

A COMPARATIVE STUDY OF THE MORPHOLOGICAL CHARACTERS OF ORAONS AND MUNDAS

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The data on which this paper is based were collected and utilized by Sri C. K. Singh in his M. A. thesis in Anthropology (Lucknow University).

The Oraons and the Mundas are two main tribes of Bihar and have their main concentrations in Ranchi, Palamau, and Hazaribagh. Ethnically, the Mundas are said to be the true representatives of the Kol race and are Proto-Australoid. They speak the Mundari dialect of the Austro-asiatic family. On the other hand, the Oraons are Dravidians and speak the "Khundukh" language of the Dravidian family. Amidst this ethnic diversity, while occupying the same ecological niches, they exhibit manifold similarities in their socio-cultural milieu. For a fairly long time they have lived together and have also adopted the ways of modern ideas of urbanisation and industrialisation. As such now both of them can be considered to be semi-Hinduized tribes. The Oraons and the Mundas restrict their marriages to their own groups. Marriage among them is regulated by the totemic clan and clan exogamy. Thus, in view of their mating pattern they represent two distinct ethnic strains.

It has been pointed out above that these two people inhabit the same area and as such are not exposed to varying climates, diets, and pathogenic factors, which might have been responsible for the present pattern of their phenotypic variation. The morphological characters exhibited by them at the present stage of development must be due, in part, to secular changes resulting from evolutionary processes and, in part, to the pressures of both biological and social selection. Since both groups have settled in the same habitat, they share the same climate and, in short, the same environment; therefore, the expression of differences might be conceived as the result of the trend of variability controlled primarily by genetic factors. In view of this, the present paper aims at studying the pattern of variation in the morphological characters. The study based on certain morphological characters will enable us to understand the degree of similarity between these two groups in as much their morphological variation is concerned. The factors considered here are the stature, the sitting height, the facial

height, the nasal height, the nasal breadth, etc. It may be pointed out that on the basis of such studies relying on a single criterion we cannot draw any conclusions. Nevertheless it needs recording for future comparisons.

MATERIAL AND METHODS

One-hundred-and-five male Oraons and one-hundred male Mundas were subjected to measurements for fifteen characters during the months of October and November, 1964. The persons examined belong to the Kanke Development Block of the Ranchi District. Observations for some somatoscopic traits were also made. Persons of the 19-55 age group were included in the set. Standard techniques were employed in taking the measurements (Martin and Saller, 1959). The "t" test was performed to see the intergroup differences between each pair of means compared. The four indices — cephalic, total facial, upper facial, and nasal — were calculated.

RESULTS AND DISCUSSION

The mean values with standard error, standard deviation and coefficient of variation of certain morphological characters of the Oraons, and the Mundas are presented in Tab. 1. It can be noticed that the two tribes, the Oraons and the Mundas, do not show any marked differences in the mean value of these characters.

The mean value of stature of the Oraons and the Mundas are 159.79 ± 0.58 and 159.72 ± 0.50 , respectively. The stature classification shows that in the Oraons, the maximum percentage of individuals goes to the short-stature group, followed by the medium-stature group (Tab. 2), while the Mundas, on the other hand (though according to their mean values, both tribes fall into the short-statured group), show a maximum percentage in the medium-stature group, followed by the short-stature group. The mean values of the cephalic index of Oraons and the Mundas are 75.01 ± 0.32 and 74.90 ± 0.28 , respectively, both values being in the dolicho-cephalic group. The cephalic index classification shows that

TAB. 1

The distribution of some morphological characters of Oraons and Mundas

Characters	Mundas (100)			Oraons (105)		
	Mean \pm S.E.	S.D. \pm S.E.	C.V. \pm S.E.	Mean \pm S.E.	S.D. \pm S.E.	C.V. \pm S.E.
1. Stature	159.72 \pm 0.50	5.09 \pm 0.35	3.18 \pm 0.22	159.79 \pm 0.58	6.00 \pm 0.41	3.75 \pm 0.25
2. Sitting Height	78.78 \pm 0.24	2.44 \pm 0.17	3.09 \pm 0.21	78.71 \pm 0.32	3.31 \pm 0.22	4.20 \pm 0.28
3. Arm Length	73.22 \pm 0.31	3.16 \pm 0.22	4.31 \pm 0.30	72.68 \pm 0.33	3.46 \pm 0.23	4.76 \pm 0.32
4. Biacromial Diameter	35.62 \pm 0.14	1.41 \pm 0.09	3.95 \pm 0.27	35.55 \pm 0.16	1.73 \pm 0.11	4.86 \pm 0.33
5. Biiliac Diameter	25.18 \pm 0.10	1.00 \pm 0.07	3.97 \pm 0.28	25.37 \pm 0.13	1.41 \pm 0.09	5.55 \pm 0.38
6. Head Length	185.10 \pm 0.54	5.47 \pm 0.38	2.95 \pm 0.20	185.83 \pm 0.73	7.48 \pm 0.51	4.02 \pm 0.27
7. Head Breadth	138.75 \pm 0.62	6.24 \pm 0.44	4.47 \pm 0.31	139.16 \pm 0.63	6.55 \pm 0.45	4.70 \pm 0.32
8. Min. Frontal Breadth	99.95 \pm 0.48	4.89 \pm 0.34	4.89 \pm 0.34	100.35 \pm 0.52	5.38 \pm 0.37	5.36 \pm 0.36
9. Bizygomatic Breadth	128.13 \pm 0.54	5.47 \pm 0.38	4.26 \pm 0.30	127.41 \pm 0.56	5.83 \pm 0.40	4.57 \pm 0.31
10. Bigonial Breadth	98.20 \pm 0.42	4.24 \pm 0.29	4.32 \pm 0.30	98.38 \pm 0.61	6.32 \pm 0.43	6.42 \pm 0.44
11. Upper Facial Height	60.16 \pm 0.43	4.35 \pm 0.30	7.23 \pm 0.51	60.22 \pm 0.46	4.79 \pm 0.33	7.95 \pm 0.54
12. Total Facial Height	109.52 \pm 0.50	5.09 \pm 0.35	4.64 \pm 0.32	108.92 \pm 0.66	6.85 \pm 0.47	6.28 \pm 0.43
13. Nasal Length	43.58 \pm 0.41	4.12 \pm 0.19	9.45 \pm 0.66	44.00 \pm 0.33	3.46 \pm 0.23	7.86 \pm 0.54
14. Nasal Breadth	37.40 \pm 0.24	2.44 \pm 0.17	6.52 \pm 0.46	38.09 \pm 0.37	3.87 \pm 0.26	10.16 \pm 0.70
15. Nasal Height	17.90 \pm 0.22	2.23 \pm 0.15	12.45 \pm 0.88	18.22 \pm 0.66	2.64 \pm 0.18	14.48 \pm 0.99
1. Cephalic Index	74.90 \pm 0.28	2.82 \pm 0.19	3.46 \pm 0.26	75.01 \pm 0.32	3.31 \pm 0.22	4.41 \pm 0.30
2. Total Facial Index	85.48 \pm 0.40	4.00 \pm 0.28	4.67 \pm 0.33	85.45 \pm 0.63	6.48 \pm 0.44	7.58 \pm 0.52
3. Upper Facial Index	46.82 \pm 0.24	2.44 \pm 0.17	5.21 \pm 0.36	47.02 \pm 0.39	4.00 \pm 0.27	8.50 \pm 0.58
4. Nasal Index	90.68 \pm 0.70	7.07 \pm 0.50	7.79 \pm 0.55	88.11 \pm 1.14	11.70 \pm 0.80	13.27 \pm 0.91

TAB. 2

Classification of stature and certain indices of Oraons and Mundas

Classification	Range	Oraons (105)		Mundas (100)	
		Abs. No.	%	Abs. No.	%
STATURE					
Very short	130.0—149.9	5	4.77	3	3.00
Short	150.0—159.9	49	46.66	45	45.00
Medium	160.0—169.9	45	42.85	52	52.00
Tall	170.0—179.9	6	5.72	—	—
Very tall	180.0—199.9	—	—	—	—
CEPHALIC INDEX					
Hyper-dolichocephal	Below —69.9	7	6.66	5	5.00
Dolichocephal	70.0—75.9	63	60.00	67	67.00
Mesocephal	76.0—80.9	33	31.42	26	26.00
Brachycephal	81.0—85.4	2	1.90	2	2.00
Hyper-brachycephal	85.5—above	—	—	—	—
TOTAL FACIAL INDEX					
Hyper-euryprosop	Below —78.9	14	13.33	7	7.00
Euryprosop	79.0—83.9	25	23.80	24	24.00
Mesoprosop	84.0—87.9	35	33.33	44	44.00
Leptoprosop	88.0—92.9	20	19.05	21	21.00
Hyper-leptoprosop	93.0—above	11	10.47	4	4.00
UPPER FACIAL INDEX					
Hyper euryene	Below —42.9	15	14.28	3	3.00
Euryene	43.0—47.9	46	43.80	66	66.00
Mesene	48.0—52.9	35	33.33	29	29.00
Leptene	53.0—56.9	9	8.57	2	2.00
Hyper-leptene	57.0—above	—	—	—	—
NASAL INDEX					
Hyper-leptorrhine	Below —54.9	—	—	—	—
Leptorrhine	55.0—69.9	2	1.90	—	—
Mesorrhine	70.0—84.9	27	25.71	22	22.00
Chamaerrhine	85.0—99.9	69	65.71	75	75.00
Hyper-chamaerrhine	100.0—above	7	6.66	3	3.00

the maximum number in both tribes belongs to the dolicho-cephalic group, followed by the meso-cephalic one. The mean value of the total facial index of the Oraons is 85.45 ± 0.63 , while that of the Mundas 85.48 ± 0.40 . The maximum percentage of individual falls to the mesoprosopic in both

tribes. The upper facial index mean value of the Oraons is 47.02 ± 0.39 , while that of the Mundas 46.82 ± 0.24 . In both tribes, the maximum number of individuals falls into the Euryene group, followed by the Mesene group, while no incidence of Hyperleptene is seen. The mean values of the nasal

TAB. 3
The mean distribution of some morphological characters among some tribes of Bihar

Characters	Bhumij (100) Risely	Hos (100) Majumdar	Kharwars (197) Majumdar	Korwas (101) Majumdar
1. Stature	1592.1 ± 3.9	1609.7 ± 3.9	160.79 ± 0.32	158.17 ± 0.50
2. Head Length	185.8 ± 0.38	184.4 ± 0.41	185.92 ± 0.46	187.48 ± 0.56
3. Head Breadth	139.6 ± 0.37	138.5 ± 0.28	136.96 ± 0.34	134.62 ± 0.34
4. Bizygomatic Breadth	131.4 ± 0.31	131.6 ± 0.29	131.22 ± 0.30	130.34 ± 0.42
5. Bigonial Breadth	—	97.2 ± 0.33	98.57 ± 0.34	97.49 ± 0.45
6. Upper Facial Height	—	—	63.16 ± 0.32	60.72 ± 0.47
7. Total Facial Height	—	—	114.16 ± 0.42	111.28 ± 0.52
8. Nasal Length	46.7 ± 0.28	48.7 ± 0.24	48.34 ± 0.23	46.72 ± 0.33
9. Nasal Breadth	40.4 ± 0.16	38.7 ± 0.20	38.47 ± 0.22	39.78 ± 0.31
10. Nasal Height	—	—	22.19 ± 0.10	21.4 ± 0.15
11. Cephalic Index	75.1 ± 0.18	75.1 ± 0.23	73.60 ± 0.26	71.90 ± 0.25
12. Facial Index	—	92.1 ± 0.28	—	—
13. Upper Facial Index	—	—	—	—
14. Nasal Index	86.6 ± 0.46	79.7 ± 0.54	79.97 ± 0.54	85.54 ± 0.85

Characters	Saros (101) Majumdar	Oraons (100) Majumdar	Oraons (250) Basu	Mundas (100) Risely	Mundas (250) Basu
1. Stature	1572.8 ± 3.7	161.45 ± 0.60	161.8	1589.0 ± 3.8	158.2
2. Head Length	184.7 ± 0.38	189.43 ± 0.60	186.2	185.9 ± 0.40	187.2
3. Head Breadth	137.5 ± 0.33	136.86 ± 0.40	138.2	138.6 ± 0.26	138.1
4. Bizygomatic Breadth	125.9 ± 0.39	130.14 ± 0.48	130.7	130.7 ± 0.29	131.7
5. Bigonial Breadth	95.1 ± 0.36	97.70 ± 0.48	—	—	—
6. Upper Facial Height	—	61.58 ± 0.41	—	—	—
7. Total Facial Height	120.0 ± 0.50	—	115.8	—	111.80
8. Nasal Length	45.0 ± 0.24	47.54 ± 0.33	48.7	44.7 ± 0.20	48.4
9. Nasal Breadth	38.2 ± 0.17	37.66 ± 0.26	40.2	40.7 ± 0.27	48.2
10. Nasal Height	—	20.60 ± 0.15	—	—	—
11. Cephalic Index	74.5 ± 0.28	72.30 ± 0.28	74.3	74.5 ± 0.16	74.3
12. Facial Index	95.3 ± 0.40	—	—	—	—
13. Upper Facial Index	—	—	—	—	—
14. Nasal Index	85.2 ± 0.47	79.52 ± 0.84	82.7	90.6 ± 0.53	83.3

TAB. 3A

The standard deviation distribution of some morphological characters among some tribes of Bihar

Characters	Bhumij (100) Risely	Hos (100) Majumdar	Kharwars (197) Majumdar	Korwas (101) Majumdar	Saros (105) Majumdar	Oraons (100) Majumdar	Mundas (100) Risely
1. Stature	57.9 ± 2.8	57.3 ± 2.7	5.56 ± 0.28	5.70 ± 0.35	55.2 ± 2.6	6.55 ± 0.46	56.7 ± 2.7
2. Head Length	5.63 ± 0.27	6.20 ± 0.30	6.48 ± 0.32	5.70 ± 0.40	5.66 ± 0.27	6.06 ± 0.42	6.01 ± 0.29
3. Head Breadth	4.63 ± 0.22	4.23 ± 0.20	4.80 ± 0.24	3.76 ± 0.26	4.92 ± 0.23	4.07 ± 0.28	3.90 ± 0.19
4. Bizygomatic Breadth	4.54 ± 0.22	4.25 ± 0.20	4.26 ± 0.21	4.29 ± 0.30	5.88 ± 0.28	4.81 ± 0.34	4.38 ± 0.21
5. Bigonial Breadth	—	4.95 ± 0.24	4.88 ± 0.24	4.53 ± 0.31	5.27 ± 0.25	4.85 ± 0.34	—
6. Upper Facial Height	—	—	4.62 ± 0.23	4.07 ± 0.28	—	4.06 ± 0.28	—
7. Facial Height	—	6.99 ± 0.33	5.99 ± 0.30	5.25 ± 0.36	7.43 ± 0.35	—	—
8. Nasal Length	2.65 ± 0.13	3.63 ± 0.17	3.32 ± 0.16	3.35 ± 0.23	3.61 ± 0.17	3.32 ± 0.23	3.02 ± 0.14
9. Nasal Breadth	2.42 ± 0.11	2.99 ± 0.14	2.84 ± 0.14	3.18 ± 0.22	2.52 ± 0.12	2.63 ± 0.18	2.41 ± 0.11
10. Nasal Height	—	—	1.48 ± 0.75	1.54 ± 0.01	—	1.58 ± 0.11	—
11. Cephalic Index	2.61 ± 0.12	3.49 ± 0.17	—	—	2.77 ± 0.13	4.19 ± 0.29	2.44 ± 0.12
12. Facial Index	—	4.29 ± 0.20	—	—	5.98 ± 0.28	—	—
13. Upper Facial Index	—	—	—	—	—	—	—
14. Nasal Index	6.87 ± 0.33	8.8 ± 0.38	—	—	7.04 ± 0.34	6.00 ± 0.42	7.86 ± 0.37

index of the Oraons and the Mundas are 88.11 ± 1.14 and 90.68 ± 0.70 , respectively and belong to the Chamaerrhine group.

Some somatoscopic observations, on the two tribes under study have also been carried out, whereby it was noticed that in general they are very similar to each other. Usually they have a dark-brown complexion. Their heads are medium-sized, the foreheads are medium-high and slightly sloping. They have black hair with deep waves. The Oraons have black eyes, while the Mundas have dark-brown eyes. The eye-slits are horizontal and the eye-brows

while in the present set only male individuals belonging to the age of 19–55 years are included.

When the "t" test was performed to see the intertribal differences, it can be seen that the Oraons show a significant difference only from the Saros in their stature; in head length they resemble all the tribes compared, but in head breadth they resemble only the Hos and the Bhumij. In bizygomatic breadth they differ from all the tribes, except for the Saros, while in bigonial breadth they differ only from the Saros. They differ from all the tribes in their total facial height and nasal length,

TAB. 4
The value of 't' for intergroup differences

Population compared	Stature	Head Length	Head Breadth	M n. Frontal Breadth	Bizygomatic breadth	Bigonial Breadth	Upper Facial Height	Total Facial Height	Nasal Length	Nasal Breadth	Nasal Height
1. Mundas X Mundas (Risely)	1.07	1.19	0.09	—	2.45	—	—	—	1.60	1.14	—
2. Mundas X Saros	3.25	0.51	0.33	—	2.77	4.58	—	1.16	2.59	3.42	—
3. Mundas X Hos	1.63	0.84	1.57	—	5.01	3.07	—	13.51	9.32	1.81	—
4. Mundas X Bhumij	0.66	0.97	1.09	—	4.60	—	—	—	6.38	4.08	—
5. Mundas X Korwas	2.03	3.02	5.65	—	3.18	1.14	—	2.41	5.92	0.95	13.08
6. Mundas X Kharwars	1.65	1.14	2.65	4.33	4.93	0.68	—	7.01	10.02	2.93	17.39
7. Mundas X Oraons	0.09	0.81	0.46	0.57	0.93	0.24	0.09	0.73	0.80	0.36	0.96
8. Oraons X Oraons (Majumdar)	1.89	12.00	2.99	—	3.66	0.86	2.19	—	7.48	0.93	7.90
9. Oraons X Saros	3.12	1.22	2.05	—	1.84	4.04	—	11.09	2.02	0.24	—
10. Oraons X Hos	1.44	1.49	0.86	—	5.90	1.49	—	12.69	9.49	1.26	—
11. Oraons X Bhumij	0.70	0.03	0.55	—	5.48	—	—	—	6.29	5.15	—
12. Oraons X Korwas	1.98	1.78	6.13	—	4.12	1.13	0.80	2.15	5.73	3.43	10.63
13. Oraons X Kharwars	1.41	0.10	3.04	—	5.91	0.26	5.14	6.60	10.53	0.84	14.28

Mundas X Oraons 't' Values = Sitting Height 0.08
Arm Length 0.52

Biacromial Diameter 0.33
Bi-iliac Diameter 0.11

are medium-sized and separated with straight hairs in both tribes. The most dominant features of the two tribes are an imperceptible type of supraorbital ridges. The noses are slightly concave, the nasal septa sloping upward with medium-sized nares in both tribes, the nasal depression in the Oraons being medium, while in the Mundas it is deep. Their lips are medium and their chins are round and mediumly developed. The earlobes are separated in the Oraons, while in the Mundas they are attached in most cases. Their faces are pentagonal in shape. They are of medium built.

The "t" test values for the intergroup differences are presented in Tab. 4. It can be seen that neither of the tribes shows any significant differences from the other. The present data on the Mundas do not show any significant difference from those of Risely's, except in one character, i.e. bizygomatic breadth. The present data on the Oraons reveal a significant difference from those of Majumdar's; moreover, they differ in seven characters out of the ten studied by the latter investigator. Several reasons may be given to explain these differences. It is quite possible that Majumdar's set was drawn from within the vast region of Chotanagpur, while the present set was taken only from the Kanke Development Block area. Secondly, Majumdar seems to have given no reference to the age group,

but in nasal breadth they differ only from the Bhumij and the Korwas.

It was also observed that the Mundas show similarities with the Saros in their head length, head breadth, and total facial length. But they display a significant difference from the Hos in bizygomatic breadth, bigonial breadth, total facial length, and nasal length. Compared with the Bhumij they show similarities in three characters, namely stature, head length, and head breadth, out of six characters. The Korwas display significant differences in all the characters, except for bigonial breadth and nasal breadth. Out of ten characters, the Kharwars show similarities only in three characters, i.e. stature, head length, and bigonial breadth.

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