	61.47	4.58	**-2.85****
9	30	30	63.23	5.39	60.87	5.25	**1.72**
10	31	31	62.55	7.42	64.73	6.01	**-1.27**
11	31	32	64.57	5.20	67.62	10.16	**-1.50**
12	32	30	69.92	4.82	70.72	6.37	**-0.56**
ANOVA			**F=48.56p<0.001**		**F = 36.93,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.2.7: Age specific area differences in WC (cm)

Age in Years	n		WC in cm				t test
			Nonindustrial area		Industrial area		
	Nonindustrial area	Industrial area	Mean	SD	Mean	SD	t
3	31	30	47.89	2.38	49.18	3.93	**-1.54**
4	32	30	49.37	4.54	48.21	2.24	**1.26**
5	30	30	50.10	3.24	49.68	4.31	**0.43**
6	31	32	50.79	2.96	52.28	4.57	**-1.53**
7	30	31	51.67	3.93	52.57	5.12	**-0.77**
8	30	31	52.03	4.40	54.08	3.50	**-2.02***
9	30	30	55.04	4.94	53.09	4.14	**1.66**
10	31	31	55.37	6.68	55.86	6.06	**-0.29**
11	31	32	56.10	5.06	60.87	8.89	**-2.21***
12	32	30	59.92	4.12	60.14	6.18	**-0.17**
ANOVA			**F=22.18p<0.001**		**F=18.27,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.2.8: Age specific area differences in BMI (kg/m^2)

Age in Years	n		BMI in kg/m^2				t test
			Nonindustrial area		Industrial area		
	Nonindustrial area	Industrial area	Mean	SD	Mean	SD	t
3	31	30	12.88	1.44	13.22	1.40	**-0.92**
4	32	30	13.22	1.60	13.55	1.31	**-0.87**
5	30	30	13.25	1.05	13.53	1.90	**-0.70**
6	31	32	13.10	1.29	14.14	1.83	**-2.60****
7	30	31	13.37	1.14	13.99	1.68	**-1.69**
8	30	31	13.50	1.25	14.14	1.54	**-1.76**
9	30	30	15.00	2.11	14.36	1.23	**1.45**
10	31	31	14.38	2.26	15.06	1.78	**-1.31**
11	31	32	14.79	1.40	16.07	2.76	**-2.32***
12	32	30	15.22	1.68	15.72	1.73	**-1.14**
ANOVA			**F=9.75p<0.001**		**F = 8.84,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.2.9: Age specific area differences in CI

Age in Years	n		CI				t test
			Nonindustrial area		Industrial area		
	Nonindustrial area	Industrial area	Mean	SD	Mean	SD	t
3	31	30	15.63	1.64	16.52	1.90	**-1.97***
	32	30	16.65	2.75	16.44	1.54	**0.36**
5	30	30	17.54	1.73	17.56	2.98	**-0.03**
6	31	32	17.97	1.83	19.25	2.75	**-2.17***
7	30	31	18.66	2.11	19.50	3.13	**0.24**
8	30	31	19.24	2.29	20.77	2.13	**-2.71****
9	30	30	22.00	3.59	20.89	2.32	**1.42**
10	31	31	22.02	4.74	23.14	4.18	**-0.98**
11	31	32	23.06	3.10	26.67	7.69	**-2.46****
12	32	30	25.65	3.44	26.22	4.36	**-0.56**
ANOVA			**F=38.40p<0.001**		**F=29.49,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.2.10: Age specific area differences in WHR

Age in Years	n		WHR				t test
			Nonindustrial area		Industrial area		
	Nonindustrial area	Industrial area	Mean	SD	Mean	SD	t
3	31	30	0.95	0.03	0.94	0.04	**1.30**
4	32	30	0.94	0.04	0.93	0.04	**0.61**
5	30	30	0.91	0.03	0.90	0.04	**-0.03**
6	31	32	0.92	0.05	0.92	0.06	**-0.17**
7	30	31	0.91	0.05	0.91	0.04	**0.11**
8	30	31	0.90	0.06	0.88	0.05	**1.33**
9	30	30	0.87	0.06	0.88	0.07	**-0.18**
10	31	31	0.89	0.10	0.86	0.04	**1.41**
11	31	32	0.87	0.07	0.90	0.10	**-1.39**
12	32	30	0.86	0.04	0.85	0.04	**0.69**
ANOVA			**F=8.92p<0.001**		**F = 8.13,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.2.11: Age specific area differences in WHtR

Age in Years	n		WHtR				t test
			Nonindustrial area		Industrial area		
	Nonindustrial area	Industrial area	Mean	SD	Mean	SD	t
3	31	30	0.49	0.03	0.49	0.04	**0.39**
4	32	30	0.49	0.04	0.47	0.03	**0.21**
5	30	30	0.46	0.04	0.46	0.03	**0.19**
6	31	32	0.45	0.03	0.46	0.04	**-1.42**
7	30	31	0.45	0.04	0.45	0.04	**0.90**
8	30	31	0.43	0.03	0.44	0.03	**-0.40**
9	30	30	0.44	0.04	0.42	0.03	**2.47****
10	31	31	0.43	0.05	0.42	0.04	**1.23**
11	31	32	0.42	0.03	0.44	0.06	**-2.00***
12	32	30	0.42	0.02	0.42	0.03	**-0.21**
ANOVA			**F=17.08p<0.001**		**F = 12.13,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.2.12: Age specific area differences in triceps skinfold (mm)

Age in Years	n		Triceps Skinfold in mm				t test
			Nonindustrial area		Industrial area		
	Nonindustrial area	Industrial area	Mean	SD	Mean	SD	t
3	31	30	6.16	1.18	5.93	1.19	**0.73**
4	32	30	6.73	1.27	6.13	1.17	**1.39***
5	30	30	6.05	1.22	6.13	1.51	**0.21**
6	31	32	6.07	1.30	6.01	1.86	**0.14**
7	30	31	6.39	1.55	6.32	2.41	**0.14**
8	30	31	5.73	1.13	6.91	2.59	**-2.32***
9	30	30	6.25	2.09	6.26	1.51	**0.02**
10	31	31	6.17	2.26	6.27	1.99	**-0.18**
11	31	32	5.88	1.79	7.09	3.03	**-1.91**
12	32	30	6.15	1.77	6.34	1.50	**-0.45**
ANOVA			**F=0.90p>0.05**		**F = 1.11,p>0.05**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.2.13: Age specific area differences in biceps skinfold (mm)

Age in Years	n		Biceps Skinfold in mm				t test
			Nonindustrial area		Industrial area		
	Nonindustrial area	Industrial area	Mean	SD	Mean	SD	t
3	31	30	4.51	1.10	4.51	0.98	**0.00**
4	32	30	4.73	1.46	4.63	0.99	**0.31**
5	30	30	4.22	0.72	4.64	1.10	**-1.76**
6	31	32	4.47	0.93	4.61	1.31	**-0.48**
7	30	31	4.38	0.85	4.72	1.76	**0.01**
8	30	31	3.92	0.93	5.25	2.18	**-3.13****
9	30	30	4.52	1.39	4.41	1.29	**0.31**
10	31	31	4.48	1.65	4.57	1.74	**-0.20**
11	31	32	3.92	1.02	5.38	2.19	**-3.40*****
12	32	30	4.44	1.77	4.49	1.12	**-0.13**
ANOVA			**F=1.43p>0.05**		**F = 1.39,p>0.05**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.2.14: Age specific area differences in sub-scapular skinfold (mm)

Age in Years	n		Sub scapular Skin fold in mm				t test
			Nonindustrial area		Industrial area		
	Nonindustrial area	Industrial area	Mean	SD	Mean	SD	t
3	31	30	5.53	1.24	5.74	1.07	**0.72**
4	32	30	6.21	1.95	6.22	1.11	**0.02**
5	30	30	5.69	0.92	6.41	1.79	**-1.95***
6	31	32	5.70	1.10	6.40	1.51	**-2.09***
7	30	31	6.33	1.29	6.57	1.95	**0.22**
8	30	31	5.96	1.14	7.35	2.47	**-2.80****
9	30	30	6.71	1.84	6.36	1.60	**0.79**
10	31	31	6.86	1.82	6.73	1.83	**0.28**
11	31	32	6.81	1.54	7.89	3.17	**-1.72**
12	32	30	6.75	1.61	6.87	1.35	**-0.31**
ANOVA			**F=3.69p<0.001**		**F=3.18,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

5.3: Anthropometric characteristics among school going children of nonindustrial area

Table 5.3.1: Age specific sex differences in height (cm)

Age in Years	n		Height in cm				t test
			Boys		Girls		
	Boys	Girls	Mean	SD	Mean	SD	t
3	31	31	98.04	3.80	101.07	8.12	**-1.88**
4	32	30	101.41	6.52	104.58	7.05	**-1.84**
5	30	32	109.81	6.23	107.01	6.50	**1.73**
6	31	31	113.35	4.69	110.78	5.85	**1.90**
7	30	30	115.67	4.18	113.40	4.23	**2.08***
8	30	31	119.82	9.16	118.42	9.29	**0.19**
9	30	32	125.89	7.56	122.79	9.91	**1.38**
10	31	34	129.14	9.63	130.22	9.90	**-0.45**
11	31	32	135.38	8.80	133.79	9.87	**0.68**
12	32	30	142.34	7.18	142.59	9.36	**-0.12**
ANOVA			**F=139.99,p<0.001**		**F=85.29,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.3.2: Age specific sex differences in weight (kg)

Age in Years	n		Weight in kg				t test
			Boys		Girls		
	Boys	Girls	Mean	SD	Mean	SD	t
3	31	31	12.42	1.84	12.97	2.70	**0.93**
4	32	30	13.72	2.80	14.44	2.39	**1.09**
5	30	32	15.99	1.88	15.69	2.17	**-0.58**
6	31	31	16.87	2.34	16.46	1.81	**-0.78**
7	30	30	17.93	2.12	17.02	1.95	**-1.73**
8	30	31	19.53	2.48	19.41	3.70	**-0.14**
9	30	32	23.92	4.95	20.94	5.27	**-2.29***
10	31	34	24.24	6.16	24.8	6.27	**0.36**
11	31	32	27.25	4.66	27.31	6.57	**0.04**
12	32	30	31.06	5.69	32.20	6.88	**0.71**
ANOVA			**F=78.54,p<0.001**		**F=59.80,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.3.3: Age specific sex differences in sitting height (cm)

Age in Years	n		Sitting Height in cm				t test
			Boys		Girls		
	Boys	Girls	Mean	SD	Mean	SD	t
3	31	31	49.04	3.42	53.36	6.40	**3.31*** **
4	32	30	53.03	4.53	55.8	5.60	**2.14***
5	30	32	57.86	4.09	58.63	3.15	**0.84**
6	31	31	61.30	3.67	59.61	3.20	**-1.93**
7	30	30	61.85	4.20	60.24	3.72	**-1.58**
8	30	31	63.01	4.50	60.94	5.39	**-1.62**
9	30	32	65.47	3.75	63.97	5.99	**-1.20**
10	31	34	66.73	4.77	65.20	5.99	**-1.15**
11	31	32	68.01	3.46	68.23	5.39	**0.20**
12	32	30	71.76	4.21	72.24	5.26	**0.40**
ANOVA			**F= 90.20,p<0.001**		**F =37.71,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.3.4: Age specific sex differences in knee height (cm)

Age in Years	n		Knee Height in cm				t test
			Boys		Girls		
	Boys	Girls	Mean	SD	Mean	SD	t
3	31	31	26.53	1.52	28.11	3.56	**2.28***
4	32	30	28.43	2.75	29.92	4.01	**1.71**
5	30	32	31.27	2.11	31.18	2.79	**-0.14**
6	31	31	32.20	1.86	31.89	2.42	**-0.57**
7	30	30	33.59	2.05	33.38	2.14	**-0.40**
8	30	13	34.94	3.22	34.44	4.24	**-0.51**
9	30	32	37.57	3.13	35.00	4.50	**-2.59****
10	31	34	38.50	4.30	37.50	5.34	**-0.83**
11	31	32	40.23	3.47	40.61	4.12	**0.39**
12	32	30	42.51	3.30	41.63	3.97	**-0.95**
ANOVA			**F= 99.48,p<0.001**		**F =41.46,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.3.5: Age specific sex differences in MUAC (cm)

Age in Years	n		MUAC in cm				t test
			Boys		Girls		
	Boys	Girls	Mean	SD	Mean	SD	t
3	31	31	14.99	1.13	15.48	1.41	**1.52**
4	32	30	15.46	1.75	15.76	1.17	**0.78**
5	30	32	15.58	1.01	16.18	1.61	**1.78**
6	31	31	15.97	1.17	16.21	1.52	**0.69**
7	30	30	15.95	1.69	15.71	1.50	**-0.58**
8	30	31	16.71	1.15	16.51	1.55	**-0.57**
9	30	32	17.82	2.22	16.48	1.69	**-2.70****
10	31	34	18.56	2.85	18.48	2.58	**-0.12**
11	31	32	18.56	2.19	18.81	2.55	**0.41**
12	32	30	19.13	1.77	18.87	2.49	**-0.48**
ANOVA			**F=22.28,p<0.001**		**F =15.73,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.3.6: Age specific sex difference in HC (cm)

Age in Years	n		HC in cm				t test
			Boys		Girls		
	Boys	Girls	Mean	SD	Mean	SD	t
3	31	31	50.35	2.58	51.28	6.18	**0.78**
4	32	30	52.83	5.04	51.94	3.22	**-0.82**
5	30	32	54.99	3.37	54.92	3.20	**-0.08**
6	31	31	55.51	3.38	55.55	4.71	**0.03**
7	30	30	56.79	4.36	56.59	3.70	**-0.19**
8	30	31	57.90	5.16	58.16	5.24	**0.19**
9	30	32	63.23	5.39	58.28	6.13	**-3.37*****
10	31	34	62.55	7.42	64.16	6.30	**0.95**
11	31	32	64.57	5.20	65.00	8.65	**0.24**
12	32	30	69.92	4.82	68.74	8.94	**-0.64**
ANOVA			**F=48.56,p<0.001**		**F =29.04,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.3.7: Age specific sex differences in WC (cm)

Age in Years	n		WC in cm				t test
			Boys		Girls		
	Boys	Girls	Mean	SD	Mean	SD	t
3	31	31	47.89	2.38	48.56	5.17	**0.65**
4	32	30	49.37	4.54	48.37	2.89	**-1.03**
5	30	32	50.10	3.24	49.42	2.36	**-0.96**
6	31	31	50.79	2.96	49.99	4.27	**-0.86**
7	30	30	51.67	3.93	51.24	3.26	**-0.46**
8	30	31	52.03	4.40	52.07	4.19	**0.04**
9	30	32	55.04	4.94	51.32	4.12	**-3.23*** **
10	31	34	55.37	6.68	56.16	5.79	**0.51**
11	31	32	56.10	5.06	56.79	6.42	**0.48**
12	32	30	59.92	4.12	58.72	5.49	**-0.97**
ANOVA			**F=22.18,p<0.001**		**F =19.97,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.3.8: Age specific sex differences in BMI (kg/m²)

Age in Years	n		BMI in kg/m²				t test
			Boys		Girls		
	Boys	Girls	Mean	SD	Mean	SD	t
3	31	31	12.88	1.44	12.59	1.26	**-0.87**
4	32	30	13.22	1.60	13.15	1.17	**-0.20**
5	30	32	13.25	1.05	13.67	1.15	**1.49**
6	31	31	13.10	1.29	13.48	1.80	**0.97**
7	30	30	13.37	1.14	13.24	1.37	**-0.41**
8	30	31	13.50	1.25	13.43	1.23	**-0.22**
9	30	32	15.00	2.11	13.67	1.51	**-2.89****
10	31	34	14.38	2.26	14.37	1.85	**-0.02**
11	31	32	14.79	1.40	15.04	2.14	**0.56**
12	32	30	15.22	1.68	15.66	2.04	**0.93**
ANOVA			**F=9.75,p<0.001**		**F =10.51,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test.

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.3.9: Age specific sex differences in CI

Age in Years	n		CI				t test
			Boys		Girls		
	Boys	Girls	Mean	SD	Mean	SD	t
3	31	31	15.63	1.64	15.86	2.03	**0.51**
4	32	30	16.65	2.75	16.44	1.53	**-0.37**
5	30	32	17.54	1.73	17.33	1.44	**-0.52**
6	31	31	17.97	1.83	17.7	2.21	**-0.51**
7	30	30	18.66	2.11	18.19	1.58	**-0.98**
8	30	31	19.24	2.29	19.15	2.07	**-0.16**
9	30	32	22.00	3.59	19.30	2.58	**-3.42****
10	31	34	22.02	4.74	22.32	3.47	**0.29**
11	31	32	23.06	3.10	23.37	3.67	**0.36**
12	32	30	25.65	3.44	25.44	3.38	**-0.25**
ANOVA			**F=38.40,p<0.001**		**F =48.28,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.3.10: Age specific sex differences in WHR

Age in Years	n		WHR				t test
			Boys		Girls		
	Boys	Girls	Mean	SD	Mean	SD	t
3	31	31	0.95	0.03	0.95	0.03	**-0.43**
4	32	30	0.94	0.04	0.93	0.03	**-0.39**
5	30	32	0.91	0.03	0.90	0.05	**-1.04**
6	31	31	0.92	0.05	0.90	0.06	**-1.04**
7	30	30	0.91	0.05	0.91	0.06	**-0.25**
8	30	31	0.90	0.06	0.90	0.04	**-0.29**
9	30	32	0.87	0.06	0.89	0.07	**0.80**
10	31	34	0.89	0.10	0.88	0.05	**-0.69**
11	31	32	0.87	0.07	0.88	0.07	**0.45**
12	32	30	0.86	0.04	0.86	0.07	**0.21**
ANOVA			**F=8.92,p<0.001**		**F =6.59,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.3.11: Age specific sex differences in WHtR

Age in Years	n		WHtR				t test
			Boys		Girls		
	Boys	Girls	Mean	SD	Mean	SD	t
3	31	31	0.49	0.03	0.48	0.06	**-0.57**
4	32	30	0.49	0.04	0.47	0.05	**-1.90**
5	30	32	0.46	0.04	0.46	0.03	**0.67**
6	31	31	0.45	0.03	0.45	0.05	**0.40**
7	30	30	0.45	0.04	0.45	0.03	**0.60**
8	30	31	0.43	0.03	0.44	0.05	**0.39**
9	30	32	0.44	0.04	0.42	0.04	**-1.80**
10	31	34	0.43	0.05	0.43	0.05	**0.29**
11	31	32	0.42	0.03	0.43	0.05	**1.01**
12	32	30	0.42	0.02	0.41	0.05	**-0.80**
ANOVA			**F=17.08,p<0.001**		**F =7.22,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.3.12: Age specific sex differences in triceps skinfold (mm)

Age in Years	n		Triceps skinfold in mm				t test
			Boys		Girls		
	Boys	Girls	Mean	SD	Mean	SD	t
3	31	31	6.16	1.18	6.37	1.37	**0.67**
4	32	30	6.73	1.27	6.39	1.27	**-1.06**
5	30	32	6.05	1.22	6.58	1.75	**1.39**
6	31	31	6.07	1.30	5.57	1.43	**-1.42**
7	30	30	6.39	1.55	6.18	1.42	**-0.55**
8	30	31	5.73	1.13	5.97	1.12	**0.85**
9	30	32	6.25	2.09	5.99	1.18	**-0.61**
10	31	34	6.17	2.26	7.81	3.61	**2.16***
11	31	32	5.88	1.79	7.80	2.60	**3.41*****
12	32	30	6.15	1.77	6.91	1.84	**1.67**
ANOVA			**F=0.90,p=0.52**		**F =4.85,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.3.13: Age specific sex differences in biceps skinfold (mm)

Age in Years	n		Biceps skinfold in mm				t test
			Boys		Girls		
	Boys	Girls	Mean	SD	Mean	SD	t
3	31	31	4.51	1.10	4.59	0.92	**0.33**
4	32	30	4.73	1.46	4.78	0.99	**0.14**
5	30	32	4.22	0.72	5.16	1.7	**2.88****
6	31	31	4.47	0.93	4.38	1.22	**-0.33**
7	30	30	4.38	0.85	4.41	1.01	**0.11**
8	30	31	3.92	0.93	4.43	1.14	**1.92**
9	30	32	4.52	1.39	4.12	0.96	**-1.35**
10	31	34	4.48	1.65	5.84	2.92	**2.32***
11	31	32	3.92	1.02	5.56	2.15	**3.90*****
12	32	30	4.44	1.77	4.88	1.2	**1.14**
ANOVA			**F=1.43,p=0.17**		**F =4.01,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.3.14: Age specific sex differences in sub-scapular skinfold (mm)

Age in Years	n		Sub-scapular skinfold in mm				t test
			Boys		Girls		
	Boys	Girls	Mean	SD	Mean	SD	t
3	31	31	5.53	1.24	5.87	1.35	**1.04**
4	32	30	6.21	1.95	6.18	1.10	**-0.07**
5	30	32	5.69	0.92	6.95	2.59	**2.58****
6	31	31	5.70	1.10	6.29	1.24	**1.97**
7	30	30	6.33	1.29	6.17	1.17	**-0.50**
8	30	31	5.96	1.14	6.15	1.07	**0.67**
9	30	32	6.71	1.84	6.63	1.54	**-0.18**
10	31	34	6.86	1.82	8.43	3.64	**2.23***
11	31	32	6.81	1.54	8.09	2.93	**2.18***
12	32	30	6.75	1.61	7.20	1.31	**1.18**
ANOVA			**F=3.69,p<0.001**		**F =6.00,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

5.4: Anthropometric characteristic among School going children of industrial area

Table 5.4.1: Age specific sex differences in height (cm)

Age in Years	n		Height in cm				t test
			Boys		Girls		
	Boys	Girls	Mean	SD	Mean	SD	t
3	30	30	101.53	6.18	100.56	6.25	**-0.61**
4	30	31	102.02	6.41	103.88	7.92	**1.01**
5	30	34	109.05	5.64	109.27	5.88	**0.15**
6	32	31	113.53	5.47	113.91	3.13	**0.34**
7	31	31	116.21	6.90	116.93	7.18	**0.41**
8	31	32	124.16	6.62	121.82	5.96	**-1.48**
9	30	30	128.10	8.81	124.29	6.73	**-1.88**
10	31	33	134.14	7.45	129.15	7.14	**-2.73****
11	32	31	138.02	9.85	137.04	9.08	**-0.41**
12	30	31	142.25	8.02	142.77	8.15	**0.25**
ANOVA			**F=124.02,p<0.001**		**F=123.95,p<0.001**		

NOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.4.2: Age specific sex differences in weight (kg)

Age in Years	n		Weight in kg				t test
			Boys		Girls		
	Boys	Girls	Mean	SD	Mean	SD	t
3	30	30	13.60	1.60	13.12	2.09	**-1.00**
4	30	31	14.13	2.13	14.08	2.40	**-0.09**
5	30	34	16.20	3.44	15.08	2.77	**-1.44**
6	32	31	18.28	3.03	17.64	3.73	**-0.74**
7	31	31	19.00	3.65	19.19	4.36	**0.18**
8	31	32	21.82	3.20	21.02	4.01	**-0.88**
9	30	30	23.68	3.93	22.54	3.74	**-1.15**
10	31	33	27.25	5.03	25.30	5.86	**-1.42**
11	32	31	31.18	8.57	28.99	5.75	**-1.19**
12	30	31	32.07	5.82	32.40	6.67	**0.21**
ANOVA			**F= 67.92,p<0.001**		**F =67.25,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.4.3: Age specific sex differences in sitting height (cm)

Age in Years	n		Sitting Height in cm				t test
			Boys		Girls		
	Boys	Girls	Mean	SD	Mean	SD	t
3	30	30	55.76	3.06	56.15	3.57	**0.45**
4	30	31	55.83	3.73	57.56	3.98	**1.75**
5	30	34	58.95	4.29	57.67	3.54	**-1.31**
6	32	31	61.66	3.23	59.74	3.03	**-2.44***
7	31	31	60.78	4.14	61.7	5.70	**0.73**
8	31	32	64.68	3.20	63.31	2.97	**-1.76**
9	30	30	66.83	4.37	64.07	3.71	**-2.64****
10	31	33	69.04	4.34	66.64	4.32	**-2.22***
11	32	31	70.51	5.92	69.3	5.89	**-0.82**
12	30	31	71.36	3.80	71.79	4.82	**0.39**
ANOVA			**F= 61.49,p<0.001**		**F =47.53,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.4.4: Age specific sex differences in Knee height (cm)

Age in Years	n		Knee Height in cm				t test
			Boys		Girls		
	Boys	Girls	Mean	SD	Mean	SD	t
3	30	30	28.69	2.43	28.51	2.94	**-0.26**
4	30	31	28.11	2.67	29.32	3.60	**1.49**
5	30	34	30.90	2.37	30.68	3.62	**-0.28**
6	32	31	32.93	2.17	33.77	3.55	**1.15**
7	31	31	33.75	2.98	33.84	3.58	**0.12**
8	31	32	36.85	2.73	35.48	2.62	**-2.04***
9	30	30	37.95	3.91	37.00	2.55	**-1.12**
10	31	33	39.97	3.83	38.46	3.03	**-1.76**
11	32	31	41.27	4.23	41.33	4.05	**0.06**
12	30	31	42.03	4.03	43.17	3.31	**1.21**
ANOVA			**F= 76.53,p<0.001**		**F =68.36,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.4.5: Age specific sex differences in MUAC (cm)

Age in Years	n		MUAC in cm				t test
			Boys		Girls		
	Boys	Girls	Mean	SD	Mean	SD	t
3	30	30	15.94	1.99	15.49	1.77	**-0.94**
4	30	31	15.34	1.04	15.20	1.40	**-0.42**
5	30	34	16.03	1.72	15.63	0.89	**-1.13**
6	32	31	17.44	2.15	15.82	1.68	**-3.33*** **
7	31	31	16.57	2.79	15.94	1.82	**-1.06**
8	31	32	18.06	3.10	17.26	1.97	**-1.22**
9	30	30	17.08	1.25	17.83	3.17	**1.20**
10	31	33	18.08	2.24	18.74	3.29	**0.93**
11	32	31	19.58	4.43	19.23	3.25	**-0.36**
12	30	31	20.50	2.45	20.40	2.38	**-0.17**
ANOVA			**F=13.01,p<0.001**		**F =19.73,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.4.6: Age specific sex differences in HC (cm)

Age in Years	n		HC in cm				t test
			Boys		Girls		
	Boys	Girls	Mean	SD	Mean	SD	t
3	30	30	52.32	2.96	52.07	5.17	**-0.23**
4	30	31	52.00	3.57	53.26	5.59	**1.05**
5	30	34	55.53	5.15	53.14	2.86	**-2.25***
6	32	31	56.90	3.59	54.22	4.69	**-2.55****
7	31	31	57.56	5.85	55.85	5.69	**-1.17**
8	31	32	61.47	4.58	61.03	6.46	**-0.31**
9	30	30	60.87	5.25	61.19	5.8	**0.22**
10	31	33	64.73	6.01	64.16	7.54	**-0.33**
11	32	31	67.62	9.16	67.51	7.51	**-0.05**
12	30	31	70.72	6.37	69.90	5.71	**-0.53**
ANOVA			**F=36.93,p<0.001**		**F =38.15,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.4.7: Age specific sex differences in WC (cm)

Age in Years	n		WC in cm				t test
			Boys		Girls		
	Boys	Girls	Mean	SD	Mean	SD	t
3	30	30	49.18	3.93	48.06	4.26	**1.06**
4	30	31	48.21	2.24	49.01	4.17	**0.95**
5	30	34	49.68	4.31	48.48	2.79	**-1.34**
6	32	31	52.28	4.57	49.49	3.65	**-2.67***
7	31	31	52.57	5.12	50.28	4.54	**-1.87**
8	31	32	54.08	3.50	54.08	6.25	**0.00**
9	30	30	53.09	4.14	53.89	4.77	**0.69**
10	31	33	55.86	6.06	55.18	5.96	**-0.45**
11	32	31	60.87	10.89	57.52	4.62	**-1.60**
12	30	31	60.14	6.18	60.28	7.16	**0.08**
ANOVA			**F=18.27,p<0.001**		**F =22.40,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.4.8: Age specific sex differences in BMI (kg/m²)

Age in Years	n		BMI in kg/m²				t test
			Boys		Girls		
	Boys	Girls	Mean	SD	Mean	SD	T
3	30	30	13.22	1.40	12.99	1.91	**-0.54**
4	30	31	13.55	1.31	13.05	1.70	**-1.27**
5	30	34	13.53	1.90	12.55	1.53	**-2.27***
6	32	31	14.14	1.83	13.57	2.61	**-1.01**
7	31	31	13.99	1.68	13.90	2.11	**-0.19**
8	31	32	14.14	1.54	14.10	2.01	**-0.09**
9	30	30	14.36	1.23	14.53	1.44	**0.5**
10	31	33	15.06	1.78	15.05	2.55	**-0.01**
11	32	31	16.07	2.76	15.27	1.37	**-1.45**
12	30	31	15.72	1.73	15.75	2.22	**0.07**
ANOVA			**F=8.84,p<0.001**		**F =9.10,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.4.9: Age specific sex differences in CI

Age in Years	n		CI				t test
			Boys		Girls		
	Boys	Girls	Mean	SD	Mean	SD	T
3	30	30	16.52	1.90	15.93	2.16	**-1.13**
4	30	31	16.44	1.54	16.55	2.26	**0.21**
5	30	34	17.56	2.98	16.46	1.74	**-1.83**
6	32	31	19.25	2.75	17.84	2.75	**-2.04***
7	31	31	19.50	3.13	18.62	3.04	**-1.12**
8	31	32	20.77	2.13	20.67	3.99	**-0.13**
9	30	30	20.89	2.32	21.06	3.02	**0.25**
10	31	33	23.14	4.18	22.44	4.56	**-0.64**
11	32	31	26.67	7.69	24.23	3.48	**-1.63**
12	30	31	26.22	4.36	26.40	5.26	**0.15**
ANOVA			**F=29.49,p<0.001**		**F =34.31,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.4.10: Age specific sex differences in WHR

Age in Years	n		WHR				t test
			Boys		Girls		
	Boys	Girls	Mean	SD	Mean	SD	T
3	30	30	0.94	0.04	0.93	0.06	**-1.02**
4	30	31	0.93	0.04	0.92	0.05	**-0.47**
5	30	34	0.9	0.04	0.91	0.03	**1.74**
6	32	31	0.92	0.06	0.91	0.04	**-0.36**
7	31	31	0.91	0.04	0.90	0.03	**-1.4**
8	31	32	0.88	0.05	0.89	0.06	**0.38**
9	30	30	0.88	0.07	0.88	0.03	**0.45**
10	31	33	0.86	0.04	0.86	0.04	**-0.07**
11	32	31	0.90	0.10	0.86	0.05	**-2.24***
12	30	31	0.85	0.04	0.86	0.08	**0.72**
ANOVA			**F=8.13,p<0.001**		**F =8.30,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.4.11: Age specific sex differences in WHtR

Age in Years	n		WHtR				t test
			Boys		Girls		
	Boys	Girls	Mean	SD	Mean	SD	T
3	30	30	0.49	0.04	0.48	0.06	**-0.44**
4	30	31	0.47	0.03	0.47	0.04	**0.60**
5	30	34	0.46	0.03	0.44	0.03	**-1.35**
6	32	31	0.46	0.04	0.43	0.03	**-2.88****
7	31	31	0.45	0.04	0.43	0.05	**-1.99***
8	31	32	0.44	0.03	0.44	0.05	**0.80**
9	30	30	0.42	0.03	0.43	0.03	**2.23***
10	31	33	0.42	0.04	0.43	0.04	**1.13**
11	32	31	0.44	0.06	0.42	0.02	**-1.74**
12	30	31	0.42	0.03	0.42	0.04	**-0.06**
ANOVA			**F=12.13,p<0.001**		**F =7.92,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.4.12: Age specific sex differences in triceps skinfold (mm)

Age in Years	n		Triceps skin fold in mm				t test
			Boys		Girls		
	Boys	Girls	Mean	SD	Mean	SD	T
3	30	30	5.93	1.19	5.99	1.57	**0.15**
4	30	31	6.13	1.17	6.19	1.84	**0.17**
5	30	34	6.13	1.51	6.22	1.12	**0.29**
6	32	31	6.01	1.86	6.72	1.88	**1.50**
7	31	31	6.32	2.41	6.43	1.52	**0.21**
8	31	32	6.91	2.59	6.27	1.35	**-1.23**
9	30	30	6.26	1.51	6.73	2.12	**0.99**
10	31	33	6.27	1.99	7.09	2.68	**1.37**
11	32	31	7.09	3.03	6.87	1.84	**-0.35**
12	30	31	6.34	1.5	6.74	2.65	**0.73**
ANOVA			**F=1.11,p=0.35**		**F =1.06,p=0.38**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test

t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.4.13: Age specific sex differences in biceps skinfold (mm)

Age in Years	n		Biceps skinfold in mm				t test
			Boys		Girls		
	Boys	Girls	Mean	SD	Mean	SD	T
3	30	30	4.51	0.98	4.17	1.05	**1.29**
4	30	31	4.63	0.99	4.76	1.32	**0.43**
5	30	34	4.64	1.1	4.19	0.79	**-1.87**
6	32	31	4.61	1.31	4.64	1.48	**0.08**
7	31	31	4.72	1.76	4.84	1.39	**0.29**
8	31	32	5.25	2.18	4.75	1.19	**-1.13**
9	30	30	4.41	1.29	5.28	1.97	**2.01***
10	31	33	4.57	1.74	5.02	2.12	**0.92**
11	32	31	5.38	2.19	5.10	1.49	**-0.57**
12	30	31	4.49	1.12	4.71	1.81	**0.59**
ANOVA			**F=1.39,p=0.18**		**F =1.75,p=0.07**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test
t*= p<0.05, t**= p<0.01, t***=p<0.001

Table 5.4.14: Age specific sex differences in sub-scapular skinfold (mm)

Age in Years	n		Sub scapula skinfold in mm				t test
			Boys		Girls		
	Boys	Girls	Mean	SD	Mean	SD	t
3	30	30	5.74	1.07	5.81	1.17	**0.24**
4	30	31	6.22	1.11	6.37	1.47	**0.46**
5	30	34	6.41	1.79	5.56	0.86	**-2.37***
6	32	31	6.4	1.51	6.33	2.25	**-0.15**
7	31	31	6.57	1.95	6.18	1.42	**-0.91**
8	31	32	7.35	2.47	6.97	1.95	**-0.68**
9	30	30	6.36	1.60	7.55	2.25	**2.36***
10	31	33	6.73	1.83	7.91	3.16	**1.84**
11	32	31	7.89	3.17	7.87	1.90	**-0.04**
12	30	31	6.87	1.35	7.12	2.38	**0.50**
ANOVA			**F=3.18,p<0.001**		**F =5.69,p<0.001**		

ANOVA = Analysis of Variance, t' test = Independent sample t' test
t*= p<0.05, t**= p<0.01, t***=p<0.001

Figures

Figure 5.1: Age specific area and sex differences in height (cm)

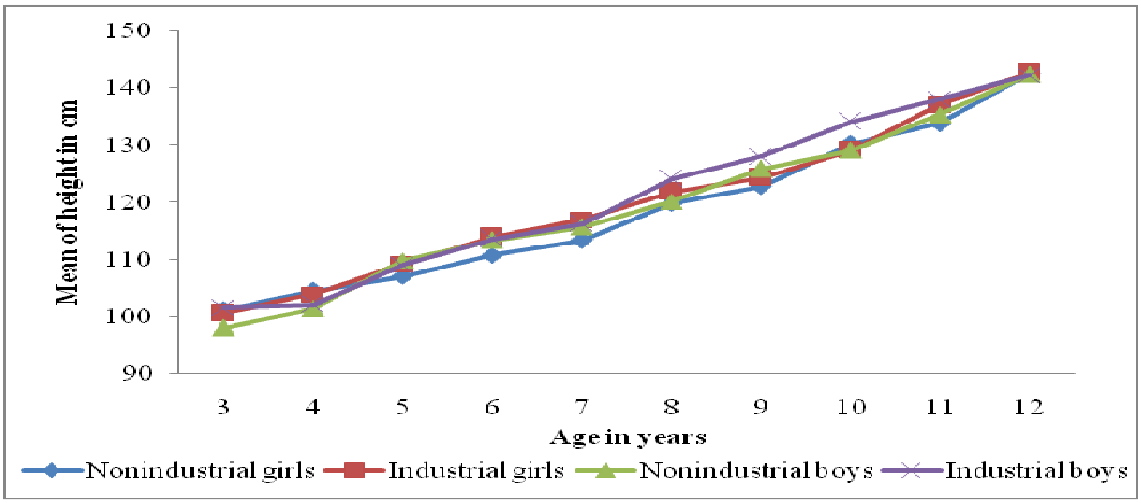

Figure 5.2: Age specific area and sex differences in weight (kg)

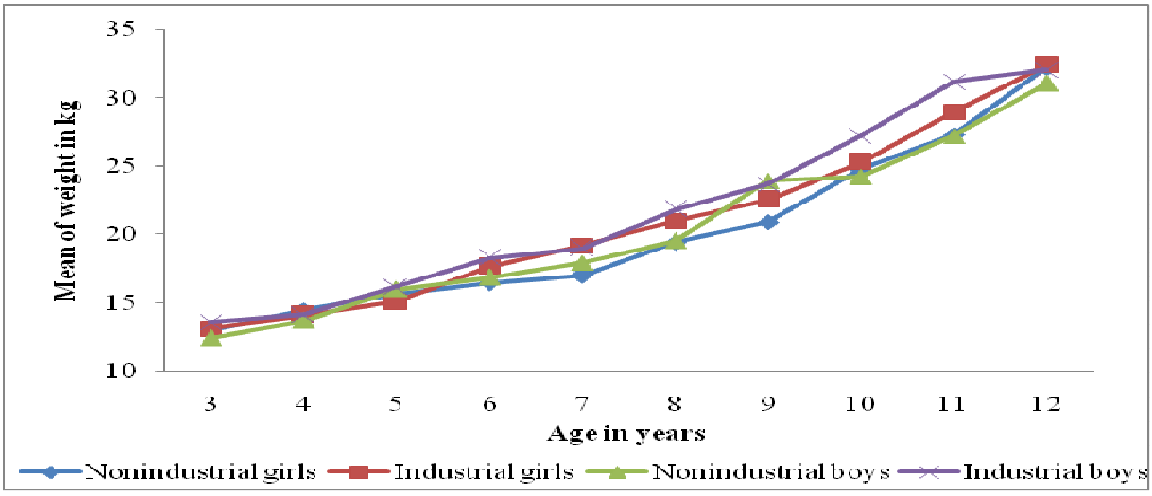

Figure 5.3: Age specific area and sex differences in sitting height (cm)

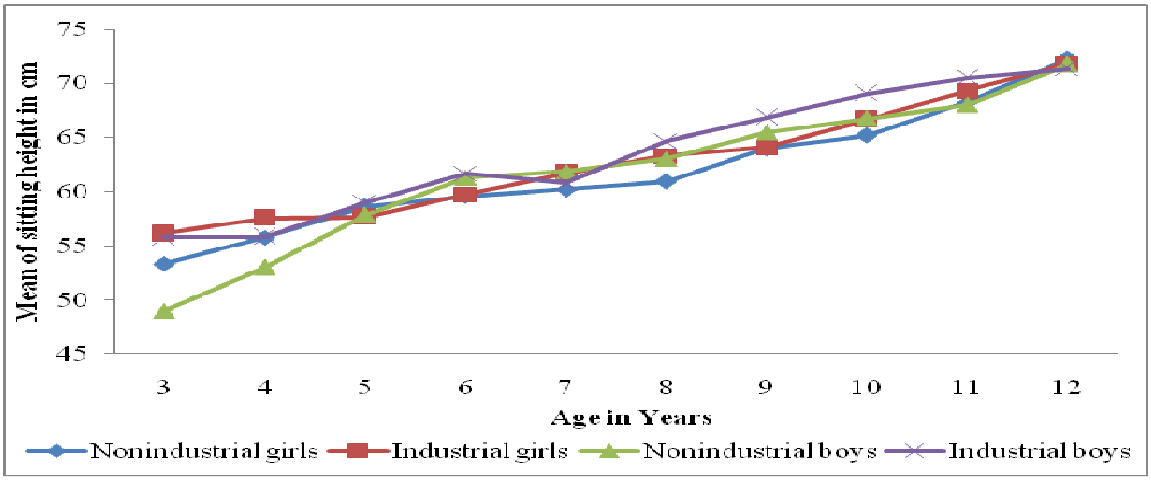

Figure 5.4: Age specific area and sex differences in knee height (cm)

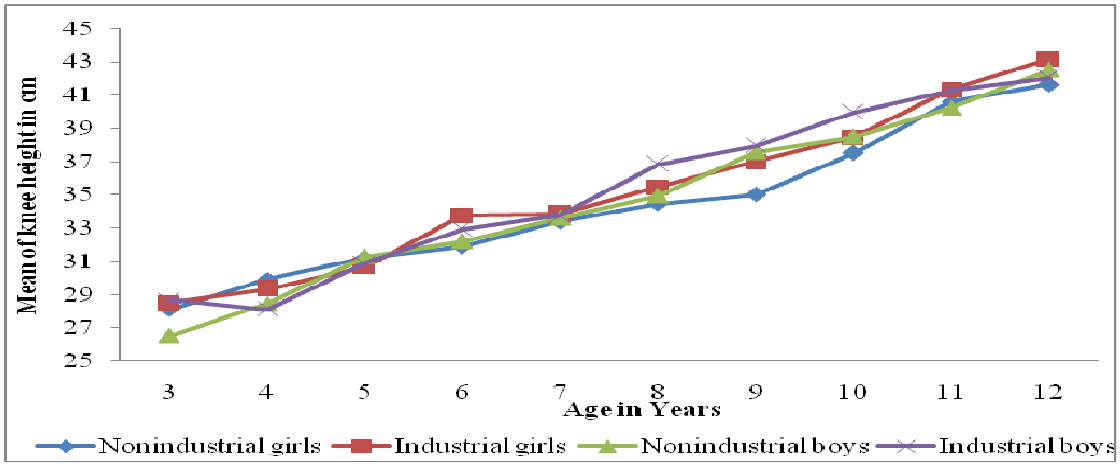

Figure 5.5: Age specific area and sex differences in MUAC (cm)

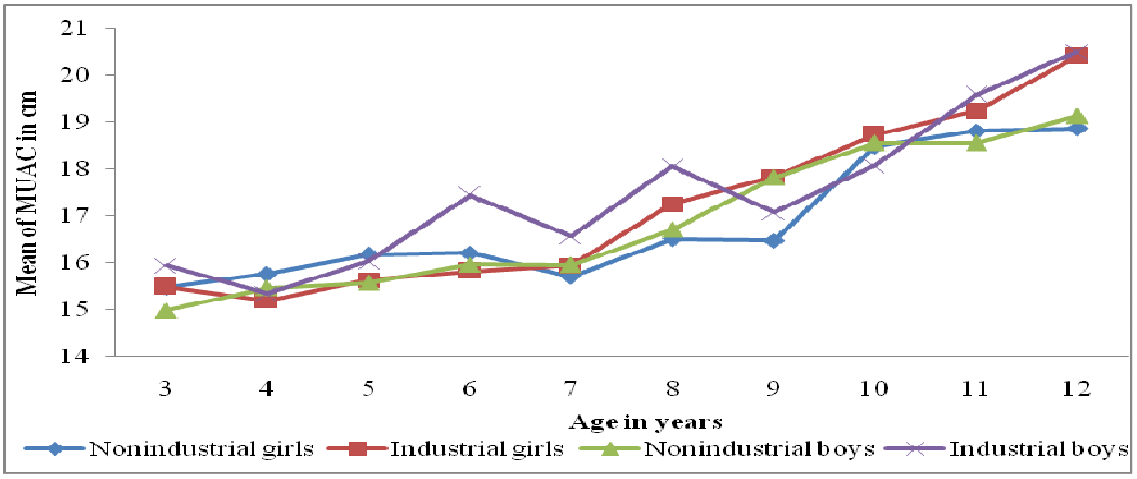

Figure 5.6: Age specific area and sex differences in HC (cm)

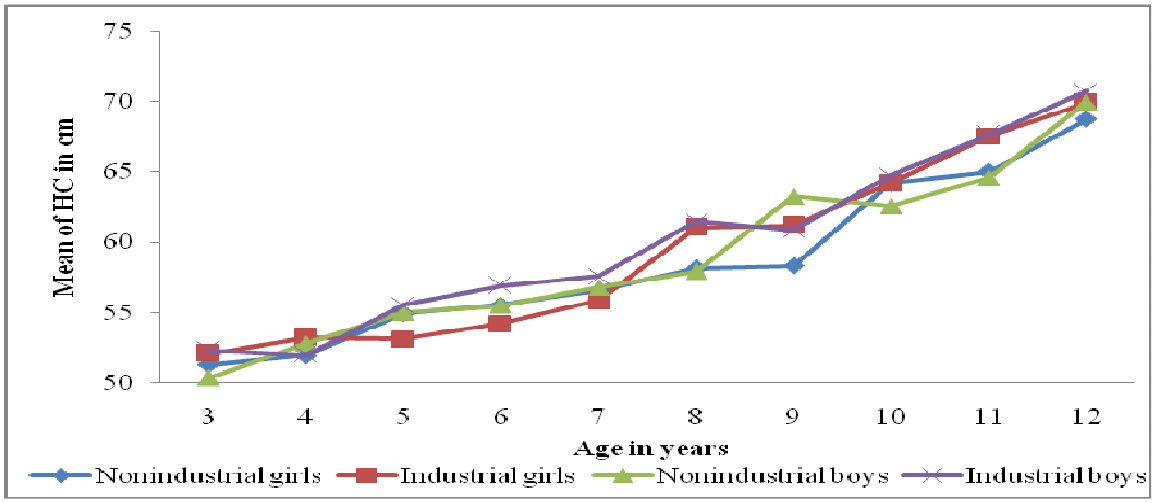

Figure 5.7: Age specific area and sex differences in WC (cm)

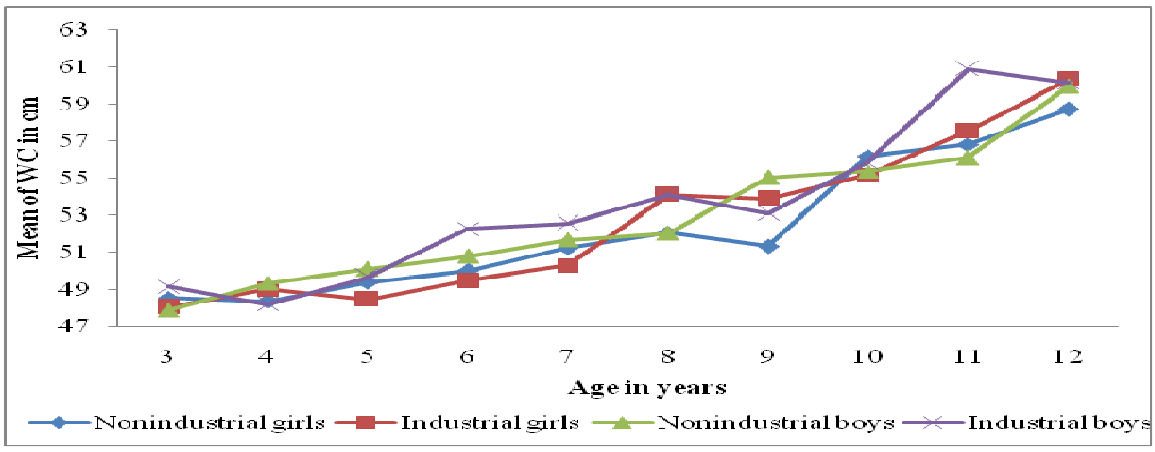

Figure 5.8: Age specific area and sex differences in BMI (kg/m²)

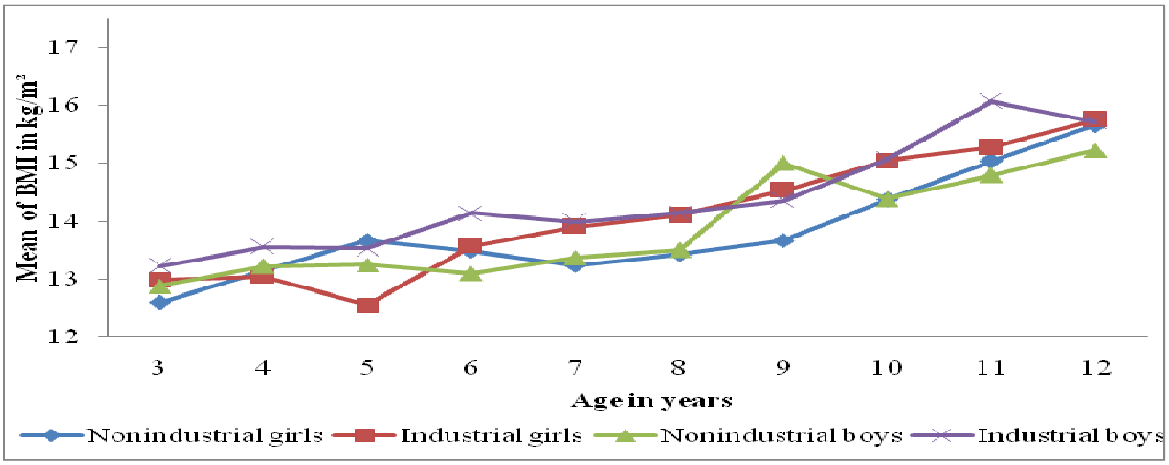

Figure 5.9: Age specific area and sex differences in CI

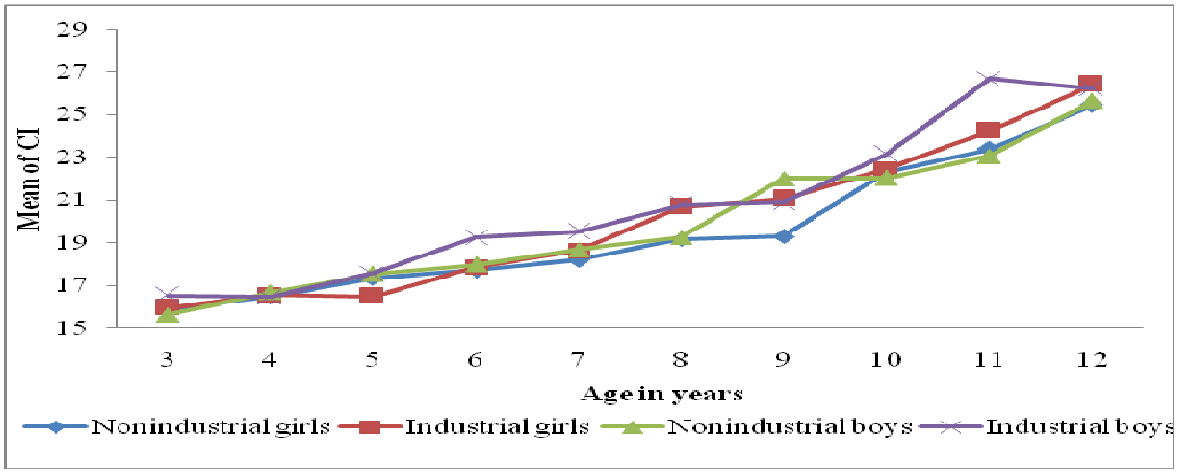

Figure 5.10: Age specific area and sex differences in WHR

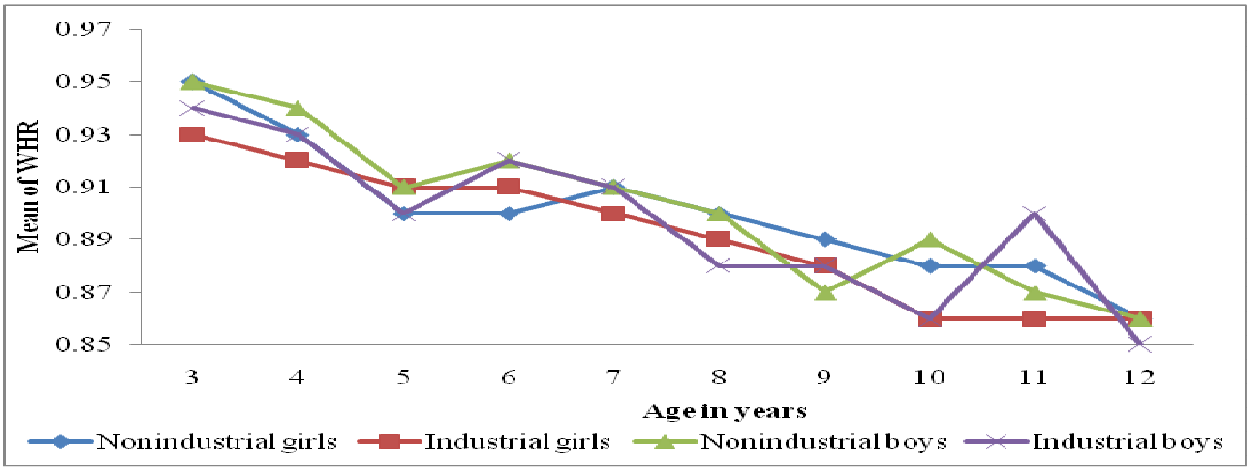

Figure 5.11: Age specific area and sex differences in WHtR

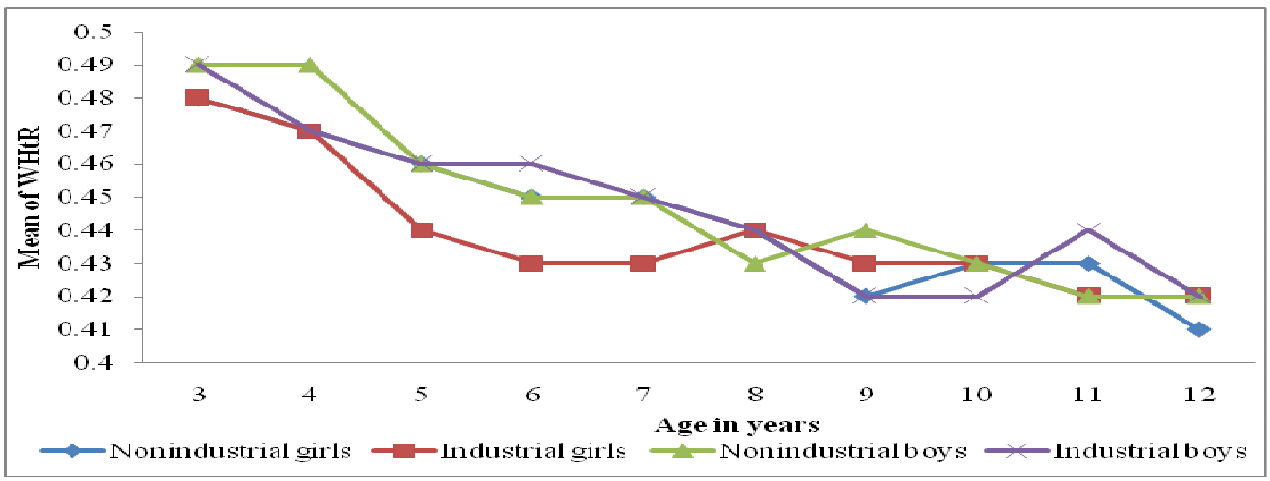

Figure 1.12: Age specific area and sex differences in triceps skinfold (mm)

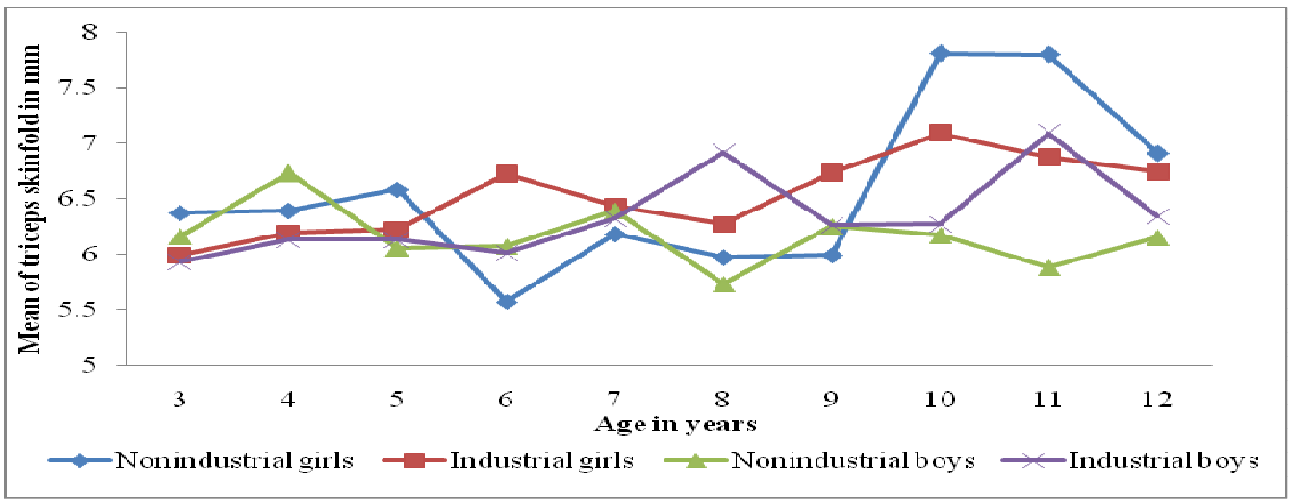

Figure 5.13: Age specific area and sex differences in biceps skinfold (mm)

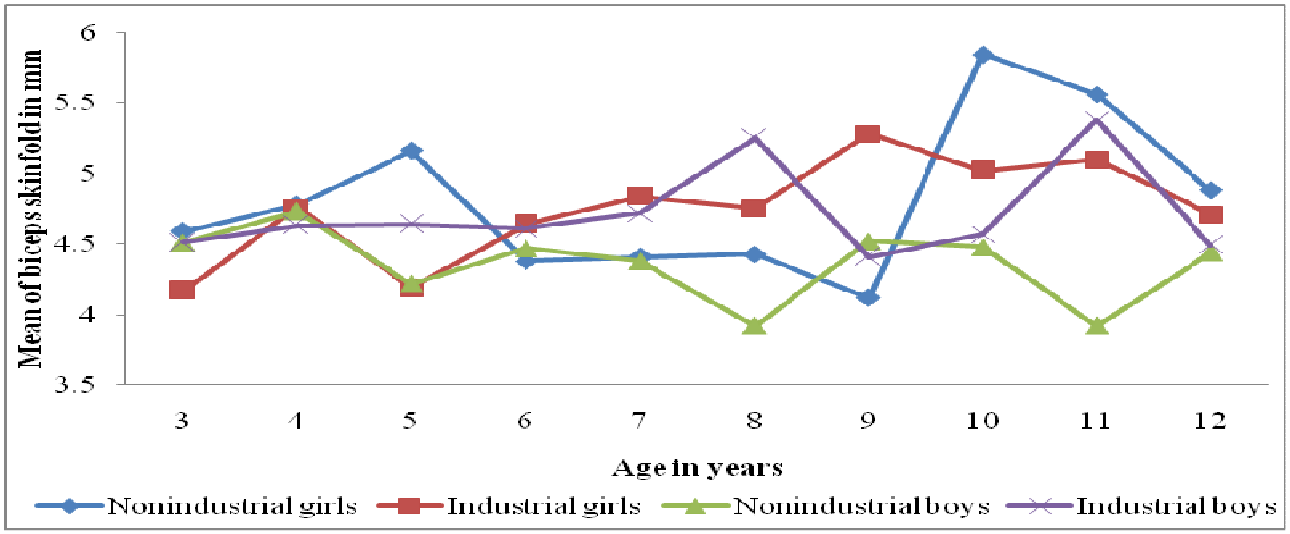

Figure 5.14: Age specific area and sex differences in sub-scpular skinfold (mm)