International Journal of Research in Engineering and Science (IJRES)
ISSN (Online): 2320-9364, ISSN (Print): 2320-9356
www.ijres.org Volume 11 Issue 4 ǁ April 2023 ǁ PP. 479-496

Estimation of Stature from Various Circumferences of the Body among Brahmin and Yadava Community of Lucknow, Uttar Pradesh

*Kshama Chaturvedi
** Dr. Ajeet Jaiswal
** Kshama Chaturvedi (Ph.D Scholar; Department of Anthropology, Pondicherry University)*
***Dr. Ajeet Jaiswal (Assistant Professor, Department of Anthropology,Pondicherry University)*

Abstract
The present study aims to reconstruct stature among male and female of Brahmin and Yadava community of Lucknow, Uttar Pradesh, using different circumferential parts of the body. To this aim the stature and whole circumference (Head Circumference, Neck Circumference, Chest Circumference (Normal Position), Mid Upper Arm Circumference, Wrist Circumference, Maximum Condylar Circumference, Abdominal Circumference, Waist Circumference, Hip Circumference, Thigh Circumference, Knee Circumference, Calf Circumference etc) of the body were recorded on each subject using the standard measurement techniques recommended by Martin and Saller. The data is composed of total 1000 subjects of Brahmin and Yadava communities (During the pilot study covered 250 males and 250 females of each group and collected the full data from this selected group) within the age range of 20-50 years. Multiplication factors (M.Fs) and linear regression equations for stature estimation were produced using the above mentioned variables. Analysis of data reveals that the Brahmin and Yadvas community males are taller than the females. The sex differences have been observed to be highly significant. Analysis of the study reveals that in the case of Brahmin males only weight is contributing significant role to predict the height and in the case of females head circumferential part and weight is contributing significant role to predict the height, In the case of Yadava community males condylar circumferential (Right and Left both) part contributing significant role to predict the height and in the case of Yadava female no one circumferential part is significantly contributing any role to predict the height. The study highlights that the weight is provide the best estimate of stature. However, the estimated stature may not be quite reliable using other circumferential parts of the body among both communities of males and females as it exhibits the lowest correlation with stature. Analysis of data clearly indicates that the dependability in the predicted stature would be better on using linear regression equations for any of these body dimensions as compared to the use of M.Fs for this purpose.

Date of Submission: 08-04-2023 Date of acceptance: 22-04-2023

I. Introduction

Forensic is the application of science to law. Reconstruction of stature is one of the important aspects of various parameters of identification for establishing individuality of the person. It is one of the important criteria for establishing identification of unknown person/dead body. It is usually measured as standing height of the individual. Evaluation of stature is difficult when dead bodies are mutilated, burnt or skeletonized. Reconstruction of stature from skeletal/dismembered remains is not new for Anthropologists/Forensic experts. Under the circumstances, where mutilated, decomposed or fragmentary skeletal remains are recovered, the stature of an individual may be estimated by adopting anatomical method; if complete skeleton is available for examination or by following mathematical method where measurement of a single long bone may serve the purpose because there is a strong relation between skeletal element and stature. This means that measurement of any bone or combinations of bone reflect stature.

II. Material and Method

The study has done with the help of both primary and secondary sources of data. But the actual emphasis will be of primary data. As earlier told, the research has mainly based on primary data. To collect the primary data, an intensive field work has carried among the Brahmin and Yadava population of Lucknow, Uttar Pradesh. After the selection of subjects for the study with purposive sampling method, Anthropometric measurement collected has Along with other relevant data. The secondary data has collected through different Documents, Registers, Files, and other relevant papers from various Government/Non-Governmental sources

like Department of Culture, Anthropological Survey of India, Forensic Science Department, Criminological Department, Judicial sources and Administrate section of UP Council an India etc, have also consulted. Internet, related books, articles and other publications have also consulted for evaluation and comparison.

In the present study, an attempt has been made to investigate the co-relation between stature and different body measurements among the Brahmin and Yadava community of Lucknow, Uttar Pradesh. Different anthropometric measurements of the study sample have taken. In this phase, basically, researcher used the anthropometric method to collect the data and also filled some health related information in the prepared schedule.

III. Methodology

The primary data has collected by Anthropometric Measurements. Measurements have taken on both communities Brahmin and Yadava of Lucknow, Uttar Pradesh - males as well as on females. The subjects for the study have taken between age group of 20-50 years, as the morphological features are well developed at this stage. The Anthropometric measurements will be carried out following the conventional methods of Weiner and Laurie. Anthropometric measurements have recorded in centimeters (cm). Total 13 Anthropometric measurements have taken. These are - Stature, Head Circumference, Neck Circumference, Chest Circumference (Normal Position), Mid Upper Arm Circumference, Wrist Circumference, Maximum Condylar Circumference, Abdominal Circumference, Waist Circumference, Hip Circumference, Thigh Circumference, Calf Circumference, Knee Circumference etc. Required Statistical method have used for the analysis, interpretation, and representation of the data.

IV. Result

The observation was done on total male and female of Brahmin and yadava community of lucknow, Uttar Pradesh. In this regard the classification of data is given below –

Table 1: Distribution of subject according to caste and gender wise

S.No.	Community	Male		Female		Total	
		No.	(%)	N	(%)	N	(%)
1.	Brahmin	250	25	250	25	500	(50%)
2.	Yadava	250	25	250	25	500	(50%)
					Total	1000	

For the completion of aims and objective of this research to regression analysis had done to find out that any circumferential part of the body are significantly contributing to the height or not. For that, regression analysis did individually one by one, circumferential part of the body with the dependent value (height) separately for Brahmin and Yadava community either gender wise, with the help of SPSS Statistical Package.

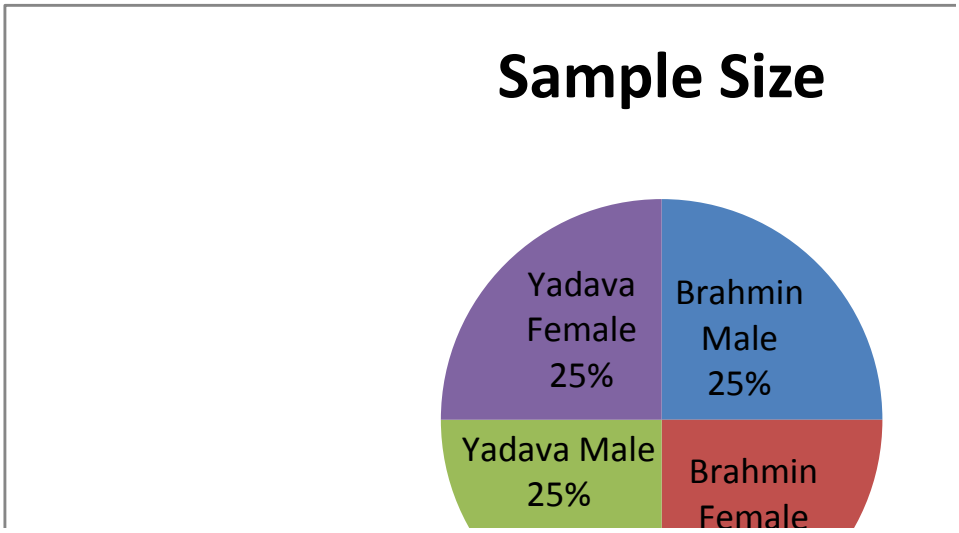


Figure 1.1_ Distribution of sample size according to the Community and Gender Wise-

Brahmin Community

Stature:-

Table 2, presents mean, standard deviation, minimum and maximum value of stature of male and female of Brahmin community of Lucknow, Uttar Pradesh. The standing height of male of Brahmin community

varied from 148.50 cm to 188.00 cm with mean value of 167.07 cm and standard deviation value of 8.83. The stature of female varied from 135.00 cm to 17.00 cm with mean value of 154.66 cm and standard deviation value of 6.21.

Table 2: Gender wise Distribution of the study group (Brahmin male and female) according to Mean, Standard Deviation with the Minimum and Maximum Range of Stature

	Male (n- 250)	**Female (n-250)**
Minimum	148.50 cm	135.00 cm
Maximum	185.00 cm	170.00 cm
Mean	168.43 cm	154.66 cm
Standard Deviation	6.99	6.30

Table 3-6 presents means, standard deviation, minimum and maximum value of all Circumferential part of the body of male and female of Brahmin community of Lucknow, Uttar Pradesh.

Table 3- Gender wise Distribution of Using Descriptive Statistics of Different Anthropometric Measurements for Brahmin Male Community of Lucknow, Uttar Pradesh –

S.No.	Measurements (cm)	Brahmin Male Community (N-250)		
		Range(cm)	Mean±SD (cm)	$\overline{SE}$(x)
1	Height	148.5-185.0	168.43±6.99	.442
2	Weight (Kg)	44.0-90.0	63.22±9.73	.615
3	Head Cir.	38.0-58.2	52.56±4.13	.261
4	Neck Cir.	28.0-43.0	33.71±2.60	.164
5	Chest Cir	78.0-125.0	94.81±6.08	.384
6	Abdomen Cir	68.0-108.0	91.78±7.07	.447
7	Waist Circ.	65.0-136.0	93.17±7.61	.481
8	Hip Cir.	66.0-125.0	95.59±6.46	.409
9	Upper Arm Cir. Rt	20.1-49.0	34.73±5.56	.351
10	Upper Arm Cir. Lt	20.0-48.9	34.61±5.55	.351
11	Condylar Cir. Rt.	18.1-46.2	29.06±6.41	.405
12	Condylar Cir. Lt.	18.0-46.0	28.94±6.40	.405
13	Wrist Cir. Rt.	11.4-21.5	17.39±10.40	.089
14	Wrist Cir. Lt.	11.3-21.4	17.27±1.40	.088
15	Thigh Cir. Rt	45.5-70.0	57.16±5.54	.350
16	Thigh Cir. Lt	45.4-70.0	57.07±5.55	.351
17	Knee Cir. Rt.	30.2-63.2	39.18±4.03	.255
18	Knee Cir. Lt.	30.1-63.0	39.09±4.00	.253
19	Calf Cir. Rt.	30.1-62.9	37.68±4.51	.285
20	Calf Cir. Lt.	30.0-62.8	37.60±4.48	.284

*Cir.-Circumference, *Rt- Right, *Lt- Left, *S.E. $\overline{x}$ – Standard Error of Mean, *S.D. - Standard Deviation

Table 4- Gender wise Distribution by Using Descriptive Statistics of Different Anthropometric Measurements for Brahmin Female Community of Lucknow, Uttar Pradesh –

S.No.	Measurements (cm)	Brahmin Female Community (N-250)		
		Range(cm)	Mean±SD (cm)	$\overline{SE}$(x)
1	Height	135.0-188.0	157.34±6.30	.398
2	Weight (Kg)	40.0-95.0(Kg)	57.22±8.84	.559
3	Head Cir.	40.0-59.0	52.19±4.36	.275
4	Neck Cir.	28.0-40.0	33.00±1.95	.123
5	Chest Cir	72.0-120.0	93.49±6.10	.385
6	Abdomen Cir	70.0-127.0	89.95±7.21	.456
7	Waist Cir.	70.0-140.0	91.94±7.22	.457
8	Hip Cir.	77.0-130.0	95.65±6.88	.435
9	Upper Arm Cir. Rt	22.1-52.0	34.24±6.58	.416
10	Upper Arm Cir. Lt	22.0-51.8	34.10±6.60	.417
11	Condylar Cir. Rt.	18.1-40.7	26.83±4.45	.281
12	Condylar Cir. Lt.	18.0-40.4	26.70±4.45	.281
13	Wrist Cir. Rt.	14.7-21.2	16.95±1.16	.073
14	Wrist Cir. Lt.	14.5-21.0	16.83±1.15	.073

15	Thigh Cir. Rt	39.1-70.0	55.92±6.34	.401
16	Thigh Cir. Lt	39.0-69.9	55.82±6.34	.401
17	Knee Cir. Rt.	21.0-50.3	35.88±4.82	.305
18	Knee Cir. Lt.	20.9-50.4	35.77±4.85	.306
19	Calf Cir. Rt.	21.2-51.3	34.86±4.37	.276
20	Calf Cir. Lt.	21.1-51.0	34.76±4.38	.277

*Cir.-Circumference, *Rt- Right, *Lt- Left, *S.E. $\bar{x}$ – Standard Error of Mean, *S.D. - Standard Deviation

In the case of Brahmin male overall we can conclude that on the basis of regression analysis only weight is contributing significant role. From the ANOVA table $P<0.05$, hence weight is significantly influence the height. Here co-relation coefficient (r) value is 0.69. In the case of Brahmin female only head circumference and weight is contributing significant role. From the ANOVA table head circumference and weight $P<0.05$, hence weight and head circumference is significantly influence the height. Here co-relation coefficient (r) value of head circumference is 0.29 and weight is 0.33. All other circumferential part of male and female of Brahmin community is giving non-significant value. So that, we can conclude that the weight is mainly much contributing to predict the height of the Brahmin community.

Yadava Community

Stature:-

Table 4, presents means, standard deviation, minimum and maximum value of stature of male and female of Yadava community of Lucknow, Uttar Pradesh. The standing height of male of Yadava community varied from 150.00 cm to 172.00 cm with mean value of 161.83 cm and standard deviation value of 6.85. The stature of female varied from 122.00 cm to 165.00 cm with mean value of 152.27 cm and standard deviation value of 8.60.

Table 4: Gender wise Distribution of the study group (Yadava male and female) according to Mean, Standard Deviation with the Minimum and Maximum Range of Stature

	Male (n-250)	**Female (n-250)**
Minimum	146.00 cm	122.00 cm
Maximum	180.00 cm	170.00 cm
Mean	165.18 cm	153.38 cm
Standard Deviation	5.58	7.22

Table 5, presents means, standard deviation, minimum and maximum value of all circumferential part of the body of male and female of Yadava community of Lucknow, Uttar Pradesh.

Table 5, presents the mean, standard deviation, minimum and maximum value of stature of Yadava Male community of Lucknow, Uttar Pradesh.

S.No.	Measurements (cm)	Yadava Male Community (N-250)		
		Range(cm)	Mean±SD (cm)	SE($\bar{x}$)
1	Height	146.0-180.0	165.18±5.58	.353
2	Weight (Kg)	40.0-175.0(Kg)	63.38±10.41	.658
3	Head Cir.	22.0-60.0	53.78±3.16	.200
4	Neck Cir.	30.0-42.0	34.55±2.49	.158
5	Chest Cir.	75.0-110.0	91.23±7.38	.467
6	Abdomen Cir.	64.0-110.0	86.95±8.51	.538
7	Waist Circ.	64.0-112.0	88.20±8.55	.541
8	Hip Cir.	70.3-110.0	91.40±8.18	.517
9	Upper Arm Cir. Rt	22.5-42.1	30.87±4.61	.291
10	Upper Arm Cir. Lt	22.4-42.0	30.74±4.61	.291
11	Condylar Cir. Rt.	21.2-39.0	27.05±3.67	.232
12	Condylar Cir. Lt.	21.0-38.8	26.92±3.66	.232
13	Wrist Cir. Rt.	15.0-25.1	17.88±1.48	.094
14	Wrist Cir. Lt.	14.9-25.0	17.76±1.49	.094
15	Thigh Cir. Rt.	33.2-85.0	50.92±6.67	.422
16	Thigh Cir. Lt.	33.1-84.5	50.81±6.66	.421
17	Knee Cir. Rt.	21.0-48.0	34.98±3.81	.241
18	Knee Cir. Lt.	20.9-47.9	34.89±3.81	.241
19	Calf Cir. Rt.	22.0-40.1	33.95±4.18	.264
20	Calf Cir. Lt.	22.0-40.0	33.86±4.19	.265

*Cir.-Circumference, *Rt- Right, *Lt- Left, S.E. $\bar{x}$ – Standard Error of Mean, S.D.- Standard Deviation

Table 6, presents the mean, standard deviation, minimum and maximum value of stature of Yadava Female community of Lucknow, Uttar Pradesh.

S.No.	Measurements (cm)	Yadava Female Community (N-250)		
		Range(cm)	Mean±SD (cm)	SE($\bar{x}$)
1	Height	122.0-170.0	153.38±7.22	.457
2	Weight (Kg)	34.0-85.0(Kg)	54.00±8.49	.537
3	Head Cir.	40.0-61.2	52.68±2.89	.183
4	Neck Cir.	28.0-39.6	32.22±1.81	.114
5	Chest Circ.	74.0-115.0	91.97±7.75	.490
6	Abdomen Cir.	64.0-107.0	86.85±8.88	.561
7	Waist Circ.	28.0-118.0	87.91±11.03	.697
8	Hip Cir.	48.0-122.0	91.38±9.35	.591
9	Upper Arm Cir. Rt	18.5-39.2	27.66±4.81	.304
10	Upper Arm Cir. Lt	18.2-39.1	27.55±3.50	.306
11	Condylar Cir. Rt.	17.2-36.2	24.48±3.50	.221
12	Condylar Cir. Lt.	17.0-36.0	24.33±3.99	.221
13	Wrist Cir. Rt.	12.9-65.0	17.35±3.99	.252
14	Wrist Cir. Lt.	12.8-64.9	17.23±7.73	.252
15	Thigh Cir. Rt.	25.6-70.4	48.02±7.72	.489
16	Thigh Cir. Lt.	25.5-70.3	47.88±4.73	.488
17	Knee Cir. Rt.	21.1-46.7	34.65±4.71	.299
18	Knee Cir. Lt.	21.0-46.8	34.50±4.99	.298
19	Calf Cir. Rt.	18.2-53.6	33.32±5.01	.315
20	Calf Cir. Lt.	18.0-53.5	33.19±7.22	.317

*Cir.-Circumference, *Rt- Right, *Lt- Left, S.E. $\bar{x}$ – Standard Error of Mean, S.D. - Standard Deviation

In the case of Yadava male overall we can conclude that on the basis of regression analysis only condylar circumference (Right and Left both) is contributing significant role. From the ANOVA table $P<0.05$, hence condylar circumference is significantly influence the height. Here co-relation coefficient (r) value is 0.22. In the case of Yadava female no one circumferential part is significantly contributing any role to predict the height only two circumferential parts are giving nearest value of P, i.e. condylar and Calf circumference (Right and Left both), From the ANOVA table the Significant value of condylar circumference is 0.06 and Calf circumference value is 0.06, the co-relation coefficient value is 0.26 and 0.26 for both. Hence condylar and calf circumference is giving nearest significant value so that it's hopefully influence the height. All other circumferential part of male and female of Yadava community is giving non-significant value. So that, we can conclude that only condylar and Calf circumference is contributing to predict the height of the Yadava community.

Table 5.29-Community wise Difference in Anthropometric Measures among Brahmin & Yadava Community of Lucknow, Uttar Pradesh-

S.No.	Measurements (cm)	Brahmin and Yadava Community (N-1000)	
		Value of 't'	Level of Significance (Value of P)
1	Height	6.514	.000
2	Weight (Kg)	2.375	.018
3	Head Cir.	-3.632	.000
4	Neck Cir.	-.190	.850
5	Chest Cir.	5.851	.000
6	Abdomen Cir.	7.863	.000
7	Waist Cir.	8.139	.000
8	Hip Cir.	8.583	.000
9	Upper Arm Cir. Rt	14.825	.000
10	Upper Arm Cir. Lt	14.781	.000
11	Condylar Cir. Rt.	7.177	.000
12	Condylar Cir. Lt.	7.222	.000
13	Wrist Cir. Rt.	-3.040	.000
14	Wrist Cir. Lt.	-2.987	.002
15	Thigh Cir. Rt	16.667	.003
16	Thigh Cir. Lt	16.719	.000
17	Knee Cir. Rt.	9.457	.000
18	Knee Cir. Lt.	9.557	.000
19	Calf Cir. Rt.	8.976	.000
20	Calf Cir. Lt.	9.033	.000

* Significant at .05% level, *Cir.-Circumference, *Rt- Right, *Lt- Left

In the above table number 5.29the analysis has been made using the t-test; to test the significance levels (if any). The readings in a separate column have been made. The value of P indicates the levels of difference across the measured body parts. The value 0.05 has been defined as the benchmark. This implies that the measured body part where the value of P>0.05 indicates there is a significant difference in the measured body parts.

Based on the above parameters and definition of the significant level of association we can conclude that only the measurement of the weight (0.018) and the circumferential measurement of the neck (0 .850) in both the communities shows a non - significant level of association.

Table 5.30- Difference in different Anthropometric Measures among Brahmin & Yadava Male Community of Lucknow, Uttar Pradesh.

S.No.	Measurements (cm)	Brahmin and Yadava Male Community (N-500)	
		Value of 't'	Level of Significance (Value of P)
1	Height	5.730	.000
2	Weight (Kg)	-.178	.859
3	Head Cir.	-3.698	.000
4	Neck Cir.	-3.688	.000
5	Chest Cir.	5.915	.000
6	Abdomen Cir.	6.905	.000
7	Waist Cir	6.856	.000
8	Hip Cir.	6.357	.000
9	Upper Arm Cir. Rt	8.446	.000
10	Upper Arm Cir. Lt	8.464	.000
11	Condylar Cir. Rt.	4.302	.000
12	Condylar Cir. Lt.	4.328	.000
13	Wrist Cir. Rt.	-3.804	.000
14	Wrist Cir. Lt.	-3.743	.000
15	Thigh Cir. Rt	11.368	.000
16	Thigh Cir. Lt	11.391	.000
17	Knee Cir. Rt.	11.933	.000
18	Knee Cir. Lt.	12.019	.000
19	Calf Cir. Rt.	9.568	.000
20	Calf Cir. Lt.	9.616	.000

* Significant at .05% level, *Cir.-Circumference, *Rt- Right, *Lt- Left

In the above table number 5.30 the analysis has been made using the t-test; to test the significance levels (if any). The readings in a separate column have been made. The value of P indicates the levels of difference across the measured body parts. The value 0.05 has been defined as the benchmark. This implies that the measured body part where the value of P>0.05 indicates there is a significant difference in the measured body parts.

Based on the above parameters and definition of the significant level of association we can conclude that only the weight (0.859) of the communities shows a non - significant level of association.

Table 5.31- Differences in different Anthropometric Measures among Brahmin & Yadava Female Community of Lucknow, Uttar Pradesh-

S.No.	Measurements (cm)	Brahmin and Yadava Female Community (N-500)	
		Value of 't'	Level of Significance (Value of P)
1	Height	6.524	.000
2	Weight (Kg)	4.154	.000
3	Head Cir.	-1.471	.142
4	Neck Cir.	4.658	.000
5	Chest Cir.	2.432	.015
6	Abdomen Cir.	4.287	.000
7	Waist Cir.	4.829	.000
8	Hip Cir.	5.816	.000
9	Upper Arm Cir. Rt	12.740	.000
10	Upper Arm Cir. Lt	12.652	.000
11	Condylar Cir. Rt.	6.561	.000
12	Condylar Cir. Lt.	6.608	.000

13	Wrist Cir. Rt.	-1.530	.127
14	Wrist Cir. Lt.	-1.498	.135
15	Thigh Cir. Rt	12.478	.000
16	Thigh Cir. Lt	12549	.000
17	Knee Cir. Rt.	2.856	.004
18	Knee Cir. Lt.	2.957	.003
19	Calf Cir. Rt.	3.662	.000
20	Calf Cir. Lt.	3.722	.000

* Significant at .05% level, *Cir.-Circumference, *Rt- Right, *Lt- Left

In the above table number 5.31 the analysis has been made using the T-test; to test the significance levels (if any). The readings in a separate column have been made. The value of P indicates the levels of difference across the measured body parts. The value 0.05 has been defined as the benchmark. This implies that the measured body part where the value of P>0.05 indicates there is a significant difference in the measured body parts.

Based on the above parameters and definition of the significant level of association we can conclude that only the measurement of the Head (0.142), the circumferential measurement of Chest (0.015), and Wrist (both right 0.127 and left0.135) in both the communities' shows a non - significant level of association.

Table 5.32 depicts the Correlation(between height and each circumference of the body parts) which exists between the various body parts of the males and females of the Brahmin community in Lucknow, Uttar Pradesh. The significance at the 0.01 level (2-tailed) between height and the different body measurements. The correlation of height is significant with weight, Neck, Chest, Abdomen, Waist, and Hip Circumference. The rest of the body part measurements do not have a significant level of correlation with the height.

In the case of the Brahmin female community the Correlation is significant at the 0.01 level (2-tailed) between the height and the weight, Neck, Chest, waist, hip, thigh (both Rt and Lt), Knee (both Rt and Lt), calf (both Rt and Lt). The correlation between height and the Head, Abdomen Cir., Upper Arm Cir. (both Rt and Lt), condylar car (both Rt and Lt), wrist car. (both Rt and Lt) is not significant.

Table 5.32 - Distribution of Correlation between Stature and various circumference of the body among Brahmin (Male and Female) Community of Lucknow, Uttar Pradesh-

S. No.	Measurements (cm)	Correlation (r) value of Brahmin Community	
		Male (N=250)	Female (N=250)
1	Head Cir	0.075	0.028
2	Neck Cir	.167**	0.174**
3	Chest Cir	0.283**	0.224**
4	Abdomen Cir	0.222**	0.111
5	Waist Cir	0.375**	0.290**
6	Hip Cir	0.295**	0.337**
7	Upper arm Cir (Rt)	0.019	-0.015
8	Upper arm Cir (Lt)	0.020	-0.015
9	Condylar Cir(Rt)	0.076	0.109
10	Condylar Cir(Lt)	0.076	0.107
11	Wrist Cir(Rt)	0.056	-0.050
12	Wrist Cir(Lt)	0.058	-0.056
13	Thigh Cir(Rt)	0.061	0.142*
14	Thigh Cir(Lt)	0.057	0.140*
15	Knee Cir(Rt)	0.084	0.244**
16	Knee Cir(Lt)	0.079	0.241**
17	Calf Cir(Rt)	0.108	0.270**
18	Calf Cir(Lt)	0.105	0.269**
19	Weight (Kg)	0.521**	0.447**

** Significant at .001% level

Table 5.34 - Distribution of Correlation between Stature and various circumference of the body among Yadava (Male and Female) Community of Lucknow, Uttar Pradesh-

S. No.	Measurements (cm)	Correlation (r) value of Yadava Community	
		Male (N=250)	Female (N=250)
1	Head Cir	0.127*	0.038
2	Neck Cir	0.190**	0.132*
3	Chest Cir	0.286**	0.175**
4	Abdomen Cir	0.389	0.076
5	Waist Cir	0.312	0.103
6	Hip Cir	0.329	0.110
7	Upper arm Cir (Rt)	0.140	0.115
8	Upper arm Cir (Lt)	0.138	0.125*
9	Condylar Cir(Rt)	0.093	0.050
10	Condylar Cir(Lt)	0.090	0.051
11	Wrist Cir(Rt)	0.221	0.166**
12	Wrist Cir(Lt)	0.223	0.167**
13	Thigh Cir(Rt)	0.095	0.024
14	Thigh Cir(Lt)	0.098	0.025
15	Knee Cir(Rt)	0.429	0.060
16	Knee Cir(Lt)	0.428	0.062
17	Calf Cir(Rt)	0.300	-0.051
18	Calf Cir(Lt)	0.301	-0.053
19	Weight (Kg)	0.444**	0.353**

** Significant at .001% level

Yadava

Table 5.34depicts the degree of Correlation that exists between height and the various body parts of the males of the Yadava community of Lucknow, Uttar Pradesh. A significant correlation exists between the height and weight, Head,Neck, and chest at the 0.01 level (2-tailed).The correlation between the height and the body parts other than those mentioned above does not exist. In the case of the Yadava female community, the significant correlationexistsonly between the height and weight, Neck,Chest, Upper arm (both Rt. and Lt),Wrist (both Rt. and Lt) circumference.

Description about Regression Table

Table 5.36 - Linear Regression Equation for Estimation of Stature using other Anthropometric measurements for Brahmin Male Community of Lucknow, Uttar Pradesh-

S. No.	Measurements (cm)	Brahmin Male (N=100)		
		Correlation Coefficient (r)	Regression equation	P Value
1	Head Cir	0.075	Ht=161.753+(.127) head cir	.000
2	Neck Cir	0.167	Ht=153.33+(.448) neck cir	.008
3	Chest Cir	0.283	Ht=137.60+(.325) chest cir	.000
4	Abdomen Cir	0.222	Ht=148.24+(.220) abdomen cir	.000
5	Waist Cir	0.357	Ht=137.838+(.328) waist cir	.000
6	Hip Cir	0.295	Ht=137.89.2+(.319) hip cir	.000
7	Upper arm Cir (Rt)	0.019	Ht=167.591+(.024) upper arm cirRt	.762
8	Upper arm Cir (Lt)	0.020	Ht=167.546+(.026) upper arm cir Lt	.749
9	Condylar Cir(Rt)	0.076	Ht=166.029(.083)condylar cirRt	.232
10	Condylar Cir(Lt)	0.076	Ht=166.029+(.083) condylar cir Lt.	.231
11	Wrist Cir(Rt)	0.056	Ht=163.575+(.279)wrist cirRt	.376
12	Wrist Cir(Lt)	0.058	Ht=163.418+(.290)wrist cir Lt.	.359
13	Thigh Cir(Rt)	0.061	Ht=164.003+(.077)thigh cirRt	.333
14	Thigh Cir(Lt)	0.057	Ht=164.313+(.072)thigh cir. Lt	.367
15	Knee Cir(Rt)	0.084	Ht=162.721+(.146)knee cir.Rt	.185
16	Knee Cir(Lt)	0.079	Ht=163.065+(.137)knee cir. Lt.	.216
17	Calf Cir(Rt)	0.108	Ht=162.146+(.167)calfcir.Rt.	.089
18	Calf Cir(Lt)	0.105	Ht=162.288+(.163)calf cir. Lt.	.098
19	Weight (Kg)	0.521	Ht=144.758+(.374)weight	.000

* Significant at .05% level, * Cir.-Circumference, *Rt- Right, *Lt- Left, Ht.- Height

An analysis of table 5.36 which shows the - Linear Regression Equation for Estimation of Stature using other Anthropometric measurements for Brahmin Male Community of Lucknow, Uttar Pradesh- The following details tell us about the Brahmin males (The scope of the description is only the significant values related to the Brahmin males in the table)

The regression equation is Ht = 161.753 + (.127) head circumference .The significant value (P) arrived after the calculation is .000 which is a significant value and thus we can conclude that Head circumference can be used in the estimation of the stature of males of the Brahmin community in Lucknow (Uttar Pradesh).

The regression equation is Ht = 137.60+(.325) Chest Circumference .The value (P) arrived after the calculation is .000 which is a significant value and thus we can conclude that chest circumference can be used in the estimation of the stature of males of the Brahmin community in Lucknow (Uttar Pradesh).

The regression equation is Ht=148.24+(.220) abdomen Circumference. The value(P) arrived after the calculation is .000 which is a significant value.Thus we can conclude that abdomen Circumference can be used in the estimation of the stature of males of the Brahmin community in Lucknow (Uttar Pradesh).

The regression equation is Ht=137.838+(.328) waist Circumference.The significant value (P) arrived after the calculation is .000 which is a significant value.Thus we can conclude that waist Circumference can be used in the estimation of the stature of males of the Brahmin community in Lucknow (Uttar Pradesh).

The regression equation isHt=137.89.2+(.319) hip circumference.The significant value significant (P) arrived after the calculation is .000 which is a significant value.Thus we can conclude that hip circumference can be used in the estimation of the stature of males of the Brahmin community in Lucknow, Uttar Pradesh.

The regression equation isHt=144.758 + (.374) weight .The significant value of (P) arrived after the calculation is .000 which is a significant value.Thus we can conclude weight can be used in the estimation of the stature of males of the Brahmin community in Lucknow (Uttar Pradesh).

Table 5.37- Simple Regression Equation for Estimation of Stature using other Anthropometric measurements for Brahmin Female Community of Lucknow, Uttar Pradesh-

S.No.	Measurements (cm)	Brahmin Female (N=100)		
		Correlation Coefficient (r)	Regression equation	P Value
1	Head Cir	0.028	Ht=155.265+(.040)head cir.	.665
2	NeckCir	0.174	Ht=138.761+(.563)neck cir.	.006
3	ChestCir	0.224	Ht=135.688+(.232)chest cir	.000
4	AbdomenCir	0.111	Ht=148.606+(.097)abdomen cir	.079
5	Waist Cir	0.290	Ht=134.116+(.253)waist cir	.000
6	HipCir	0.337	Ht=127.810+(.309)hip cir.	.000
7	Upper arm Cir (Rt)	-0.015	Ht=157.841+(-.015)upper arm cir. Rt.	.812
8	Upper arm Cir (Lt)	-0.015	Ht=157.836+(-.014) upper arm cir. Lt.	.812
9	Condylar Cir(Rt)	0.109	Ht=153.215+(.154)condylar cir. Rt.	.086
10	Condylar Cir(Lt)	0.107	Ht=153.285+(.152) condylar cir. Lt.	.090
11	Wrist Cir(Rt)	-0.050	Ht=161.933+(-.271)wrist cir. Rt.	.433
12	Wrist Cir(Lt)	-0.056	Ht=162.503+(-.306)wrist cir.Lt.	.376
13	Thigh Cir(Rt)	0.142	Ht=149.464+(.141)thigh cir. Rt.	.025
14	Thigh Cir(Lt)	0.140	Ht=149.581+(.139)thigh cir. Lt.	.027
15	Knee Cir(Rt)	0.244	Ht=145.933+(.318)knee cir. Rt.	.000
16	Knee Cir(Lt)	0.241	Ht=146.120+(.314)knee cir. Lt.	.000
17	Calf Cir(Rt)	0.270	Ht=143.792+(.389)calf cir. Rt.	.000
18	Calf Cir(Lt)	0.269	Ht=143.880+(.387)calf cir. Lt.	.000
19	Weight (Kg)	0.447	Ht=139.105+(.319)weight	.000

* Significant at .05% level, * Cir.-Circumference, *Rt- Right, *Lt- Left, Ht.- Height

An analysis of table 5.37 shows that the - Linear Regression Equation for estimation of Stature using other Anthropometric measurements for Females of the Brahmin Community of Lucknow, Uttar Pradesh. (The scope of the description below is only the significant values related to the Brahmin females in the table) .

The chest circumference of the females of the Brahmin community of Lucknow has been analyzed.The regression equation so arrived after processing the raw data in the calculation tools is Ht=135.688+(.232) chest circumference. The significant value (P) is .000 which is significant.Thus we can conclude that the Chest circumference of the females of the Brahmin community of UttarPradesh can be used in the estimation of their stature. The waist circumference of the females of the Brahmin community of Lucknow has been analyzed.The regression equation so arrived after processing the raw data in the calculation tools is Ht=134.116+(.253)waist

circumference. The value of (P) is .000 which is significant.Thus, we can conclude that the waist circumference of the females of the Brahmin community of UttarPradesh can be used in the estimation of their stature.

The hip circumference of the females of the Brahmin community of Lucknow has been analyzed.The regression equation so arrived after processing the raw data in the calculation tools is Ht=127.810+(.309) hip circumference. The significant value (P)is .000 which is significant.Thus, we can conclude that the hip circumference of the females of the Brahmin community of UttarPradesh can be used in the estimation of their stature.

The knee circumference (Rt) of the females of the Brahmin community of Lucknow has been analyzed. The regression equation so arrived after processing the raw data in the calculation tools is Ht=145.933 + (.318) knee circumference (Rt). The significant value (P) is .000 which is significant.Thus, we can conclude that the knee circumference(Rt) of the females of the Brahmin community of UttarPradesh can be used in the estimation of their stature.

The knee circumference(Lt)of the females of the Brahmin community of Lucknow has been analyzed.The regression equation so arrived after processing the raw data in the calculation tools is Ht=146.120+(.314) knee circumference (Rt). The significant value (P)is .000 which is significant. Thus, we can conclude that the knee circumference (Lt) of the females of the Brahmin community of Uttar Pradesh can be used in the estimation of their stature.

The calf circumference (Rt)of the females of the Brahmin community of Lucknow has been analyzed.The regression equation so arrived after processing the raw data in the calculation tools is Ht=143.792+(.389) calf circumference (Rt). The significant value (P)is .000 which is significant.Thus we can conclude that the calf circumference(Rt) of the females of the Brahmin community of UttarPradesh can be used in the estimation of their stature.

The calf circumference(Lt)of the females of the Brahmin community of Lucknow has been analyzed.The regression equation so arrived after processing the raw data in the calculation tools is Ht=143.880+(.387) calf circumference(Lt). The value of P is .000 which is significant.Thus we can conclude that the calf circumference(Lt) of the females of the Brahmin community of UttarPradesh can be used in the estimation of their stature

The regression equation Ht=139.105 + (.319) weight .The significant value of P arrived after the calculation is .000 which is a significant value.Thus we can conclude weight can be used in the estimation of the stature of females of the Brahmin community in Lucknow, Uttar Pradesh.

Table 5.38- Linear Regression Equation for Estimation of Stature using other Anthropometric measurements for Yadava Male Community of Lucknow, Uttar Pradesh-

S. No.	Measurements (cm)	Yadava Male (N=100)		
		Correlation coefficient (r)	Regression equation	P Value
1	Head Cir	0.127	Ht=153.144+(.224)head cir.	.045
2	NeckCir	0.190	Ht=150.540+(.424)neck cir.	.003
3	ChestCir	0.286	Ht=145.474+(.216)chest cir.	.000
4	AbdomenCir	0.389	Ht=142.962+(.256)abdomen cir.	.000
5	Waist Cir	0.312	Ht=147.221+(.204)waist cir.	.000
6	HipCir	0.329	Ht=144.643+(.225)hip cir.	.000
7	Upper arm Cir (Rt)	0.140	Ht=159.949+(.170)upper arm cir. Rt.	.027
8	Upper arm Cir (Lt)	0.138	Ht=160.036+(.168) upper arm cir. Lt.	.029
9	Condylar Cir(Rt)	0.093	Ht=161.374+(.141)condylar cir. Rt.	.144
10	Condylar Cir(Lt)	0.090	Ht=161.496+(.137) condylar cir. Lt.	.156
11	Wrist Cir(Rt)	0.221	Ht=150.351+(.830)wrist cir. Rt.	.000
12	Wrist Cir(Lt)	0.223	Ht=150.402+(.832) wrist cir. Lt.	.000
13	Thigh Cir(Rt)	0.095	Ht=161.138+(.080)thigh cir. Rt.	.134
14	Thigh Cir(Lt)	0.098	Ht=160.998+(.082)thigh cir. Lt.	.121
15	Knee Cir(Rt)	0.429	Ht=143.194+(.629)knee cir. Rt.	.000
16	Knee Cir(Lt)	0.428	Ht=143.290+(.628)knee cir. Lt.	.000

17	Calf Cir(Rt)	0.300	Ht=151.596+(.400)calf cir. Rt.	.000
18	Calf Cir(Lt)	0.301	Ht=151.627+(.400)calf cir. Lt.	.000
19	Weight (Kg)	0.444	Ht=150.087+(.238)weight	.000

* Significant at .05% level, * Cir.-Circumference, *Rt- Right, *Lt- Left, Ht.- Height

The description below gives the relevance of the body parts of the Yadava community males in the estimation of their stature.

The regression equation is Ht=150.540+(.424)neck circumference.The significant value of (P) arrived after the calculation is .003 which is a significant value and thus we can conclude that Neck circumference can be used in the estimation of the stature of males of the Yadava community in Lucknow, Uttar Pradesh.

The range is from 75 .0 to 110.0.The Mean stands at 91.23 and the standard deviation is 7.38.The regression equation isHt=145.474+(.216)chest Circumference.The significant value of P arrived after the calculation is .000 which is a significant value.Thus we can conclude that Chest circumference can be used in the estimation of the stature of males of the Yadava community in Lucknow, Uttar Pradesh.

The regression equation Ht=142.962+(.256) abdomen Circumference.The significant value of (P) arrived after the calculation is .000 which is a significant value and thus we can conclude that Abdomen circumference can be used in the estimation of the stature of males of the Yadava community in Lucknow, Uttar Pradesh.

The regression equation Ht=147.221+(.206) Waist Circumference.The significant value of (P) arrived after the calculation is .000 which is a significant value and thus we can conclude that waist circumference can be used in the estimation of the stature of males of the Yadava community in Lucknow, Uttar Pradesh.

The range is from 70.3 to 110.0.The Mean stands at 91.40 and the standard deviation is 8.18.The regression equation isHt=144.643+(.225) hip Circumference.The significant value (P) arrived after the calculation is .000 which is a significant value and thus we can conclude that hip circumference can be used in the estimation of the stature of males of the Yadava community in Lucknow, Uttar Pradesh.

The regression equation Ht=150.351+ (.830) wrist Cir. Rt. The significant value (P) arrived after the calculation is .000 which is a significant value and thus we can conclude that waist circumference can be used in the estimation of the stature of males of the Yadava community in Lucknow, Uttar Pradesh.

The regression equation Ht=150.402 + (.833) wrist Cir. Lt.The significant value (P) arrived after the calculation is .000 which is a significant value and thus we can conclude that circumference can be used in the estimation of the stature of males of the Yadava community in Lucknow, Uttar Pradesh.

The regression equation Ht=143.194+(.629)Knee circumference(Rt).The value of P arrived after the calculation is .000 which is a significant value and thus we can conclude that Knee circumference(Rt) can be used in the estimation of the stature of males of the Yadava community in Lucknow,Uttar Pradesh.

The regression equation Ht=143.290+(.628)Knee circumference(Lt) .The value of P arrived after the calculation is .000 which is a significant value and thus we can conclude that Knee circumference (Lt) can be used in the estimation of the stature of males of the Yadava community in Lucknow, Uttar Pradesh.

The regression equation Ht=151.596+(.400)calf circumference(Rt).The value of P arrived after the calculation is .000 which is a significant value and thus we can conclude that calf circumference(Rt) can be used in the estimation of the stature of males of the Yadava community in Lucknow, Uttar Pradesh.

The regression equation Ht=151.627+(.400)calf circumference(Lt).The value of P arrived after a calculation is .000 which is a significant value and thus we can conclude that calf circumference (lt) can be used in the estimation of the stature of males of the Yadava community in Lucknow, Uttar Pradesh.

The regression equationHt=150.087 + (.238) weight.The value of P arrived after the calculation is .000 which is a significant value and thus we can conclude that calf circumference (Lt) can be used in the estimation of the stature of males of the Yadava community in Lucknow, Uttar Pradesh.

Table 5.39- Linear Regression Equation for Estimation of Stature using other Anthropometric measurements for Yadava Female Community of Lucknow, Uttar Pradesh-

S. No.	Measurements (cm)	Yadava Female (N=100)		
		Co-rellation coefficient (r)	Regression equation	P Value
1	Head Cir	0.038	Ht=148.441+(.094)head cir.	.553
2	NeckCir	0.132	Ht=136.374+(.528)neck cir.	.037
3	ChestCir	0.175	Ht=138.426+(.163)chest cir.	.006
4	AbdomenCir	0.076	Ht=148.000+(.062) abdomen cir.	.230
5	Waist Cir	0.103	Ht=147.457+(.067) waist cir.	.104
6	HipCir	0.110	Ht=145.623+(.085) hip cir	.083
7	Upper arm Cir (Rt)	0.115	Ht=148.627(.127) upper arm cir. Rt.	.070
8	Upper arm Cir (Lt)	0.125	Ht=148.251+(.186) upper arm cir. Lt.	.048
9	Condylar Cir(Rt)	0.050	Ht=150.878+(.103) condylar cir. Rt.	.434
10	Condylar Cir(Lt)	0.051	Ht=150.827+(.105) condylar cir. Lt.	.422
11	Wrist Cir(Rt)	0.166	Ht=148.175+(.300) wrist cir. Rt.	.009
12	Wrist Cir(Lt)	0.167	Ht=148.188+(.302) wrist cir. Lt.	.008
13	Thigh Cir(Rt)	0.024	Ht=152.320+(.022) thigh cir. Rt.	.708
14	Thigh Cir(Lt)	0.025	Ht=152.260+(.024) thigh cir. Lt.	.692
15	Knee Cir(Rt)	0.060	Ht=150.188+(.092) knee cir. Rt.	.341
16	Knee Cir(Lt)	0.062	Ht=150.118+(.095) knee cir. Lt.	.330
17	Calf Cir(Rt)	-0.051	Ht=155.838+(-.074) calf cir. Rt.	.424
18	Calf Cir(Lt)	-0.053	Ht=155.914+(-.076) calf cir. Lt.	.405
19	Weight (Kg)	0.353	Ht=137.153+(.301) weight	.000

* Significant at .05% level, * Cir.-Circumference, *Rt- Right, *Lt- Left, Ht.- Height

The description below gives the relevance of the body parts of the Yadava community females in the estimation of their stature. The regression equation Ht=137.153+(.301) weight. The value of P arrived after the calculation is .000 which is a significant value and thus we can conclude that calf circumference (lt) can be used in the estimation of the stature of Females of the Yadava community in Lucknow, Uttar Pradesh.

Description about MFsTable

Table 5.40 - Distribution Multiplication Factors from the various circumference of the body among Brahmin (Male and Female) Community of Lucknow, Uttar Pradesh-

S. No.	Measurements (cm)	Multiplication Factors of Brahmin Community	
		Male (N=250)	Female (N=250)
1	Head Cir	3.20	3.01
2	Neck Cir	5.00	4.77
3	Chest Cir	1.78	1.68
4	Abdomen Cir	1.84	1.75
5	Waist Cir	1.81	1.71
6	Hip Cir	1.76	1.64
7	Upper arm Cir (Rt)	4.85	4.60
8	Upper arm Cir (Lt)	4.87	4.61
9	Condylar Cir(Rt)	5.79	5.86
10	Condylar Cir(Lt)	5.82	5.89
11	Wrist Cir(Rt)	9.68	9.28
12	Wrist Cir(Lt)	9.75	9.35
13	Thigh Cir(Rt)	2.95	2.81
14	Thigh Cir(Lt)	2.95	2.82
15	Knee Cir(Rt)	4.30	4.39
16	Knee Cir(Lt)	4.31	4.40
17	Calf Cir(Rt)	4.47	4.51
18	Calf Cir(Lt)	4.48	4.53
19	Weight (Kg)	2.66	2.75

* Cir.-Circumference, *Rt- Right, *Lt- Left

Table 5.41 - Distribution Multiplication Factors from the various circumference of the body among Yadava (Male and Female) Community of Lucknow, Uttar Pradesh-

S. No.	Measurements (cm)	Multiplication Factors of Yadava Community	
		Male (N=250)	Female (N=250)
1	Head Cir	3.07	2.91
2	Neck Cir	4.78	4.76
3	Chest Cir	1.81	1.67
4	Abdomen Cir	1.90	1.77
5	Waist Cir	1.87	1.74
6	Hip Cir	1.81	1.68
7	Upper arm Cir (Rt)	5.35	5.54
8	Upper arm Cir (Lt)	5.37	5.57
9	Condylar Cir(Rt)	6.11	6.27
10	Condylar Cir(Lt)	6.14	6.30
11	Wrist Cir(Rt)	9.24	9.00
12	Wrist Cir(Lt)	9.30	9.07
13	Thigh Cir(Rt)	3.24	3.19
14	Thigh Cir(Lt)	3.25	3.20
15	Knee Cir(Rt)	4.72	4.43
16	Knee Cir(Lt)	4.73	4.45
17	Calf Cir(Rt)	4.86	4.60
18	Calf Cir(Lt)	4.88	4.62
19	Weight (Kg)	2.61	2.84

Table 5.40 and 5.41 exhibits multiplication factors for all the thirteen body dimensions with weight among the Brahmin and Yadava (male and female) community of Lucknow, Uttar Pradesh. It is observed that due to variation in the body proportions of males and females of both communities the value of multiplication factors is also variable for males and females of both communities (Fig. 1 to 5).

The Brahmin male community shows greater multiplication factors for all body dimensions except four dimensions i.e. Condylar circumference (both left and right), knee circumference (both left and right), calf circumference (both left and right), and body weight. While the Brahmin female community exhibit greater values of Multiplication factors for only condylar circumference (both left and right), knee circumference (both left and right), calf circumference (both left and right), and body weight. All other body dimensions have less value of Multiplication factors. The difference between the multiplication factors for males and females of the Brahmin community varies from a minimum of 0.1 (in case of chest circumference and waist circumference) to a maximum of 0.26(in case of upper arm circumference).

The case of the Yadava male community shows greater multiplication factors for all body dimensions except three dimensions i.e. Upper Arm circumference (both left and right), condylar circumference (both left and right), and body weight. While the Yadava female community exhibit greater values of Multiplication factors for only Upper Arm circumference (both left and right), condylar circumference (both left and right), and body weight. All other body dimensions have less value of Multiplication factors. The difference between the multiplication factors for males and females of the Yadava community varies from a minimum of 0.2 (in case of neck circumference) to a maximum of 0.33 (in case of wrist circumference).

Fig 5.1: Variation in the Values of multiplication factors for head, neck, chest cir. among Brahmin and Yadava (male and female) community of Lucknow, Uttar Pradesh

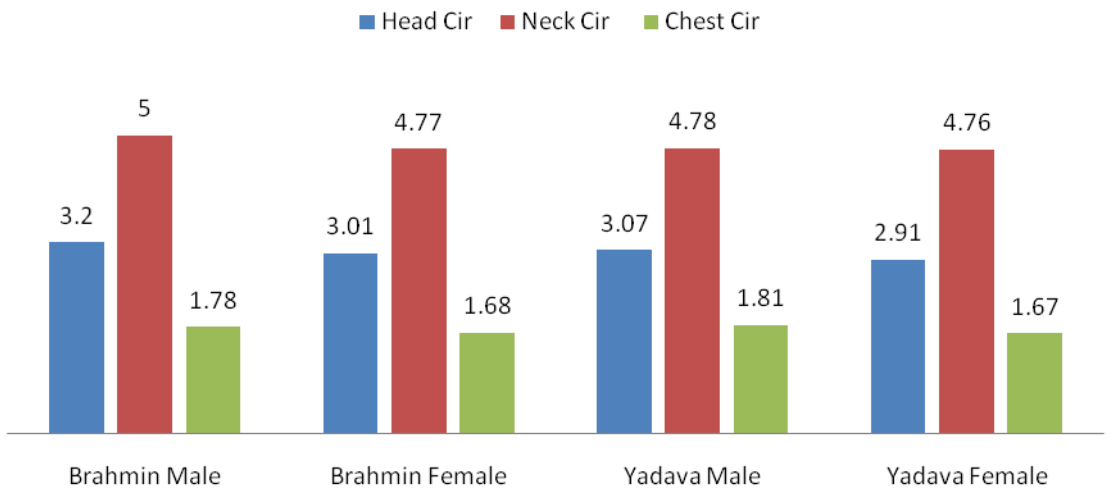


Fig 5.2: Variation in the Values of multiplication factors for abdomen, waist, hip cir. among Brahmin and Yadava (male and female) community of Lucknow, Uttar Pradesh

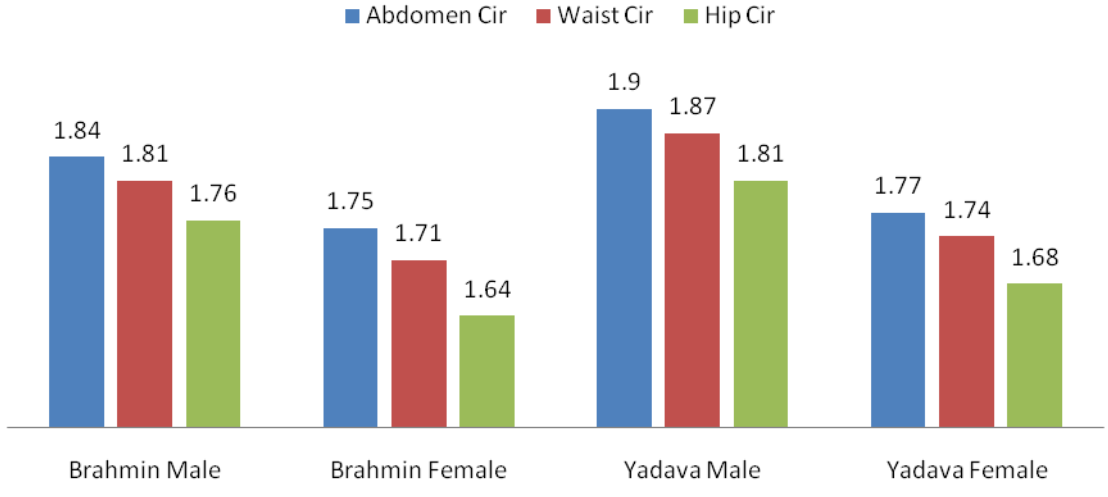


Fig 5.3: Variation in the Values of multiplication factors for Upper Extremity bone dimensions among Brahmin and Yadava (male and female) community of Lucknow, Uttar Pradesh

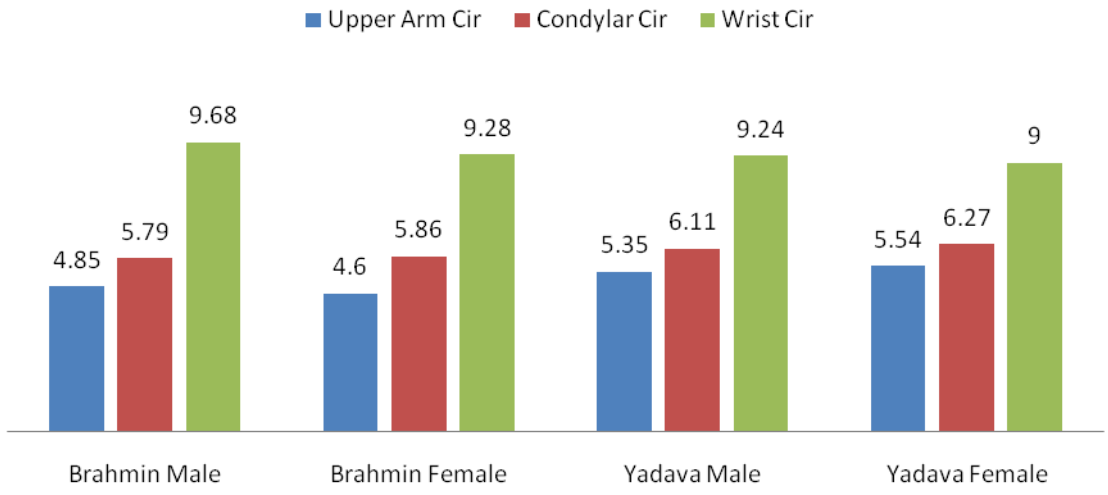
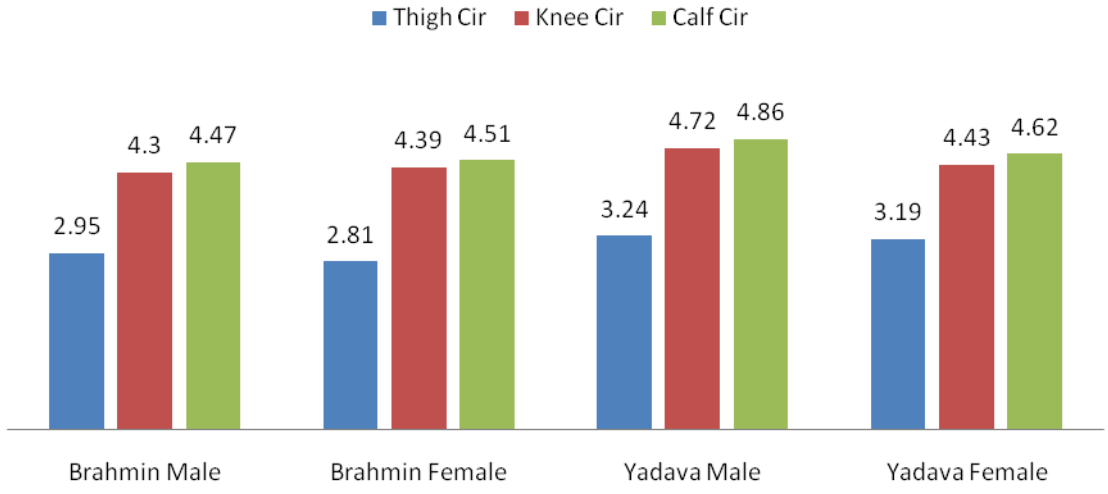


Fig 5.4: Variation in the Values of multiplication factors for Lower Extremity bone dimensions among Brahmin and Yadava (male and female) community of Lucknow, Uttar Pradesh



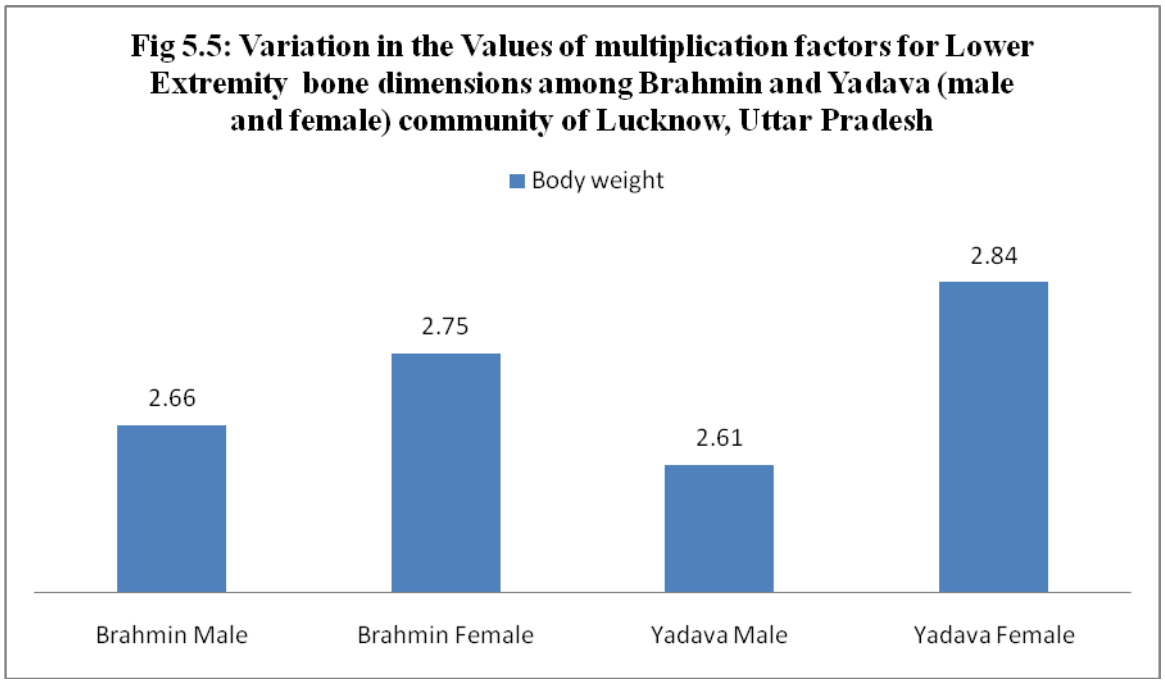


Table 3 & 5 also shows regression equation for estimation of stature (in cm) from all circumferential measurements in Brahmin and Yadava (male and female) community of Lucknow, Uttar Pradesh, India. There are separate equations for each circumference measurements which can help in estimation of stature from individual circumference part of body. The regression equations have calculated by regression analysis of the data and the value of constants 'a' and 'b' are calculated; where 'a' is the regression coefficient of the dependant variable i.e. stature, and 'b' is the regression coefficient of the independent variable, i.e. any measurements out of whole circumference measurements of the body. Hence; stature (Height) = a + (b) x, where, x is any circumference measurement of the body. The regression formulae have been calculated separately from various circumference measurements of the body with stature by substituting the appropriate values of constants and b in the standard equation of regression line.

In the present study also used SPSS statistical Package for analyzing Independent sample T Test for finding out the differences between the gender and community. For that, firstly, I performed it gender- wise. The outcome is $P<0.05$, here there is significant differences between male and female with regarding to their height. For finding out community- wiz differences, I had done the independent sample T Test. Here, the outcome is $P<0.05$. It seems that there are significant differences between Brahmin and Yadava community with regarding to their height.

Weight is the most important part of our body to predict the height, but in the case of Yadava community both male and female weight is not significantly contributing any role, the reason is behind of that we can see in the whole data of Yadava Male and Female they haven't ideal weight according to their height, so that it's not giving the significant value to predict the height. We can also observe this in the BMI table no. 7. According to the guideline of WHO (Table-6) only 27 males of Yadava community have Normal Weight according to their height out of 46 Subjects and in the case of females only 23 females have Normal weight according to their height. So, here we can see that the ratio of Normal weight is very less. So, it's hopefully the reason of non significant value. In the case of Brahmin community male and female ratio is average as compare to Yadava community, here, 31 male and female of Brahmin community have Normal weight according to their height out of 50 subjects in each group.

Table 7: Community and Gender wise Distribution of the study group according to BMI (Body Mass Index)

S.No.	Community	Gender	Category of weight According to WHO (World Health Organization) Guideline	Total no. of Subjects who have accurate weight according to their height	
				NO.	(%)
1	Brahmin	Male	Normal Weight	31	62

	(n-500)	(n-250)			
		Female (n-250)	Normal Weight	31	62
2	Yadava (n-500)	Male (n-250)	Normal Weight	27	58.69
		Female (n-250)	Normal Weight	23	46

V. Discussion

The forensic Anthropologist and Medical experts encounter difficulty while dealing with dismembered bodies or those recovered in extremely decomposed from or in skeletonised from. To eliminate these difficulties, new methods are being developed for estimation of stature using regression formulae. Estimation of stature is a crucial requirement in post mortem examination of dead bodies specially when they are un-identified and badly decomposed, mutilated or skeletonised, it is also very much useful on that place they have some disaster like the terror attacks on 26th Nov 2008.

It is a known fact that the different population groups exhibit variation in their body proportions as a result of which correlation of one bone length to stature not only varies from population to population but also between sexes. A number of Multiplication Factors and Regression Equations have been developed to reconstruct stature from long bones throughout the world, but, estimation of stature in mutilated bodies especially from their bones is a tedious and time consuming process. Keeping this in mind, an attempt has been made in the present study to reconstruct stature among male and female Brahmin and Yadava community of Lucknow using different body circumferential measurements.

The estimation of height from various long bones has been attempted by many researchers since the development is influenced by a number of factors producing deference in skeletal proportions between different geographical areas. It is important to know such quantitative differences, table 1,2 ,3 and 4 shows co-relation coefficient between height and all body circumference part with height in total subject of both community (Brahmin and Yadava) of Lucknow, Uttar Pradesh in either sex.

Many researchers have tried to predict height using various bones and body parts measurements like; Dr. Kewal Krishan have shown a significant co-relation between height and cephalo-facial anthropometry measurements in north Indian population, Patel et al., have derived a regression equation between total height and foot length in Gujrat region, Agrawal, Sunil, Dikshit and Rani derived regression equation between hand length and total height, Amit et al., have also derived the height from length of distal half of upper limb, Akhtar et al., derived a regression equation between height and head measurements in Bangladeshi Garo adult females and find out significant co-relation with head circumference to predict the height using Multiplication factor analysis etc.

Here we can see many studies have been done in this regards. Present study has also derived the regression equation between height and different circumferential part of the body among Brahmin and Yadava (male and female) community of Lucknow, Uttar Pradesh. Here we can observe that in the case of Brahmin male only weight and Brahmin female weight and head circumference significantly contributing to predict the height and In the case of Yadava male Condylar circumference significantly contributing to predict the height and Yadava female Condylar circumference, calf circumference is giving the nearest significant value (not exact) to predict the height. Except these all other circumferential part of the body is not giving the significant value to predict the height of both community of Lucknow, Uttar Pradesh.

References

[1]. Akhter Z., Begum J. A., Banu L. A., Alam M., Hossain S., Amin N. F., Uddin M., Yasmin Q. S., (2009), Stature Estimation using head measurements in Bangladeshi Garo Adult Females, Bangladesh Journal of Anatomy,Vol.7 No. 2:101-104.

[2]. Bhavna, Nath, S., (2009), Use of lower limb measurements in reconstructing stature among Shia Muslims. The Internet Journal of Biological Anthropology, Vol.2 No. 2. DOI: 10.5580/2326.

[3]. Bhavna, Nath, S., (2007), Estimation of stature on the basis of measurement of the lower limb. Anthropologist Special Volume No.3:219-222.

[4]. Chikhalkar, B.G., Mangaonkar, A.A., Nanandkar, S.D., Peddawal, R.G., (2009), Estimation of Stature from measurement of long bones Hand and foot dimensions, Journal of Indian Academic Forensic Medicine, 32(4): 0971-0973.

[5]. Dayal R. M., Steyn M. and Kuykendall L. K., (2008), Stature Estimation from bones of south African whites, South African Journal of Science, 104.

[6]. Isurani I.,Gananda N., Nadeeka P., (2009), Prediction of personal stature based on the hand length, Galle Medical Journal, Vol.14 : No.1.

[7]. Jibonkumar and Lilichandra, (2006), Estimation of stature using different facial measurements among the Kubi Naga of Imphal Valley, Mainpur, Anthropologist, 8(1):1-3.

[8]. Kaur M., Mahajan A., Khurana B. S., Arora A. K., Batra A.P.S., (2011), Estimation of stature from upper arm length in North Indians- An Anthropometric Study, Indian Journal of Fundamental and Applied Life Science, Vol. 1(4):151-154.

[9]. Krishan K. and Sharma A., (2007), Estimation of stature from dimensions of hands and feet in a North Indian population. Journal of Forensic Legal Medicine, 14:327-332.

[10]. Krishan K., (2008); Estimation of stature from cephalo-facial anthropometry in North Indian population, Forensic Science International, 181: 52.e1-52.e6.

[11]. Krishan K., Kanchan T., Passi N., (2011); Estimation of stature from the foot and its segments in a Sub-adult female population of north India, Journal of Foot and Ankle Research, 4:24 DOI:10,1186/1757.
[12]. Krishan K., Kanchan T., John A., Maggio D., (2010); A Study of limb asymmetry and its effect on estimation of stature in forensic case work, Forensic Science International, 200:181.e1-181.e5.
[13]. Kumar, A., Srivastava, A. K., Verma, A. K.,(2010) Estimation of stature by percutaneous measurement of distal half of upper limb (forearm & hand), Journal of Indian Academic Forensic Medicine, 32(4):0971-0973.
[14]. Patel, J. P., Sah, R. K., Kanani, S. D., Nirvan A. B., Dave, R. V., (2012); Estimation of Height from measurement of foot length in Gujarat region, International Journal of Biological and Medical Research, 3(3): 2121-2125.
[15]. Pandhare S.R., Patil A.D., Kasote A., Meshram M.M.,(2012); Estimation of height(stature) from Inferior extremity length and foot length in children. International Journal of recent trends in science and technology, V. 3(2):33 – 37.
[16]. Mondal, M. K., Jana, T. K., Giri, S. & Ray, H., (2012); Height Prediction from Ulnar length in females; A study of Burdwan District of West Bengal. J Clin Diagn Res. Oct;6(8):1401-4.
[17]. Martin, R. and Saller, K., (1959); Lehrbuch der Anthropologie in Systematischer. Fischer Darstellung, Stuttgart.
[18]. Saxena S.K.,(1984); A study of correlation and estimation of stature from hand length , hand bredth and sole length, Anthroplogischer anzeiger, Jahrg.42, H.4: 271 – 276.
[19]. Sunil,Dikshit, P.C., Aggrawal, A., Rani, M.,(2005); Estimation of stature from hand length, JIAFM,: 27(4). ISSN 0971 – 0973.
[20]. Sen J., Ghosh S.,(2008); Estimation of stature from foot length and foot breadth among the Rajbanshi: An indigenous population of North Bengal, Forensic Science International, 181: 55.e1-55.e6.
[21]. Shukla B. R. K, & Sudha Rastogi, A Laboratory Manual of Physical Anthropology. 2008, Bharat Book Centre, Lucknow.
[22]. Harisson, Wilder H., A Laboratory Manual of Anthropometry, Vol. I. Stuttgart. 1957.
[23]. Some books of Yogesh Praveen like Dastane Avadh Aapka Lucknow.

Webliography

[24]. Official website of Census of India.
[25]. Official website of Lucknow district.(www.Lucknow.nic.in)
[26]. Official website of Uttar Pradesh. (www.upgov.nic.in)
[27]. Wikipedia.