



A COMPARATIVE STUDY OF FACIAL INDEX AMONG DIFFERENT TRIBES OF SOUTHERN RAJASTHAN

Hemkanwer Joya* Ph. D. Research Scholar *Corresponding Author

Dr. Ghanshyam Gupta Sr. Professor & Head, Department of Anatomy, R.N.T. Medical College, Udaipur, Rajasthan

ABSTRACT The significant difference was observed in previous other studies based on racial, ethnical and sexual differences with importance of anthropometric parameters, the present study is an attempt to determine facial index among 500 tribal subjects aged between 21 to 50 years, who belong from Bheel, Damor, Garasia, Kathodi and Meena tribal communities of Udaipur. Among Bheel, Damor, Garasia, Kathodi and Meena tribes the mean Facial Breadth were 12.84 ± 0.71 , 12.76 ± 0.53 , 12.13 ± 0.54 , 13.58 ± 0.58 and 12.28 ± 0.68 respectively, the mean morphological facial height 10.88 ± 0.66 , 10.86 ± 0.53 , 10.59 ± 0.56 , 11.26 ± 0.62 and 10.84 ± 0.69 respectively, the mean morphological facial index were 84.83 ± 3.60 , 85.11 ± 2.96 , 87.41 ± 4.28 , 82.93 ± 3.85 and 88.33 ± 4.39 found respectively. The results of One-Way ANOVA test reveals that, statistically significant ($p < 0.01$) difference was found for all facial parameters among different tribes (Bheel, Damore, Garasiya, Kathodi, Meena). Facial Index plays a vital role in determining racial differences in a particular geographical region.

KEYWORDS : Facial Breadth, Facial Height and Facial Index

INTRODUCTION

Tribals are an intrinsic & integrated part of our national life with their rich cultural heritage. The highest concentration of tribals lies in Africa and secondly stands India¹. Indian tribes are classified into four races namely the Proto-Australoids, the Mongoloids, the Negritos & Nordic on the basis of anthropometric data collected from various population of India². Rajasthan is one of the significant states of India where many tribal lives, after Madhya Pradesh, Orissa, Bihar and Gujarat. Rajasthan has the highest population of the tribal communities³. According to tribal history, there are five major tribes such as Meena, Bheel, Garasia, Saharia and Damor who lived in Rajasthan.

Meena: Meena are the descendents of the people of Indus Valley civilization. It is believed that they belong from pre Aryan population because they belong to Proto-Dravidian race who were settled in India before the Aryan invasion and claim to originate from Matsya Avatar⁴.

Bheel: The Bheel word derived from the Dravidian term, bow which means archer recognised for their natural talent and strength as they are the bow men of Rajasthan. The Bheel speaks in Bhilli which belongs to Indo-Aryan Family of language. Bheel is the second largest Scheduled Tribe of Rajasthan⁵.

Damor: Damor tribe is also called as Damaria, which is a small tribal group, who migrated from Gujarat state and their population mainly concentrates in Banswara, Dungarpur and Udaipur district of Rajasthan⁵.

Garasia: This community is considered to be the third largest tribal group of the state of Rajasthan. The people of this tribal community are majorly found in different tehsils such as Kotra, Gogunda and Kherwada of Udaipur district. The Garasia comprises only 2.7% of Rajasthan's tribals.

Kathodi: The Kathodis are also known as Katkari, is an isolated primitive community in Rajasthan. They originally were migrated from Songarh & Nawapur district of Maharashtra. They are mainly distributed in the hilly and forestry regions covering Jhadol and Kotra panchayat samities of Udaipur district.

Anthropometric studies have been conducted by various scientists on different factors of age, gender, racial groups in certain geological zones⁶. An anthropometric study mainly focuses on the facial anthropometry which is vital for sex determination, forensics uses, quantifying naso-facial dysmorphology, facial surgery, and diagnostic comprehension, by using accurate anthropometric measurements on facial region; we can treat and reconstruct congenital or posttraumatic facial disfigurements successfully⁷. The significant difference was observed in previous other studies based on racial, ethnical and sexual differences with importance of anthropometric parameters, the present study is an attempt to study facial measurements and facial index

among different tribes residing in the same habitat geographical area, climatic environmental condition and socio economic status in Udaipur district. The five major tribes in Udaipur are Bheel, Damor, Garasia, Kathodi, Meena. These tribes are very easily recognized in reference to their demographic, life style, social, religions, cultures and their physical traits as well as many more features.

MATERIAL AND METHODS

This study was carried out on 500 tribal subjects aged between 21 to 50 years, in Department of Anatomy, R.N.T. Medical College & attached groups of hospitals, Udaipur, Rajasthan. All the study participants belong from Bheel (126), Damor (80), Garasia (99), Kathodi (46) and Meena (149) tribal communities of Udaipur district. After getting approval from institutional ethical committee, Institutional Research Board and other concerned authorities, all the tribal subjects were selected randomly, after explaining them about nature and purpose of the study. After obtaining their written consent, all eligible study participants were asked to sit on stool in a relaxed position, keeping the mouth closed and teeth in central occluded position and head in anatomical position. Following Anthropometric measurements were taken by using standard instruments to nearest 1mm.

1. **Morphological Facial Height** was measured in as the distance between nasion and gnathion. **Nasion** is the point on the nasal root intersected by mid sagittal plane. **Gnathion** is the lowest point on the lower margin of the lower jaw intersected by the mid-sagittal plane.

2. **Maximum Facial Breadth** is the distance between the two zygomatic prominences. **Zygion** is the most laterally placed point on the zygomatic arch.

3. **Morphological Facial Index** was calculated as: Morphological Facial Height / Facial Breadth $\times 100$.



Fig. 1: Facial Height (n-gn)



Fig. 2: Facial Breadth (zy-zy)

STATISTICAL ANALYSIS

All of the statistical analysis was done with the help of SPSS (Statistical Package for Social Sciences) version 21. One-Way

ANOVA test was applied for comparing groups.

RESULTS AND DISCUSSION

Table 1: Mean & SD of Various Facial Parameters (cm) among All Tribes

Parameters	Tribes	N	Mean	SD
Facial Breadth	Bheel	126	12.84	0.71
	Damore	80	12.76	0.53
	Garasia	99	12.13	0.54
	Kathodi	46	13.58	0.58
	Meena	149	12.28	0.68
Facial Height	Bheel	126	10.88	0.66
	Damore	80	10.86	0.53
	Garasia	99	10.59	0.56
	Kathodi	46	11.26	0.62
	Meena	149	10.84	0.69
Morphological Facial Index	Bheel	126	84.83	3.60
	Damore	80	85.11	2.96
	Garasia	99	87.41	4.28
	Kathodi	46	82.93	3.85
	Meena	149	88.33	4.39

Table 2: One-Way ANOVA test for Comparison of Various Facial Parameters among All Tribes

		Sum of Squares	df	Mean Square	'F' Value	'P' value
Facial Breadth	Between Groups	90.75	4	22.68	56.54	<0.001
	Within Groups	198.59	495	0.40		
	Total	289.34	499			
Morphological Facial Height	Between Groups	14.51	4	3.62	9.25	<0.001
	Within Groups	194.11	495	0.39		
	Total	208.62	499			
Morphological Facial Index	Between Groups	1640.65	4	410.16	26.59	<0.001
	Within Groups	7633.16	495	15.42		
	Total	9273.81	499			

In other previous studies **Morphological Facial Index** in Bheel, Damor, Garasia, Kathodi and Meena tribes were not analysed separately, as such in this present study, it is impossible to compare and discuss this parameter in detail. However, mean values of all selected tribes as shown in table 1 & statistically significant difference was confirmed by One-Way ANOVA test as shown in table 2.

Facial Index plays a vital role in determining racial differences in a particular geographical region. Among Bheel, Damor, Garasia, Kathodi and Meena tribes the mean Facial Breadth were 12.84 ± 0.71 , 12.76 ± 0.53 , 12.13 ± 0.54 , 13.58 ± 0.58 and 12.28 ± 0.68 , the mean morphological facial height 10.88 ± 0.66 , 10.86 ± 0.53 , 10.59 ± 0.56 , 11.26 ± 0.62 and 10.84 ± 0.69 , the mean morphological facial index 84.83 ± 3.60 , 85.11 ± 2.96 , 87.41 ± 4.28 , 82.93 ± 3.85 and 88.33 ± 4.39 were found respectively. (Table 1)

Table 2 shows comparison of various facial parameters among all tribes, in which the F-Ratio for maximum facial breadth, morphological facial height and morphological facial index were found 56.54, 9.25 and 26.59 respectively and these differences for all facial parameters among different tribes (Bheel, Damore, Garasiya, Kathodi, Meena) was found statistically significant at 0.01 level ($p = 0.000$).

CONCLUSION

Significant difference prevailing between all tribal communities might be due to effect of genetic difference in these tribes since they belong to different racial affinities from which these communities originally belong. The Bheel tribe belong to the Dravidian race, Meena tribe belong to proto-Dravidian, while the Garasia belong to Indo-European (deemed to be descendents of Rajputs by Bhil women). The Damor tribe trace their origin from the Rajputs which they still believed to have migrated from Gujarat and Kathodi belong to Maharastrian racial groups.

REFERENCES

- Mehta, P.C. (2004). Ethnographic Atlas of Indian Tribes, Discovery Publishing House, New Delhi, pp. 174-211.
- Guha BS. 1935. The Racial Affinities of People of India. Census, of India 1931, Vol. I Part IMB, Government Press, Shimla.
- Laxman Lal Salvi (2012). Major Tribes of Rajasthan and Their Economy. International Indexed & Referred Research Journal Vol. 1 (1); 2012.
- Farkas LG, Katic MJ, Forrest CR, et al. International anthropometric study of facial morphology in various ethnic groups/races. J Craniofac Surg 2005; 16:615-46.
- Imami-Mibodi MA, Mastri-Farahani R. Study of normal range of anatomical dimension of one day old newborn by Cephalometry. J Med Counc Islam Repub Iran 1996; 14: 1-8.
- Bhasin M. K. And Jain S. Biology of the Tribal Groups of Rajasthan, India: 6. A Comparative Study Of The Nutritional Status. Anthropologist. 2007; 9(4): 273-279.
- Mehta, P.C. (1998). Changing Face of Bhils, Shiva Publishres, Udaipur, pp. 8-9.
- Saini V, Meena K. R. Anthropometric Comparison of Facial Parameters between Male and Female of Rajasthan. International Journal of Health Sciences & Research. 2017; 7(9):96-99.
- Shah S, Khanal L, Koirala S, Bhattacharya S. The Study of Prosopic Index of 17-26 Year old Normal Population in Eastern Nepal: Ethnic And Gender Variation. Russian Open Medical Journal 2015; 4: E0201.
- Sharma K, Khanal K, Mansur D. Variations in Total Facial Index Among Students of Kathmandu University School of Medical Sciences. Nepal Med Coll J 2014; 16(2-5):173-176
- Kumar M, Lone MM. The Study of Facial Index among Haryanvi Adults. International Journal of Science and Research (IJSR), India. 2013; 2(9).
- Raji JM Raji, Garba S, Numan M.A. et al. Morphological Evaluation Of Head And Face Shapes In A North - Eastern Nigerian Population. Australian Journal of Basic and Applied Sciences. 2010; 4(8): 3338-3341.
- Jahanshahi M, Gopalipour MJ, Heidari K. The Effect of Ethnicity on Facial Anthropometry in Northern Iran. Singapore Med J. 2008; 49(11): 941
- Bhasin M. K. Genetics of Castes and Tribes of India: Somatomety. Int J Hum Genet. 2006; 6(4): 323-356.
- Pandey AK. Cephalo-Facial Variation among Onges. Anthropologist. (2006); 8(4): 245-249.
- Bhargava, I and Kher GA. Comparative anthropometric study of Bhils and Barelars of central India. J. Anat. Soc. India. 1961; 10:26-33.