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Growth pattern and thinness of Rajbanshi Preschool children of North Bengal

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ABSTRACT

The term growth refers to changes in the quantitative increase in size or mass of an organism. Studies on the growth performance of children are of the utmost importance as an index of nutritional status for the community. A cross-sectional study was done in Maynaguri, Jalpaiguri district of West Bengal, India among 414 subjects out of whom 209 (50.48%) were boys and 205 (49.52%) were girls aged 2-5 years. The present investigation aims to study sex and age-specific growth patterns and to assess the grades of thinness. A total of five anthropometric measurements and one derived variable that is BMI were used in the present report. International cut-off values developed by Cole et al., 2007 were used for evaluating the grades of thinness among studied children. Mean values of all anthropometric variables were significantly increased in both sexes with the advancement of ages except boys' BMI. The prevalence of overall thinness was 56.94 % for boys and 47.8 % for girls. The growth pattern of Rajbanshi boys and girls was lagging behind the 50th percentile of international standards such as WHO 2007, NCHS 1977 and CDC 2000. It is necessary to develop regional standards of growth of children and should evaluate regularly for a better understanding of physical growth among children of different ethnicities.

Keywords: Growth, Thinness, Preschool Children, Anthropometry, NCHS, CDC, WHO

INTRODUCTION

Growth is a human characteristic which varies with sex and age as well as between different populations. Growth may be defined by terms of change (increment), rate (increment per unit time) and the momentary rate of change or pattern of changes in growth throughout a lifetime (Garn 1952). The term growth refers to changes in the quantitative increase in size or mass of an organism; while development refers to the progression of changes either quantitative or qualitative that lead from an undifferentiated or immature phase to a highly organized, specialized, and mature phase (Bogin 1991). Growth also occupies an important place in the

study of individual differences in form and function of human, for many of these also varies through differential rates of growth pattern of particular parts of the body relative to others. (Tanner & Preece 1989). Although human growth and nutritional status are also largely influenced by sociocultural and environmental factors like nutrition, infection, income, occupation, and religion, castes, community and it is very vital for understanding the bio-cultural variation and evolution of human population, it is a continuous and composite interaction method with biocultural lifestyle. Growth is a creation of heredity, which means genetics or ethnic background besides this environment plays a significant role in growth patterns. Physical growth is widely recognized as one of the most sensitive and reliable indicators of health and nutritional status among children (Tanner & Preece 1989; Eveleth and Tanner 1990). Growth and physical development are biological phenomena among organisms, the general standard of living and nutritional status of a population can be measured by child growth; because the growth faltering during childhood reflects the scenario of child malnutrition. Although growth faltering is regarded as an early sign of child undernutrition but not all cases impairment of growth is nutritional in origin (Norgan 2012).

Anthropometric parameters such as height, weight, and circumferences measurement are valuable non-invasive indicators to detect nutritional status to assess the growth and development of children (Saxena & Sharma 2004; WHO 2007). Nutritional status enhancement and improvisation of public health is global development agenda and have been committed to reducing the prevalence of undernutrition especially among preschool children the vulnerable segments of our society. Good quality of nutrition is also a determinant of healthy growth of mind and body during preschool age. Several studies have been conducted on the physical growth and nutritional status of children in different parts of the country as malnutrition continues to be a common, social and undoubtedly the biggest public health problem in our society as well as a country (Balgir et al., 2002; Yankanchi et al., 2002; Amrithaveni & Barikor 2002).

Studies on the growth performance of children are of the utmost importance as an index of nutritional status for the community. It is recognised that genetic factors play an important role in determining children's growth but the impact on their growth potential of socioeconomic and ecological conditions, altitude, pollutants, health care, poor housing, poverty and nutrition cannot be ignored (Udani, 1963; Vijairaghavan et al., 1971; Vijairaghavan et al., 1974; Rao et al., 1976; Norgan 2012; Schell et al., 2012). Children who belong to socially backwards groups like scheduled castes are highly susceptible to malnutrition (Uppal et al., 2005).

Some early growth studies done in India were mainly combined with some basic parameters like height, weight and some physiological variables. The first growth studies in India were taken by Mukherjee and Gupta in 1930. In recent years, researchers have studied on Growth pattern of Kamars (Mitra et al., 2002), Growth profile of Baiga children of Madhya Pradesh (Quamra et al., 2012), Physical growth and nutritional status among Ao Naga children (Longkumer 2013), Physical growth and nutritional status among Chakhesang boys (Kuki 2014), Growth pattern among Baharia boys of Madhya Pradesh (Ahirwar et al., 2015), Growth pattern of pre-adolescent Bengali children of Assam (Mallick 2021).

Undernutrition undoubtedly is a serious public health challenge in India among many developing countries (Khor, 2008; Black et al., 2013; Varadharajan et al., 2013, Ramachandran, 2014; UNICEF/WHO, 2016). There are several studies done on thinness among preschool

children (Biswas et al., 2009; Mandal et al., 2012; Giri et al., 2017; Mahapatra et al., 2019; Mahapatra et al., 2020) utilized the cut-off value developed by Cole et al., 2007.

The present study has been undertaken to evaluate sex and age-specific growth patterns and assessment of thinness among 2-5 years old Rajbanshi preschool children of Jalpaiguri. The present study promoted partially fulfils the emptiness of an anthropometric profile among rural Rajbanshi preschool children of Jalpaiguri, West Bengal. This study attempted to develop linear curves of anthropometric variables of the studied population and eventually tried to compare them (only height and weight) with the international (World Health Organisation 2007, National Center of Health Statistics 1977 and Centers for Disease Control and Prevention 2000) standards. The prevalence of thinness was also analysed and compared with previous studies.

MATERIAL AND METHODS

The present study was carried out in Maynaguri block of Jalpaiguri district which is the northern part of the state of West Bengal. The cross-sectional data for the present study has been collected from 40 ICDS centres of Maynaguri block. A total number of 414 Rajbanshi preschool boys (n=209) and girls (n=205) age group between 2 to 5 years participated in this study. Data collection was conducted from various 40 ICDS centres. The studied ICDS centres were chosen for operational and logistic convenience. Ethical consent and official approval were received from the authorities of all ICDS centres and from the parents before the commencement of the study.

According to Dalton (1872) Rajbanshi belongs to the Dravidian stock earlier and then comes to contact with Mongoloid population. Rajbanshi people has much resemblance with Koch people of Assam and they belong to Australasian/Dravidian and Mongolian population (Risley, 1891). Rajbanshi were traditionally agriculturists and cultivators. Rajbanshi population is frequently distributed in Jalpaiguri, Koch Bihar, Darjeeling, North Dinajpur, South Dinajpur, and Maldah districts of North Bengal. Rajbanshi follows Hinduism as a Religion as a result comes under the Schedule Caste category. According to the census 2011, Rajbanshi constitutes 18.4 % of the total Schedule Caste population of the Country.

Using the standard procedure developed by Weiner and Lourie (1981), a total of five (5) anthropometric measurements such as Height, Weight, Sitting height, Mid Upper arm circumference and Head circumference were collected by the first author (A.B).

The statistical analyses were performed by using a statistical package for social science (SPSS software version 18). The Mean and standard deviation were computed for each anthropometric variable for every age group of boys and girls. The growth pattern of Rajbanshi children was compared with the international reference data of National Centre for Health Statistics (NCHS 1977), the Centre for Disease Control (CDC, 2000) and the World Health Organization (WHO 2007). One-way ANOVA was employed for the comparison of the anthropometric data between sexes among preschool Rajbanshi children. t-test was done to evaluate significant sex differences in various measurements. The significance level of $p < 0.05$ was considered to be statistically significant.

One derived variable, BMI was calculated to evaluate the thinness of the studied population. BMI is calculated by the formula [BMI = Weight (kg) / Height (m²)]. International cut-off

values developed by Cole et al., 2007 were used for evaluating the grades of thinness among Rajbanshi preschool children.

RESULTS

Table 1 describes the mean and standard deviation of height, weight, BMI, sitting height, mid upper arm circumference and head circumference among studied participants by age and sex. Sex specific statistically significant increments were observed in mean height (F= 444.46, $p<0.05$ for boys; F= 381.80, $p<0.05$ for girls), mean weight (F= 121.23, $p<0.05$ for boys; F= 114.02, $p<0.05$ for girls), mean BMI (F= 9.22, $p<0.05$ for girls), mean sitting height (F= 260.13, $p<0.05$ for boys; F= 174.94, $p<0.05$ for girls), mean mid upper arm circumference (F= 28.05, $p<0.05$ for boys; F= 21.05, $p<0.05$ for girls) and mean head circumference (F= 63.06, $p<0.05$ for boys; F= 39.32, $p<0.05$ for girls).

Table 1. Mean and SD of Height, Weight, BMI, Sitting height, MUAC and Head circumference (HC)

Age	Sex	Height (cm)	Weight (kg)	BMI (kg/m ²)	Sitting Height (cm)	MUAC (cm)	HC (cm)
2	Boys	87.58 (4.36)	12.06 (2.03)	15.68 (1.93)	50.80 (20.50)	14.09 (1.40)	47.11 (1.40)
	Girls	86.13 (4.85)	11.24 (1.78)	15.07 (1.32)	49.71 (2.47)	13.66 (0.97)	45.81 (1.33)
3	Boys	94.26 (3.79)	12.85 (1.58)	14.43 (1.22)	53.15 (2.34)	13.92 (0.85)	47.91 (1.49)
	Girls	92.37 (3.50)	12.76 (1.86)	14.94 (1.96)	52.12 (2.90)	14.27 (1.19)	46.59 (1.38)
4	Boys	101.48 (4.23)	14.84 (1.86)	14.40 (1.42)	56.51 (3.00)	14.53 (1.12)	48.12 (1.17)
	Girls	100.45 (5.80)	14.31 (1.97)	14.15 (1.28)	56.51 (4.90)	14.37 (0.93)	47.61 (1.42)
5	Boys	106.97 (4.72)	16.47 (2.30)	14.34 (1.21)	59.13 (2.63)	14.83 (1.02)	48.71 (1.67)
	Girls	107.65 (4.78)	16.63 (3.11)	14.28 (1.95)	57.95 (2.94)	14.94 (1.95)	47.63 (1.70)
Overall	Boys	96.90 (8.15)	13.88 (2.50)	14.73 (1.59)	54.59 (3.99)	14.31 (1.16)	47.90 (1.50)
	Girls	96.30 (9.03)	13.62 (2.84)	14.60 (1.67)	54.01 (4.77)	14.29 (1.32)	46.78 (1.57)
F	Boys	444.46**	121.23**	2.55ns	260.13**	28.05**	63.06**
	Girls	381.80**	114.02**	9.22**	174.94**	21.05**	39.32**

P<0.05 **, p>0.05 ns

Table 2 describes the age and sex specific 50th percentile value, mean and increment value of height. Median (50th percentile) has coincided with the mean at maximum age groups among both sexes. At every age group, Rajbanshi boys were taller than the Rajbanshi girls. Mean height was increased (Fig.1) in boys (21.95 cm) and girls (21.52 cm) with age advancement. Significant ($p<0.05$) sexual dimorphism was found in the age group of 3 years only.

Table 2. 50th percentile, mean and increment of height in Rajbanshi preschool children

Age Groups (Years)	Boys - Height (cm)			Girls - Height (cm)			t-value
	50 th Percentile	Mean	Increment	50 th Percentile	Mean	Increment	
2	87.60	87.58		85.90	86.13		1.591ns
3	94.45	94.26	6.68	92.80	92.37	6.24	2.269**
4	102.10	101.48	7.22	100.30	100.45	8.08	1.143ns
5	110.30	109.53	8.05	107.50	107.65	7.2	-.622ns

p<0.01***, p<0.05 **, p>0.05 ns

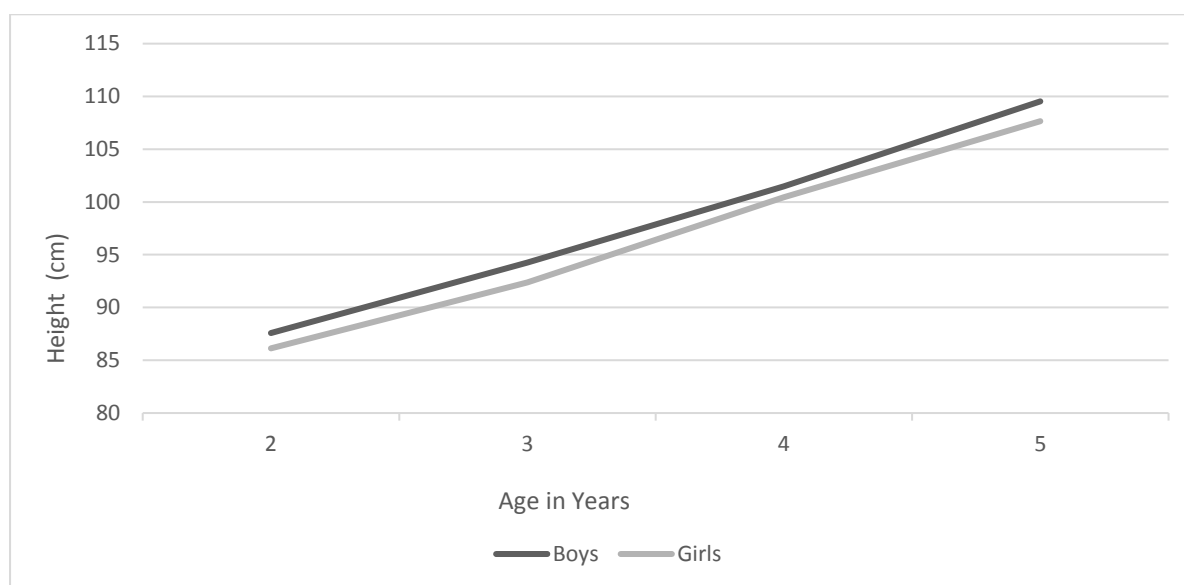


Fig. 1 Linear growth of height (cm) among studied samples

Table 3 describes age and sex specific 50th percentile value, mean and increment value of weight. Median (50th percentile) coincided with the mean at maximum age groups among both sexes. At every age group, Rajbanshi boys were heavier than the Rajbanshi girls except at the age group of 5 years. The mean weight gradually increased (Fig.2) in boys (4.41 kg) and girls (5.13 kg) with age advancement. Significant (p<0.05) sexual dimorphism was found in the age group of 2 years only.

Table 3. 50th percentile value, mean and increment value of weight among the Rajbanshi preschool children

Age Groups (Years)	Boys - Weight (kg)			Girls - Weight (kg)			t-value
	50 th Percentile	Mean	Increment	50 th Percentile	Mean	Increment	
2	11.50	12.06		10.90	11.24		2.185**
3	12.74	12.85	0.79	12.40	12.76	1.52	.270ns
4	14.58	14.84	1.99	14.14	14.31	1.55	1.574ns
5	16.06	16.47	1.63	16.37	16.63	2.32	-.252ns

p<0.01***, p<0.05 **, p>0.05 ns

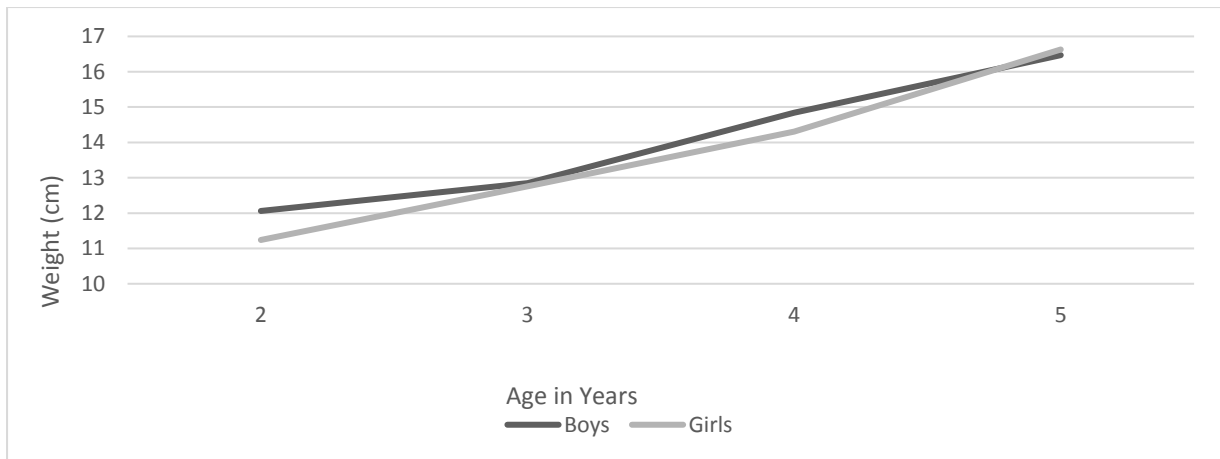


Fig. 2 Linear growth of weight (kg) among studied samples

Table 4 shows age and sex specific 50th percentile value, mean and increment value of BMI. Median (50th percentile) coincided with the mean at various age groups among both sexes. Rajbanshi boys has higher mean BMI than Rajbanshi girls in each age group except 3 years of age. Mean BMI was gradually decreased (Fig.3) among boys (-1.34 kg/m²) and girls (-0.79 kg/m²) between 2–5 years. Significant sexual dimorphism was not found in any age group.

Table 4. 50th percentile value, mean and increment value of BMI among Rajbanshi preschool children

Age Groups (Years)	Boys - BMI (kg/m ²)			Girls - BMI (kg/m ²)			t-value
	50 th Percentile	Mean	Increment	50 th Percentile	Mean	Increment	
2	15.27	15.68		14.86	15.07		1.871 ns
3	14.53	14.43	-1.23	14.68	14.94	-0.13	-1.629 ns
4	14.29	14.40	-0.03	14.19	14.15	-0.79	1.026 ns
5	14.03	14.34	-0.06	14.12	14.28	0.13	.151 ns

p<0.01***, p<0.05 **, p>0.05 ns

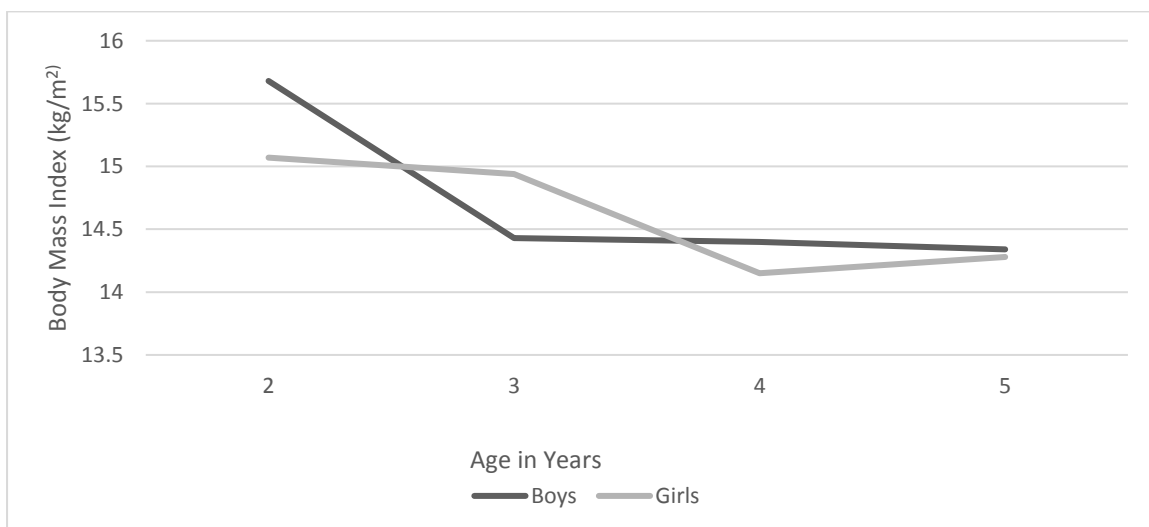


Fig. 3 Linear growth of BMI (kg/m²) among studied samples

Table 5 describes age and sex specific 50th percentile value, mean and increment value of sitting height. The median (50th percentile) has coincided with the mean at various age groups among both sexes. In all age groups, Rajbanshi boys had a higher mean sitting height than Rajbanshi girls at all age groups but in the case of age group 4, the mean sitting height was equal among both sexes. The total increment of sitting height among boys and girls between 2–5 years was 8.33 cm and 8.24 cm, respectively. Significant ($p < 0.05$) sexual dimorphism was found in age groups 2 and 3 years of age.

Table 5. 50th percentile value, mean and increment value of sitting height among Rajbanshi preschool children

Age Groups (Years)	Boys - Sitting height (cm)			Girls - Sitting height (cm)			t-value
	50 th Percentile	Mean	Increment	50 th Percentile	Mean	Increment	
2	14.00	50.80		49.25	49.71		2.204**
3	53.20	53.15	2.35	52.60	52.12	2.41	2.036**
4	56.65	56.51	3.36	56.50	56.51	4.39	.000 ns
5	58.70	59.13	2.62	58	57.95	2.19	1.825 ns

$p < 0.01$ ***, $p < 0.05$ **, $p > 0.05$ ns

Table 6 describes age and sex specific 50th percentile value, mean and increment value of mid upper arm circumference. The median (50th percentile) coincided with the mean at various age groups among both sexes. The mean MUAC for Rajbanshi girls was higher than for boys in the age group of 3 and 4 years. The total increment of MUAC among boys and girls between 2–5 years were 0.74 cm and 1.28 cm, respectively. There was no significant sexual dimorphism found in any age group.

Table 6. 50th percentile, mean and increment of MUAC in Rajbanshi preschool children

Age Groups (Years)	Boys – MUAC (cm)			Girls – MUAC (cm)			t-value
	50 th Percentile	Mean	Increment	50 th Percentile	Mean	Increment	
2	14.00	14.09		13.85	13.66		1.807 ns
3	13.80	13.92	-0.17	14.20	14.27	0.61	-1.802 ns
4	14.55	14.53	0.61	14.30	14.37	0.10	.866 ns
5	14.90	14.83	0.30	14.60	14.94	0.57	-.309 ns

$p < 0.01$ ***, $p < 0.05$ **, $p > 0.05$ ns

Table 7 describes age and sex specific 50th percentile value, mean and increment value of head circumference. The median (50th percentile) has coincided with the mean at various age groups among both sexes. At every age group, Rajbanshi boys had a higher mean head circumference than Rajbanshi girls. The total increment of HC among boys and girls between 2–5 years was 1.6 cm and 1.82 cm, respectively. Significant sexual dimorphism was found in all age groups.

Table 7. 50th percentile, mean and increment of HC in Rajbanshi preschool children

Age Groups (Years)	Boys – HC (cm)			Girls - HC (cm)			t-value
	50 th Percentile	Mean	Increment	50 th Percentile	Mean	Increment	
2	47.00	47.11		45.85	45.81		4.798 ***
3	48.00	47.91	0.80	46.50	46.59	0.78	4.789 ***
4	48.10	48.12	0.21	47.10	47.17	0.58	4.137 ***
5	48.75	48.71	0.59	47.30	47.63	0.46	2.750 **

p<0.01***, p<0.05 **

Table 8 shows the age specific frequencies (%) of nutritional status of Rajbanshi children. The prevalence of Grade I, Grade II and Grade III thinness in boys were 36.84%, 11% and 9.1%, respectively. The prevalence of Grade I, Grade II and Grade III thinness in girls were 26.80%, 14.20% and 6.8%, respectively. The overall prevalence of malnourished boys and girls was 56.94% and 47.8%, respectively. The highest percentage of malnourished boys was found at the age group 3 years but in the case of girls, it was observed at 2 years of age.

Table 8. Frequency (%) of nutritional status among Rajbanshi children

Age Groups (Years)	Sex	Nutritional categories				
		Normal	CED I	CED II	CED III	Overall Malnutrition
2	Boys	30 (54.5)	15 (27.3)	4 (7.3)	6 (10.9)	25 (45.5)
	Girls	24 (50.0)	18 (37.5)	2 (4.2)	4 (8.3)	24 (50.0)
3	Boys	20 (37.0)	20 (37.0)	6 (11.1)	8 (14.8)	34 (63.0)
	Girls	30 (54.5)	16 (29.1)	5 (9.1)	4 (7.3)	25 (45.5)
4	Boys	25 (39.1)	28 (43.8)	6 (9.4)	5 (7.8)	39 (60.9)
	Girls	32 (50.8)	12 (19.0)	15 (23.8)	4 (6.3)	31(49.2)
5	Boys	15 (41.7)	14 (38.9)	7 (19.4)	0 (0.0)	21 (58.3)
	Girls	21 (53.8)	9 (23.1)	7 (17.9)	2 (5.1)	18 (46.2)
Total	Boys	90 (43.06)	77 (36.84)	23 (11.00)	19 (9.10)	119 (56.94)
	Girls	107 (52.20)	55 (26.80)	29 (14.20)	14 (6.8)	98 (47.8)

DISCUSSION

The growth pattern of various anthropometric traits has been compared between the sexes of the studied population. Mean Height and Head Circumference of boys are relatively higher than girls in all age groups. Mean weight, BMI and MUAC vary with age and gender. Statistically significant increment of all anthropometric characteristics observed except for the BMI of boys.

The growth pattern of 50th percentile height of Rajbanshi boys is more or less similar to 50th percentile standards of WHO, NCHS, and CDC (Fig. 4). Growth pattern of 50th percentile height of Rajbanshi girls is slightly lesser than 50th percentile standards of WHO, NCHS, CDC (Fig.5).

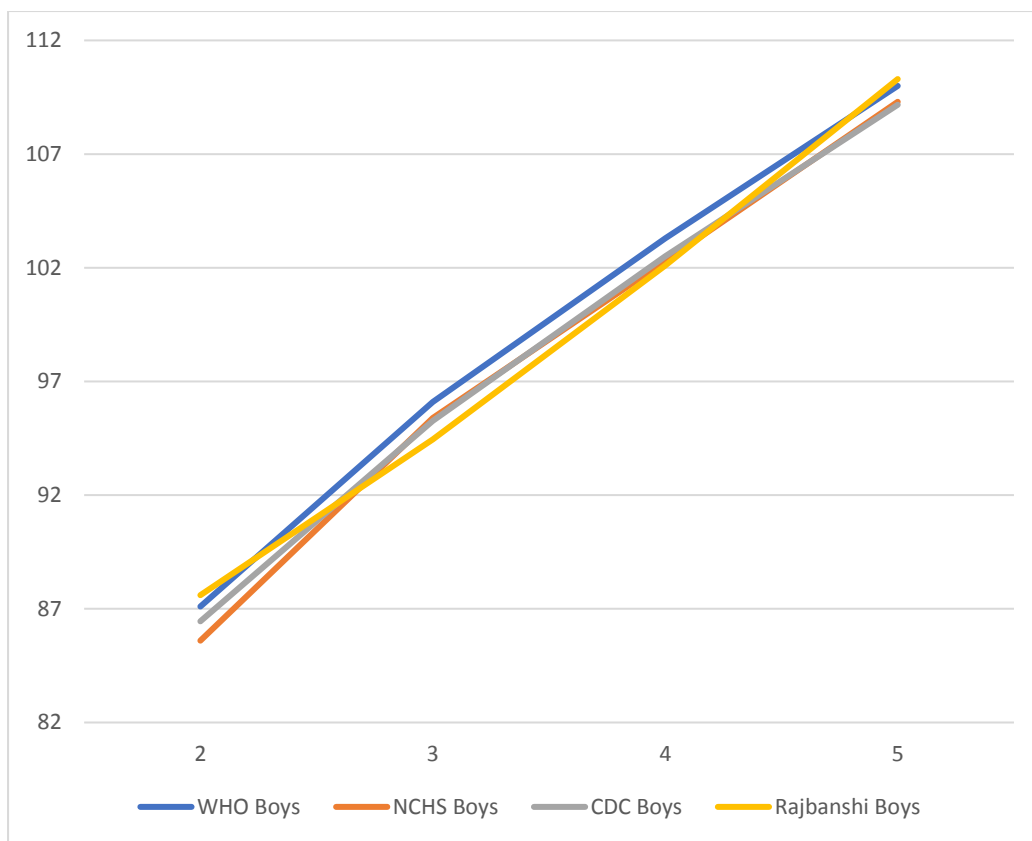


Fig: 4 Comparison of Physical growth of 50th percentile Height among Rajbanshi Boys with International standards

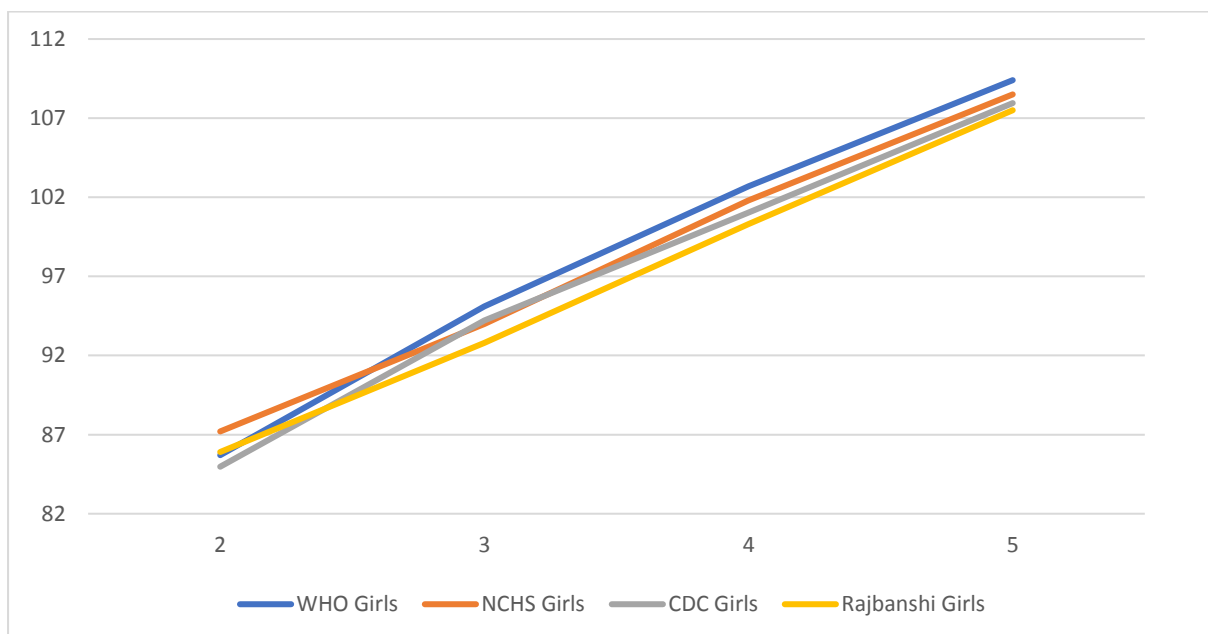


Fig: 5 Comparison of Physical growth of 50th percentile Height among Rajbanshi Girls with International standards

The 50th Percentile value of weight among Rajbanshi boys has been much lower than the 50th percentile value of WHO (where values less by -1.3 kg to -2.16 kg), NCHS (where values less by -1.67 kg to -2.41 kg) and CDC (where values less by -1.77 kg to -2.3 kg) (Fig. 6). The 50th Percentile value of weight among Rajbanshi girls have been much lower than the 50th percentile value of WHO (where values less by -.6 kg to -1.96 kg), NCHS (where values less by -.04 kg to -0.7 kg) and CDC (where values less by - 1.15 kg to -1.73 kg) (Fig. 7).

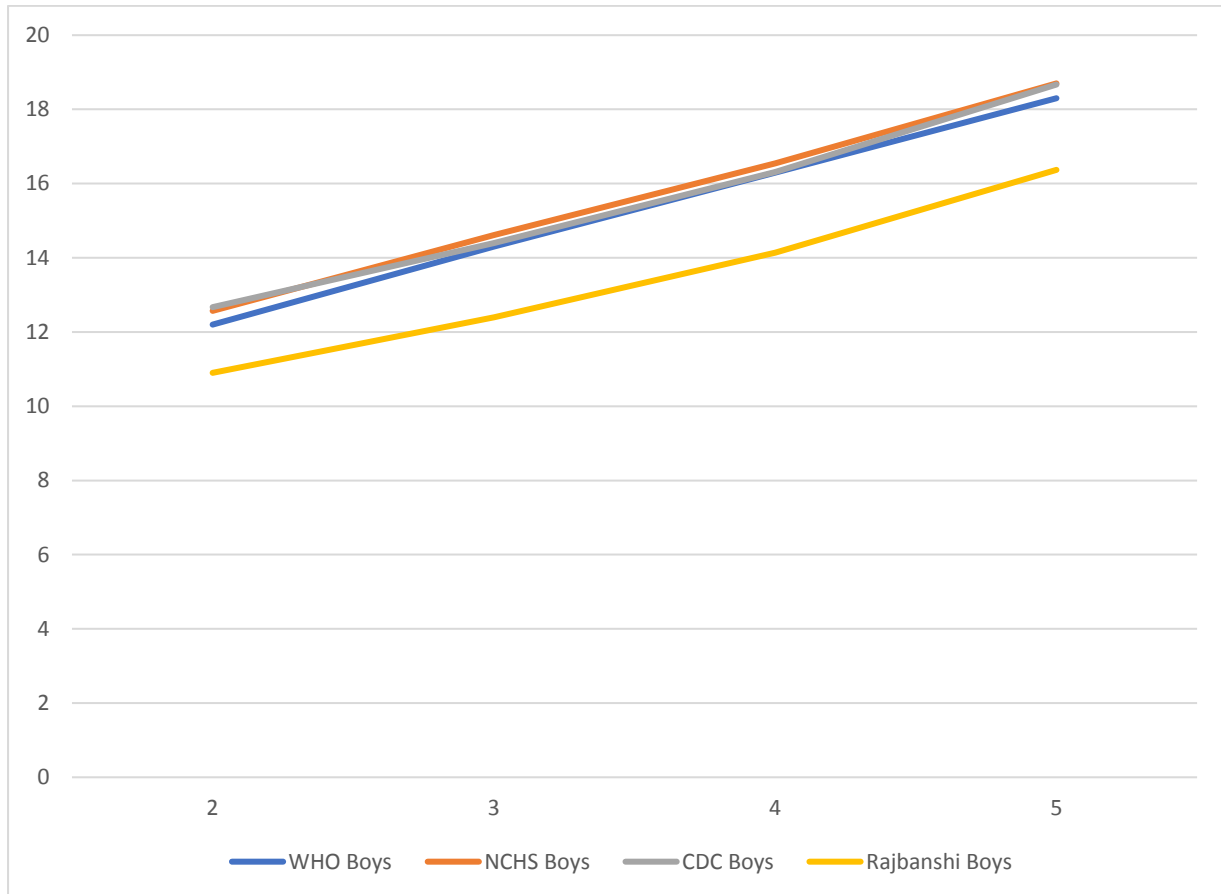


Fig: 6 Comparison of Physical growth of 50th percentile Weight among Rajbanshi Boys with International standards

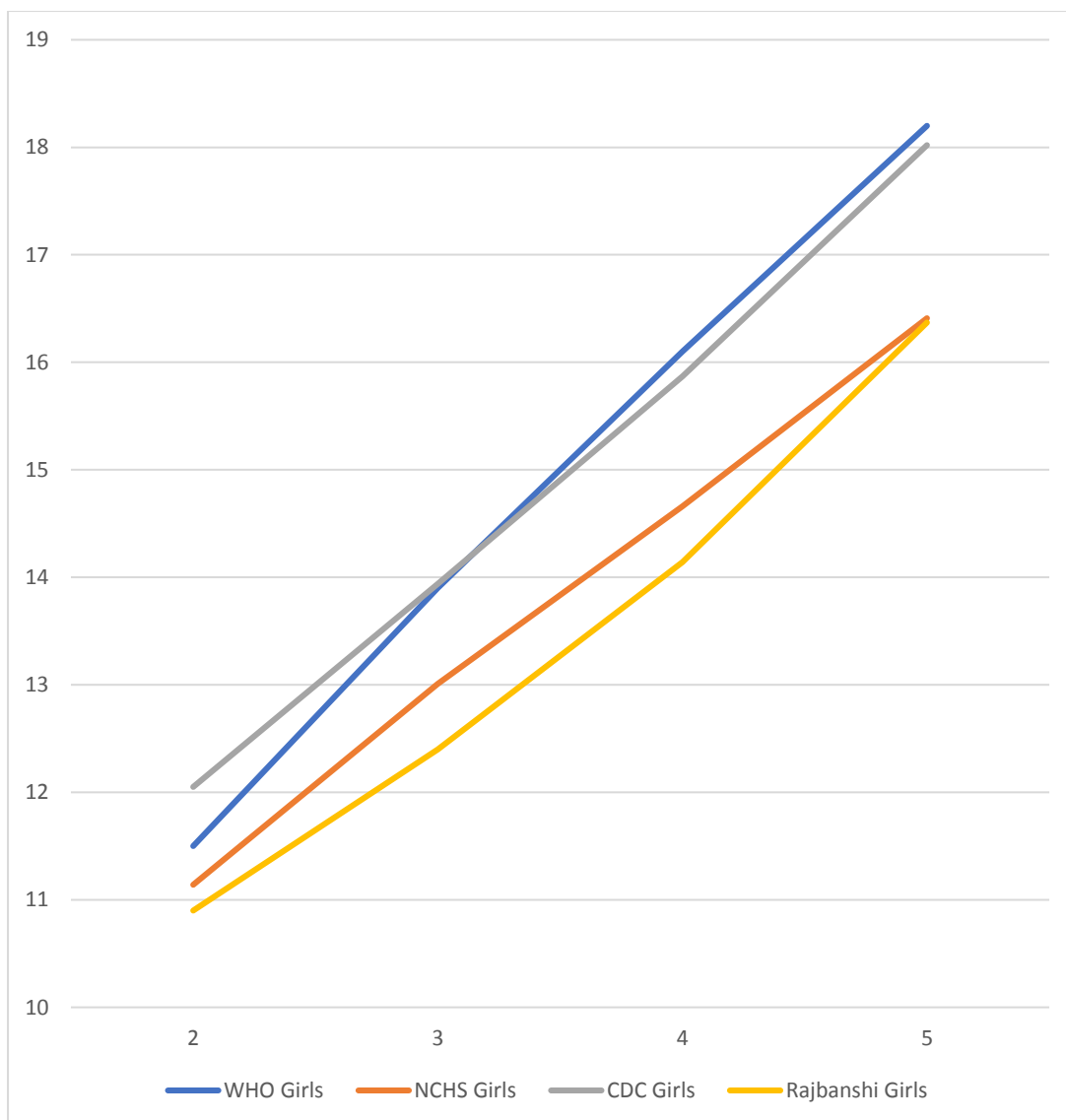


Fig: 7 Comparison of Physical growth of 50th percentile Weight among Rajbanshi Girls with International standards

The comparison of age combined sex specific mean height and weight of Rajbanshi children was also done with regional studies, which reveals that Rajbanshi boys and girls were taller than Santal & Bhumij (Mahapatra et al 2019 and 2020) preschool children of Paschim Medinipur, Jhargram and rural Bengalee preschool children of Nadia (Biswas et al., 2009); whereas Rajbanshi children were shorter than rural children of Midnapur (Mandal et al., 2012) and Rural Bengalee preschool children of Sagar Island (Giri et al., 2017). In the case of weight, Rajbanshi children were heavier than preschool children of Nadia, East Midnapur, Sagar Island and Paschim Medinipur & Jhargram (Biswas et al., 2009, Mandal et al., 2012, Giri et al., 2017, Mahapatra et al., 2019 and 2020) (Table. 9).

Table 9. Comparison of Physical growth of mean height and weight of Rajbanshi children with other studies

Population	Age Group	N	Boys		Girls		Reference
			Height (cm)	Weight (kg)	Height (cm)	Weight (kg)	
Rural Bengalee preschool children of Nadia	3-5.5	2016	96.81 (6.68)	13.59 (1.85)	96.10 (6.75)	13.12 (1.87)	Biswas et al., 2009
Rural Preschool children of East Midnapur	3-6	225	97.1(8.1)	13.6 (2.1)	97.9 (6.8)	13.4 (2.0)	Mandal et al., 2012
Rural Bengalee preschool Children of Sagar Island	3-5.5	656	99.29 (3.67)	13.31 (1.36)	98.48 (3.50)	12.91 (1.17)	Giri et al., 2017
Santal preschool children of Paschim Medinipur & Jhargram	1-5	311	89.99 (10.84)	11.81 (2.78)	89.41 (10.52)	11.46 (2.86)	Mahapatra et al., 2019
Bhumij preschool children of Paschim Medinipur & Jhargram	1-5	245	90.35 (11.98)	11.83 (2.99)	90.36 (12.19)	11.47 (2.82)	Mahapatra et al., 2020
Rajbanshi preschool children of Jalpaiguri	2-5	414	96.90 (8.15)	13.88 (2.50)	96.30 (9.03)	13.62 (2.84)	Present Study

BMI is also found to be a useful parameter for the assessment of the nutritional status of children (Venkaiaha et al., 2002). The present study suggests that a degree of thinness was found to be widely prevalent among Rajbanshi preschool children. The prevalence of thinness found among boys (56.94 %) was higher than and girls (47.8 %). The overall prevalence of thinness in the present study is higher than Biswas et al, 2009 (50.7 %), Das & Datta Banik, 2011 (44.77 %), Kuiti et al., 2022 (11.94 %) and lower than Das & Bose, 2011 (56.4 %) Mandal et al., 2012 (59.1 %), Bharati et al., 2015 (72.52 %), Giri et al., 2017 (81.25 %) and Mahapatra et al., 2020 (69.4 %).

Table 10. Comparison of the prevalence of thinness in the present study with previous studies

Population	Number	Age group in Years	Boys (%)	Girls (%)	Overall (%)	Studied by
Rural Children	2016	3-5	49.68	51.57	50.7	Biswas et al. 2009
Santal Children	251	2-6	59.5	53.3	56.4	Das & Bose 2011
Nepali Speaking Children	268	2-6	43	47.4	44.77	Das & Datta Banik., 2011
Rural Children	225	0-5	61.8	56.5	59.1	Mandal et al., 2012
Kolam Children	284	2-5	72.91	72.14	72.52	Bharathi et al., 2015
Rural Bengalee children	656	3-5.5	81.9	81.61	81.25	Giri et al., 2017
Tribal Children	643	2-5	69.5	69.2	69.4	Mahapatra & Bose 2020
Juang Children	67	<6	7.69	14.63	11.94	Kuiti et al., 2022
Rajbanshi Children	414	2-5	56.94	47.8	52.37	Present Study

Conclusion

The current study provides physical growth patterns among preschool Rajbanshi children of Jalpaiguri. It may be helpful for monitoring growth at a glance. May this data would be utilised for understanding regional and ethnic differences in physical growth. The present study may be useful to implement various nutritional programmes through nutrition supplementation. The study provides valuable anthropometric data on physical growth patterns, it could be concluded that the growth pattern of Rajbanshi boys and girls was lagging the 50th percentile of international standards such as WHO 2007, NCHS 1977 and CDC 2000. It is necessary to develop regional standards of growth of children and should evaluate regularly for a better understanding of physical growth among children of different ethnicities. The mean values of anthropometric measurements (weight, height, sitting height, MUAC and head circumference) of boys and girls increases with the advancement of age except for BMI. 52.41 % of Rajbanshi preschool children were malnourished. Boys (56.94%) are more affected by thinness than girls (47.8%). Regular periodic surveillance of the growth and nutritional status of children is required for the detection of malnutrition and growth retardation at the early stages of life.

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