 Anthropologist, 8(3): 215-217 (2006)

A Cephalometric Study among Sub Caste Groups Dangi and Ahirwar of Khurai Block of Madhya Pradesh

Priyanka Singh* and Ruma Purkait**

Department of Anthropology, Dr. Hari Singh Gour Vishwavidyalaya, Sagar 470 003, Madhya Pradesh, India
E-mail: <sing2nayan@yahoo.co.in> < rpurkait@sancharnet.in>***

KEYWORDS Anthropometry. Sexual Dimorphism. Variability. Cranio-Facial

ABSTRACT This cross-sectional study reports the frequency data of twelve caphalometric measurements and eight indices pertaining to various part of head and face among Dangis and Ahirwars of Khurai Block of M.P. Sample size comprises of 377 individuals including 200 Dangis and 177 Ahirwars. Sexual difference in the same caste group has been studied. Among both castes groups individual becomes more and more sexually dimorphic with increasing age.

INTRODUCTION

Human physical variability had been a subject of interest for the Scientists since a very long time. Anthropometry, the standardized scientific techniques of measuring human body was soon developed to make collection of data comparable. Ethnologist classified Indian population on the basis of anthropometric data collected from various population of Indian subcontinent (Eickstidt, 1926;Thurston, 1909). So far many studies have been conducted in various parts of India applying the techniques of anthropometry (Rakshit, 1964; Sen, 1967). But till date no study on Dangis and Ahirwars of Sagar district in Madhya Pradesh has been reported. So a humble beginning has been made by undertaking an anthropometric study on head and face of these groups.Twelve anthropometric measurements and eight indices pertaining to various parts of head and face among males and females have been taken to study sexual difference in the same caste group.

Anthropometry of head and face is useful in designing various head and face equipments like helmets, head phone, goggles etc by formulating standard sizes. The cephalometric results can be of assistance when evaluating a patient before craniofacial surgery (Rogers, 1974) for studying growth trends and in Orthodontics (Muzj, 1970).

MATERIAL AND METHOD

The cross-sectional study was undertaken in the Mukarampur village of Khurai Block in Sagar district of Madhya Pradesh among two numerically dominant subcaste groups Dangi and Ahirwar. Dangi is cultivating sub-caste of general caste group Thakur found almost exclusively in the Sagar district. Ahirwars, the scheduled caste of today is considered a sub-caste of tanners and menial laborers of north India. The sample size comprises of 377 individuals including 200 Dangis (Males-100, Females-100) and 177 Ahirwars (Males-92, Females-85) categorized into 3 age groups (3 to 11 years, 12-20 years and above 20 years). Individuals with any abnormality in the cephalic facial component were not included in the study.

Twelve cephalometric measurements (i) maximum head length, (ii) maximum head breadth, (iii) maximum frontal breadth, (iv) bizygomatic breadth, (v) external biocular breadth, (vi) interocular breadth, (vii) nasal height, (viii) nasal breadth, (ix) physiognomic ear length, (x) physiognomic ear breadth, (xi) morphological facial height, (xii) physiognomic facial height and eight indices (i) cephalic index, (ii) physiognomic facial index, (iii) morphological facial index, (iv) inter orbitojugular index, (v) nasal index, (vi) physiognomic ear index, (vii) eye index and (vii) forehead index were taken. All the direct measurements and first six indices were taken following Martin and Saller (1957) method and indices seven and eight following Farkas (1981, 1994) definitions. Sliding and spreading calipers with instrumental error zero were used for taking measurements.

RESULTS AND DISCUSSION

The mean for cephalometric measurements of Dangis and Ahirwars have been depicted in the Table 1 and 2 respectively.

Among Dangis, for age group 3-11yrs only one measurement physiognomic facial height.

and for age group 12 - 20 yrs measurement nasal breadth and physiognomic ear breadth exhibits statistical significant sexual difference. While for age group above 20 yrs all measurements except physiognomic ear length show statistical significant difference between sex. On contrary indices show just opposite trend. For age group 3-11 yrs physiognomic facial index, inter orbito juglar index and eye index exhibits statistical significant sexual difference. But for agegroup 12-20 yrs and above 20 yrs indices fails to produce any significant result (Table 1).

Table 1: Mean for head and face measurements of Dangis

S. No	*Measurement (cm)*	*3-11 years Mean*		*12-20 years Mean*		*Above 20 year Mean*	
		Male (N=14)	*Female (N-15)*	*Male (N=19)*	*Female (N=18)*	*Male (N=67)*	*Female (N=67)*
1	Max. Head Lth.	16.3	16.3	18.1*	17.6*	18.7*	18.0*
2	Max. Head Bd.	12.2	12.4	13.3	13.2	13.3*	13.0*
3	Bizygo. Bd.	10.7	10.8	12.5	12.2	12.9*	12.4*
4	Min. Frontal Bd.	9.1	9.3	10.1	9.9	10.4*	10.0*
5	Ext. Biocular Bd.	7.9	8.3	9.2	9.0	9.2*	8.8*
6	Inter ocular Bd.	2.5	2.6	2.8	2.8	3.0*	2.8*
7	Nasal Height	3.7	3.4	4.5	4.3	4.6*	4.3*
8	Nasal Breadth	2.7	2.7	3.5*	3.3*	3.5*	3.3*
9	Physiog. Ear Lth.	4.9	4.7	5.8	5.6	5.8	5.6
10	Physiog. Ear Bd.	2.9	2.8	3.3*	3.1*	3.4*	3.1*
11	Morph. Facial Ht.	8.3	8.6	10.7	10.3	11.4*	10.1*
12	Physiog. Facial Ht.	13.3*	14.2*	16.8	16.0	17.6*	16.2*
	Indices						
1	Cephalic index	74.8	75.7	73.5	74.5	71.6	71.9
2	Phys. Facial index	123.4*	131.4*	133.8	131.0	167.9	162.8
3	Morph. Facial Index	78.0	80.0	85.1	84.5	108.6	106.9
4	Inter-orb. Jug. Index	73.5*	77.1*	73.4	74.0	89.4	89.2
5	Nasal Index	80.8	81.1	77.2	78.5	76.5	76.5
6	Physg. Ear Index	62.6	60.7	56.9	55.2	57.3	56.1
7	Eye Index	32.0*	31.2*	30.9	31.5	32.5	31.6
8	Forehead Index	75.2	75.9	75.9	75.5	96.0	95.4

Sexual difference is significant at P≤0.05

Table 2: Mean for head and face measurements of Ahirwar

S. No	*Measurement (cm)*	*3-11 years Mean*		*12-20 years Mean*		*Above 20 year Mean*	
		Male (N=15)	*Female (N-15)*	*Male (N=18)*	*Female (N=18)*	*Male (N=59)*	*Female (N=52)*
1	Max. Head Lth.	16.5*	16.0*	18.0*	17.5*	18.2*	17.8*
2	Max. Head Bd.	11.8	11.8	12.8	12.6	13.3	13.2
3	Bizygo. Bd.	10.8	10.7	11.9	11.8	12.9*	12.4*
4	Min. Frontal Bd.	8.8	8.8	9.4	9.4	10.3*	9.9*
5	Ext. Biocular Bd.	8.2	7.9	8.7	8.7	9.3*	9.0*
6	Inter ocular Bd.	2.6	2.6	2.7	2.6	2.8	2.8
7	Nasal Height	3.5*	3.3*	3.8	3.6	4.3*	4.1*
8	Nasal Breadth	2.8	2.6	3.2	3.3	3.4	3.4
9	Physiog. Ear Lth.	4.6	4.6	5.6	5.5	5.8	5.5
10	Physiog. Ear Bd.	2.9	2.7	3.1*	2.9*	3.1*	2.8*
11	Morph. Facial Ht.	8.6*	8.2*	9.8	9.7	10.5*	10.2*
12	Physiog. Facial Ht.	14.1	13.6	16.3	16.1	17.4*	16.9*
	Indices						
1	Cephalic index	71.8*	74.2*	71	71.9	73.4	73.7
2	Phys. Facial index	133.9	126.6	136.8	136.1	135.2*	131.4*
3	Morph. Facial Index	80.4*	76.5*	82.5	81.8	81.3	82.1
4	Inter-orb. Jug. Index	76.3	74.6	72.7	73.9	71.9	72.5
5	Nasal Index	82.3	80.2	82.9*	90.7*	81	82.4
6	Physg. Ear Index	65.0*	58.6*	54.1	53.3	52.6	65.6
7	Eye Index	32.2	33.1	31.4	30.3	31.1	31.5
8	Forehead Index	71.7*	74.6*	54.1	54.8	77.3*	75.5*

Sexual difference is significant at P≤0.05

Ahirwars exhibits same trend as Dangis. For age group 3-11 yrs three measurement (maximum head length, nasal height, morphological facial height) and for age group 12-20 yrs two measurements (maximum head length and physiognomic facial height) show statistical significant sexual difference. For age group above 20 yrs all measurement except maximum head breadth, inter ocular breadth, nasal breadth and physiognomic ear length exhibits statistical significant difference between sex (Table 2).

Considering indices for age group 3-11 yrs, cephalic index, morphological facial index, physiognomic ear index and for age group 12-20 yrs nasal index and for age group above 20 yrs physiognomic facial index and forehead index exhibits statistical significant sexual difference.

CONCLUSION

Thus, it can be inferred that individual becomes more and more sexually dimorphic with increasing age among both Dangis and Ahirwars. Sexual difference is better projected as one attains adulthood.

REFERENCES

Eickstedt, E.V.: The races and types of the western Himalayas. *Man in India*, **6:** 237, (1926).

Farkas, L.G.: *Anthropometry of the Head and Face in Medicine.* Elsevier, New York (1981).

Farkas, L.G.: *Anthropometry of the Head and Face.* Raven Press, New York (1994).

Martin, R and Saller, K.: *Lehrbuch de Anthropologie.* Gustav Fischer Verlag, Stuttgart, (1957).

Muzj, E.: *Oro-facial Anthropometrics.* Index Publishers Corporation, Hempstead, New York (1970).

Rakshit, H.K.: A perspective for Anthropometric work in India. In: *Proceeding Volume of Summer School in Anthropology***,** Dalhausie (1964).

Rogers, B.O.: The role of physical anthropology in plastic surgery today. *Clin. Plast. Surg*., **1:** 439 (1974).

Sen, D.K.: Racial studies in India, Recent Trends. *J. Ind. Anthrop. Soc.*, **2:** 1-18 (1967).

Thurstone, E.: *Castes and Tribes of Southern India*. Vol.VII (1909)