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Growth Pattern of School Age Children of Two Communites in Manipur

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Abstract: Background: Growth is a characteristic of all living organisms and it varies with sex and ages as well as between different ethnic groups. It is a regular process of quantitative increase in size and mass of an organism over a period of time.
Objective: To examine the growth pattern of school age children of Scheduled caste (SC) and Meitei girls of Imphal west district, Manipur.
Setting: The study was conducted in four different villages, i.e. Sekmai, Potshangbam, Tengdongyang, and Khonghampatin Imphalwest district, Manipur.
Design: The present study was a cross-sectional study.
Subject and method: A total of 700 (Scheduled caste=350 andMeitei=350) girls ranging in age 6-12 years were randomly selected from the above-mentioned villages of Manipur. Pre- tested interview schedule forms were used to collect the data of the present study.
Result:
The Meitei girls were slightly taller in height, in all age groups ranging from 103.50cm to 135.19 cm in between the ages 6-12 years, moreover, they were larger in hip and calf girths and also bi-acromial breadth,however, no marked differences could be seen in weight and upper arm girth in both the groups. The growth spurt occurred in the beginning of early adolescent stage in between 10-11 years with absolute growth rate of 5.0 kg (weight) and 6.0 cm (height) approximately in the Scheduled caste and Meitei girls. It was found that the present study children were muchlighter and shorter than the mean weight and height of the ICMR data. Among many factors that affect growth, some are hereditary in origin, while others such as dietary condition, climate, socio-economic, etc. are important factors.
Keywords: Growth, pattern, school age children, two communities, Manipur.

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I. INTRODUCTION

Growth is a biological phenomenon. It means "quantitative increase in size or mass" of an organism; while development refers to "progression of changes either quantitative or qualitative that leads from an undifferentiated or immature state to a highly organized, specialized, and mature state" (Bogin, 1999). Growth occupies an important place in the study of individual differences in the form and function (Harrison et al., 1990). The velocity of growth or rate of growth naturally reflects the child's state of growth at any particular time, while the adolescent or pubertal growth spurt is the marked acceleration of growth. Among many factors that affect growth, some are hereditary in origin, while others such as dietary condition, season of the year, severe psychological stress, socio-economic, etc. are important factors.

There are racial differences in the rate and pattern of growth, leading to difference in the adult stage. Since human growth and development is also largely influenced by socio-environmental factors like nutrition, infection, income, occupation, and religion, it is very vital for understanding the bio-cultural variation and evolution of human population (Eveleth and Tanner, 1990).School age (6-12) years is the active growing phase of childhood. Research indicates that health problems due to miserable nutritional status in primary school-age children are among the most common causes of low school enrolment, high absenteeism, early dropout and unsatisfactory classroom performance (Srivastava et al, 2012).Various Scientsts (Gaur and Singh, 1995; Temsumongla, 2013; Thangboy, 2014; Devi, 1985; Devi, 2001, Singh and Singh, 2001) conducted their research works in different populations. The present study has been undertaken among the Scheduled caste and Meitei girls of Imphal west district, Manipur to examine the physical growth pattern of school age (6-12 years) girls through selected six (6) anthropometric measurements.

The Scheduled caste people of Manipur are also known as Loi community. They inhabited at various valley regions of Manipur, such as Sekmai, Phayeng, Leimaram, Khurkhul, Koutruk, and Andro. The Loi populations consisted of those who were vanquished by the Meitei king. This group of people paid tributes to

the Meitei rulers (Hudson, 1908) [13]. They're considered being the descendants of the Chakpas, who were one of the earliest settlers in Manipur. At one time, they were independent, but later subdued by the king and imposed to pay tributes to the king. On the other side, Meiteis are the general majority population of Manipur. They settled in the central plain areas of four districts in Manipur.

II. MATERIAL AND METHODS

The present study is a community-based cross-sectional study. A total of 700 (Scheduled caste=350 and Meitei=350) girls have been drawn randomly from Sekmai,Potshangbam, Tengdongyang, and Khonghampat in Imphal West district, Manipur. The data of the scheduled caste girls were collected from the Scheduled caste inhabited village of Sekmai, while the data of the Meitei girls had been drawn from the neighbouring 3 (three) villages of Potshangbam, Tengdongyang, and Khonghampat, Imphal west district, Manipur. These villages are located at the distances ranging between 15-17 km from Imphal, the capital of Manipur. The age of the subjects was from 6-12 years. Six (6) anthropometric measurements viz, weight, height, upper arm girth, hip girth, bi-acromial breadth and calf girth were measured using anthropometric scheduled forms following the norms of Weiner and Lourie (1969). Mean weight and height of the present study children were compared with the data of the ICMR (1994).

Statistical methods

Mean,and other statistical constants and t values were computed using SPSS version 20.

III. RESULTS

In body weights, there are no marked variations in between the scheduled caste and Meitei girls. Mean values of body weight of 6-12 years ranges from 17.40±0.34 kg to32.50±1.00kg for SC girls, which is very close to 17.40±0.34kg to 32.50±0.76kg of the Meitei girls. However in height, the Meitei girls were slightly taller at the age of 6 years (103.50±1.02 cm) and continued in all age groups till 12 years. As such, on completion of 12 years, the Meitei girls attained a mean height of 135.19±1.25 cm. The adolescent growth spurt occurred in the beginning of early adolescent stage in between 10-11 years with absolute growth rate of 5.0 kg and 6.0 cm approximately in weight and height for the Scheduled caste and Meitei girls respectively. The Meitei girls have larger hip and calf girths and also bi-acromial breadth than the Scheduled caste girls, however, the upper arm girth size were found similar with one another in between the two groups (Table 1).

Table 1Mean Values of Six Anthropometric Parameters of Scheduled Caste and Meitei girls

			6 yrs	7 yrs	8 yrs	9 yrs	10 yrs	11 yrs	12 yrs
Parameters	Popn	Sex	Mean ±SE	Mean ±SE	Mean ±SE	Mean ±SE	Mean ±SE	Mean ±SE	Mean ±SE
weight	SC	F	17.40±0.34	18.80±0.44	20.51±0.52	23.50±0.54	25.70±0.67	30.90±0.96	32.50±1.00
	Meitei	F	17.50±0.30	18.54±0.34	20.60±0.41	23.72±0.60	25.75±0.60	30.80±0.89	32.50±0.76
Height	SC	F	101.48 ±1.22	106.59 ±1.53	111.86 ±1.39	116.90 ±1.64	122.50 ±1.54	128.50 ±1.93	133.20 ±1.46
	Meitei	F	103.50±1.02	107.61± 1.30	112.56± 1.47	118.46±1.46	124.27±1.34	130.25±1.54	135.19± 1.25
UAG	SC	F	15.00±0.27	15.60±0.27	16.00± ±0.22	17.40±0.31	18.40±0.28	19.37±0.42	19.48±0.42
	Meitei	F	15.16±0.24	15.86±0.23	16.89±0.22	17.19±0.33	18.28±0.25	19.03±0.33	19.07±0.35
HG	SC	F	56.86±0.47	58.80±0.54	60.96±0.58	63.90±0.77	65.78±0.90	67.06±1.53	69.78±1.30
	Meitei	F	57.90±0.47	59.92±0.56	61.43±0.49	64.33±0.68	66.08±0.63	68.02±1.05	70.38±1.08
BAB	SC	F	22.78±0.22	23.98±0.22	24.89±0.22	25.80±0.30	27.20±0.25	27.20±0.25	28.54±0.35
	Meitei	F	23.64±0.15	24.44±0.18	25.89±0.22	26.44±0.32	27.74±0.20	28.90±0.26	29.40±0.29
CG	SC	F	21.92±0.21	21.96±0.26	22.86±0.22	23.67±0.33	24.70±0.33	25.60±0.52	26.10±0.47
	Meitei	F	22.12±0.18	22.42±0.18	23.42±0.20	23.91±0.25	25.57±0.26	25.92±0.37	26.42±0.38

Comparisons of anthropometric measurements of the Scheduled caste and Meitei girls indicate that significant differences can be observed in the bi-acromial breadth of 6 years, 8 years and 11 years (t= 3.23, 3.23, 4.72 P<0.05) and in calf girth of 10 years (t= 2.08,P> 0.05)in between the two groups (Table 2).

Table 2 t Values of Six Anthropometric Measurements of Scheduled Caste and Meitei Girls

		6 yrs.	7 yrs.	8 yrs.	9 yrs.	10 yrs.	11 yrs.	12 yrs.
Sl. No	Parameters	t value	t value	t value	t value	t value	t value	t value
1.	Weight	0.22	0.17	0.13	0.27	0.05	0.07	0.01
2.	Height	1.26	0.51	0.34	0.71	0.86	0.71	1.03
3.	UAG	1.23	0.74	0.93	1.46	0.32	0.64	0.75
4.	HG	1.57	1.44	0.62	0.42	0.27	0.52	0.36
5.	BAB	3.23*	1.64	3.23*	1.48	1.69	4.72*	1.91
6.	CG	0.74	1.45	1.93	0.57	2.08*	0.50	0.53

Note: SC=350, Meitei=350, df=698, t= 1.96

Table 3 shows comparisons ofmean values of body weights of the present study children with the data of the ICMR. Mean values of body weight of various age groups have revealed that the maximum gain in weight occurred during 10-11 years in both the populations, however, when compared with the data of the ICMR, the mean weights of age groups (6-12 years) of both the Scheduled caste and Meitei girls were much lower than the data of the ICMR. As such, on completetionof 12 years, a deficit of 9.67kg was found lighter in the two groups than the well to do Indian children of ICMR(1994).

Table 3 Mean Body Weight of SC and Meitei Girls as Compared with the Data of ICMR

Age (yrs.)	**Weight (kg)**					**Weight (kg)**				
	N	**Present study (SC girls)**	**SE**	**ICMR**	**SE**	**N**	**Present study (Meitei girls)**	**SE**	**ICMR**	**SE**
6+	50	17.40	0.34	21.56	0.37	50	17.50	0.30	21.56	0.37
7+	50	18.80	0.44	24.45	0.40	50	18.54	0.34	24.45	0.40
8+	50	20.51	0.52	25.97	0.42	50	20.60	0.41	25.97	0.42
9+	50	23.50	0.54	29.82	0.47	50	23.72	0.60	29.82	0.47
10+	50	25.70	0.67	33.58	0.39	50	25.75	0.60	33.58	0.39
11+	50	30.90	0.96	37.17	0.48	50	30.80	0.89	37.17	0.48
12+	50	32.50	1.00	42.17	0.49	50	32.50	0.76	42.17	0.49
Total	**350**					**350**				

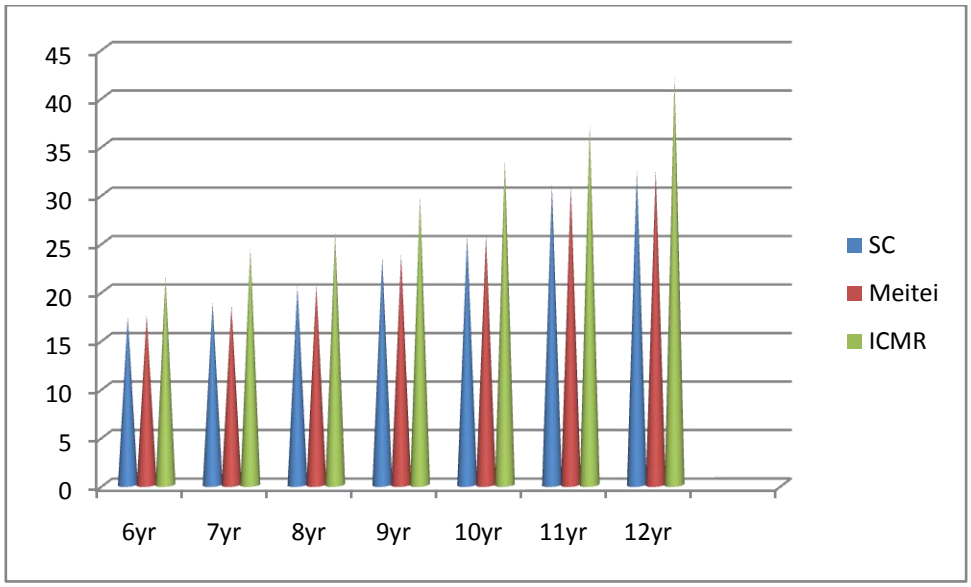

Fig. 1: Weight of SC, Meitei and ICMR Children

Further comparisons of mean heights of the present study children of the two populations with those of the ICMR data highlights that although the Meitei girls are slightly taller than SC girls, both the groups were found shorter than the data of the ICMR throughout the age groups of6-12 years. At 12 years of age,a height deficit of 15.70 cm was found in the scheduled caste and Meitei girls (Table 4, Fig. 2).

Table 4 Mean Body Height of SC and Meitei Girls as Compared with the Data of ICMR

Age (yrs.)	**Height (cm)**					**Height (cm)**				
	N	**Present study**	**SE**	**ICMR**	**SE**	**N**	**Present study**	**SE**	**ICMR**	**SE**
6+	**N**	101.48	1.22	117.73	0.54	**N**	103.50	1.02	117.73	0.54
7+	50	106.59	1.53	122.65	0.52	50	107.61	1.30	122.65	0.52
8+	50	111.86	1.39	127.22	0.56	50	112.56	1.47	127.22	0.56
9+	50	116.90	1.64	133.08	0.50	50	118.46	1.46	133.08	0.50
10+	50	122.50	1.54	139.90	0.51	50	124.27	1.34	139.90	0.51
11+	50	128.50	1.93	145.00	0.52	50	130.25	1.54	145.00	0.52
12+	50	133.20	1.46	**150.98**	**0.42**	50	135.19	1.25	**150.98**	**0.42**
	350					**350**				

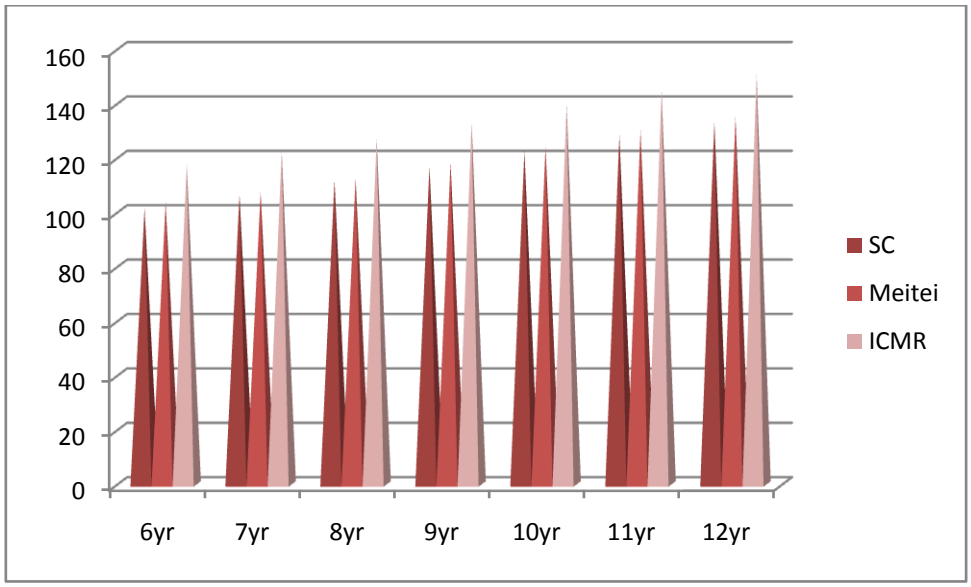

Fig. 2: Height of SC, Meitei and data of ICMR.

IV. DISCUSSION

The United Nations Educational Scientific and Cultural Organization (UNESCO) considers 6-11 years as primary school age. Both the populations of the present study children aged 6-12 years share more or less similar eco-niches, and as such, no marked variations could be seen in weights of the two population in all age groups, however, the Meitei girls were slightly taller in all the age groups (6-12 years) ranging from 103.50cm to 135.19 cm in between the ages 6-12 years. They were also larger in hip and calf girths and bi-acromial breadth than the Scheduled caste girls, but had more or less similar upper arm girth.The early adolescent growth spurt occurred early during 10-11 yearswith having absolute growth rate of 5.0 kg and 6.0 cm approximately in weight and height in the Scheduled caste and Meitei girls.

The mean heights(109.5 cmand 144.7 cm) of 6 years and 12 years rural Meitei girls (Ranjan and Yaima, 1995), and andthe mean height (142.90 cm)of 12 years of the MakokchingNaga girls, Nagaland (Temsumongla, 2013) were taller than the present study scheduled caste and Meitei girls. Adolescent growth spurt in height of the Naga girls occurred a bit later during 11-12 yearswith higher absolute growth rate of 8.30 cm than the present study children of both communities. The study children were also much lighter and shorter than the mean weight and height of the ICMR data. These variations in height of the different populations children would be due to genetic as well as environmental conditions such as dietarypattern, climate, health care facilities and socio-economic factors.

V. CONCLUSION

The above findings of the present study has led to the conclusion that in general, the present study children din't show much variations in all 6 (six) anthropometric parameters except that the Meitei girls were slightly taller in height, larger in hip and calf girths and bi-acromial breadth than the Scheduled caste girls. However, both of them were found lighter and shorter than the children of rural Meitei girls of Manipur, Naga girls of Nagaland and also the data of the ICMR (1994).

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Competing Interests

Authorhas declared that no competing interests exist.

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