Comparative Anthropometric Analysis of Adolescent Boy's Growth Patterns in Dibrugarh and Kokrajhar Districts, Assam

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Abstract: *The purpose of the present study was to do the comparative anthropometric analysis of adolescent boy's growth patterns in Dibrugarh and Kokrajhar Districts, Assam. The study was administered on two hundred (N= 200) students in the age group 13 - 16 years of Dibrugarh and Kokrajar. The anthropometric measurements namely standing height, body weight, chest girth, arm girth, arm length and sitting height were used for this study. To find out the significant difference independent t - test was used. The level of significance was fixed at 0.05 levels. Result of this Ponderal Index reveals more Ectomorphic among the adolescence boys of Kokrajhar district in comparison to adolescence boys of Dibrugarh district. From this study no significant difference was observed in segments of the adolescence boys studying in Class VIII of Dibrugarh and Kokrajar. Weight, Chest girth and Arm girth measurement is significant of adolescence boys studying in Class due to different body weight of the students.*

Keywords: Segmental growth, adolescence

1. Introduction

At each moment of life, any person is in a process of changing into something a little different what he now is, it is important to keep in mind at one time both the fact of pattern and the fact of change. The growth of the individual from the birth to maturity constitutes almost one - third of the normal life span. The child's physical growth, his motor development at a different age level can be objectively. Anthropometric measures refer to the size and proportion of the human body. To assess the size and proportion of the human body segments, skin fold thickness, circumference and segment lengths may be used. The modern physical educator is often assigning to take the measures of height and weight of the students of various classes and they are by to predict body structure or in other words growth factor of the students of the institution. The performance in physical education or athletic even by the students in greatly influence by such factor of age, height, weight and body structure and these factors are also influence by the genetic factor, environmental and geographical factors, socio - economic factors, nutritional factor and involvement in games and sports. Victor P. Dauer and Robert P. Pangrazi (1992) have stated that growth patterns are generally controlled by genetic makeup at birth. Although, unhealthy parents or poor dilatory practices can have a negative impact on proper growth and development. Sodhi (1991) has reported that the ratio of sitting height and the total height become less as mean temperature increases geographically that is lower limb tend to be longer in hotter climate. Body weight surface area ratio also declines from temperature to hotter climate. As a result, this study examines the compare of segmental growth in adolescence boys of Dibrugarh and Kokrajar district in Assam.

2. Objectives

The objective of the study is
1) To find out the growth status of boys between Dibrugarh and Kokrajar district of Assam.
2) To find out the regional effect if any on growth status of boys in mentioned regions.
3) To compare the differences in selected anthropometric parameters between the boys of Dibrugarh and Kokrajhar district of Assam

3. Methodology

Subjects
For the purpose of the study total Two hundred (n=200) boys students were selected. One hundred (100) subjects from Dibrugarh district (i. e. fifty (50) from class VIII and fifty (50) from class IX) and One hundred (100) subjects from Kokrajar district (i. e. fifty (50) from class VIII and fifty (50) from class IX) were selected randomly. With age ranged from 13 to 16 years.

Variables
Following anthropometric variables were selected in this study.
- Standing height
- Body weight
- Chest girth
- Arm girth
- Arm length
- Sitting height

Criterion Measures and collection of data
The standard data collection procedures were used for the study. Measurement of upper extremity and lower extremity

of the body were measured by Anthropometric kit. Height was measured by Stadiometer and recorded in centimetre. Weight was measured by Weighing Machine and recorded in kilogram. Chest girth Arm girth Arm length was measured by 2 meters steel measuring tap and recorded in centimetre. To maintain the objectivity and uniformity in conducting the measurements all assistance were given proper orientation of purpose study and the instrument used. The whole data were collected on consecutive five days from each school.

Statistical technique for analysis data:
For the purpose of the study to compare of segmental growth in adolescence boys of Dibrugarh and Kokrajar district, descriptive statistics of mean, SD and t - test was employed. The level of significance was set at 0.05.

4. Result

After collecting the data statistical analysis were done. Ponderal Index (PI) is a ratio of height and weight, which is used in the somato typing process. The higher the P. I. scores the thinner or more ectomorphic the subject or individual.

Table 1: Mean and t - test of Ponderal Index for the subjects from Dibrugarh and Kokrajar

Class	Dibrugarh			Kokrajar			p - value
	Mean Height	Mean Weight	Mean P. I.	Mean Height	Mean Weight	Mean P. I.	
VIII	153.72	41.23	11.45	153.18	44.4	12.35	0.98*
IX	157.09	44.6	11.6	159.24	55.14	13.66	0.94*

Source: Computed by the authors, 2022 Significant at 0.05 levels
*: Non significant

Table - 1 showed that the mean height, mean weight and mean P. I. of class VIII and IX standard for Dibrugarh and Kokrajar. The calculated p - value of class VIII was 0.98 which was smaller than the critical value at 0.05 level of significant. Again the calculated p - value of class XI was 0.94 which was smaller than the critical value at 0.05 level of significant.

Table 2: Mean, SD and t - test of Segment for the class VIII students from Dibrugarh and Kokrajar

Class	N	Anthropometric Parameters	Dibrugarh		Kokrajar		p - value
			Mean	SD	Mean	SD	
VIII	100	Standing Height	153.78	5.27234	153.18	5.26323	0.60942*
		Weight	41.23	4.34155	44.4	4.69042	0.00351*
		Chest girth	69.28	4.07601	71.22	4.08726	0.00351*
		Arm girth	20.88	2.23735	21.88	1.88051	0.00351*
		Arm length	68.92	3.15493	67.46	2.84401	0.00351*
		Sitting height	77.82	3.12211	78.42	3.5105	0.37351*

Source: Computed by the authors, 2022 Significant at 0.05 levels
*: Non significant

Table 3: Mean, SD and t - test of Segment for the class VIII students from Dibrugarh and Kokrajar

Class	N	Anthropometric Parameters	Dibrugarh		Kokrajar		p - value
			Mean	SD	Mean	SD	
IX	100	Standing Height	157.09	3.94422	159.24	4.03762	0.00897 (NS)
		Weight	44.6	3.37639	55.14	4.69472	1.5**
		Chest girth	71.05	2.41713	75.82	2.68097	5.1E - 15**
		Arm girth	21.25	2.00562	23.9184	2.3819	3.3E - 08**
		Arm length	70.58	2.58527	71.24	3.53021	0.29363*
		Sitting height	80.18	2.95763	82.02	3.19681	0.00389*

Source: Computed by the authors, 2022 Significant at 0.05 levels
*: Non significant
**: Significant

5. Findings

Result of the study indicated that there were no significance difference on ponderal index between Dibrugarh and Kokrajar district. It observed that the subjects of Kokrajar were advanced in the ratio. This indicated that the subjects of Kokrajar were more Ectomorhic than the subjects of Dibrugarh. It was observed that the class VIII and IX there were no significant difference among the mean height of the subjects for Dibrugarh and Kokrajar. Pakrasi et al. (1988) has reported that peak annual increase of growth in height and weight occurs in Bangali boys at 12 - 13 years and 14 - 15 years respectively. This was about one year early then the well of India, British or American boys. This also supported the present findings. The students of class VIII showed that there were no significant difference between the mean weight for Dibrugarh and Kokrajar district. The students of class IX indicated that there were significant differences between the mean weight for Dibrugarh and Kokrajar district. This may be due to the height of the subjects of Kokrajar or may be due to the nutritional factor, which is beyond the periphery of the present research. Similar kind of

results was obtained by Dr. Sinha, S. K. (1996), where he concluded in his study on the Eastern region (ER) and North - Eastern region (NER) boys that rapid increase in weight of ER boys are seen at 12 years of age where as NER boys exhibited moderate increase in height in the same age. ER boys exhibited increase rate of growth and development (Height and weight) as compared to NER boys from 12 years of age onwards and up to 14 years of age. Again Khan et. al. (1990) studies the anthropometric measurements of 1020 rural school going children 776 boys and 236 girls in the age group 5 - 15 years. They concluded that physical growth in terms of height and weight were considered as important parameters reflecting the pattern of growth and development in a community. In the growing children, by and large were deprived of good nutrition on account of their poor socio economic status, ignorance and lack of health promotional facilities. There nutritional deprivation result is relative stunting of growth. The arm length and sitting height of class VIII and IX for Dibrugarh and Kokrajar, there no significance difference found. But the chest girth and arm girth of the students of class IX, indicated that the significant difference. It may be occurred due to weight of the students. The chest girth and arm girth of the students of class VIII, indicated that the no significant difference.

6. Conclusion

On the basis of above discussion, the following concussions may be drawn;
1) There is no difference in Ponderal Index of the students between Dibrugarh and Kokrajar district of Assam. Ponderal Index indicated that the adolescence boys of Kokrajar district were more Ectomorhic than the subjects of Dibrugarh district.
2) There is no difference in segments of the adolescence boys studying in Class VIII of Dibrugarh district and Kokrajar district.
3) Weight, Chest girth and Arm girth measurement is significant of adolescence boys studying in Class IX due to different body weight of the students.

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