

Anthropometric Comparison of Facial Parameters between Male and Female of Rajasthan

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ABSTRACT

Anthropometric measurements especially facial measurements are important for determining various face shapes. The present study was conducted in department of anatomy, NIMS medical college, Shobha Nagar Jaipur, on 140 adults from Rajasthan region comprising of 70 males and 70 females in different age groups 17-25 & 26-30 and 31-35 years. Two measurements, the morphological facial length, bi-zygomatic breadth were taken by using standard anthropometric instruments. From the study it was concluded that the facial index in male and female was 88.13 and 85.58 respectively in 17 to 25 years' age group, the mean facial index in male and female is 85.12 and 82.42 respectively in 26 to 30 years' age group, the mean facial index in male and female is 85.28 and 82.21 respectively in age group 31 to 35 years' age group. Data of this study will be useful to anthropologist, plastic surgeons, anatomists and forensic experts.

Keywords: anthropometry, facial index, mesoprosopic, euryprosopic, Rajasthan population

INTRODUCTION

Anthropometry is a science which deals with the measurement of human beings, whether living or dead of skeletal materials and constitutes a series of systematized measuring techniques of expressing quantitatively the form of the human body and skeleton ^[1] (Krishan and Kumar, 2007). It is a measurement of man, living or dead, and consists primarily in the measurement of the dimensions of the body ^[2] (Ashley Montagu, 1951). Geometrical variability not only helps to understand the variations in the bodily measurements in various populations but also make the data base available to help automate the process of various features with computer based animation technologies ^[3,4] (David JP, Tim V, 2010 and Miyasaka et al.,1995). Craniofacial anthropometrics have become an important tool for genetic counselors to

identify any dysmorphic syndromes ^[5] (Nagle et al., 2005). For assessment of variations in craniofacial morphology, the standards of anthropometric measurements should be established for a particular population ^[6] (Basciftel et al., 2004). A person with euryprosopic facial type favors' the nasal breathing modermorphic syndromes inherited characters ^[7] (Crupi P et al., 2007). The human facial contour has always been an interesting subject for anatomists, anthropologists, plastic surgeons and artists ^[8] (Manoharrao Save et al., 2012). The facial anthropometric measurement avails to describe the racial and sexual difference ^[9-10] (Heidari et al., 2006 and Jahanshahi et al., 2008). The Indian populations belong to the mesoprosopic facial index, which varies from hypereuryprosopic to hyperleptosopic index ^[11] (Bhasin,

2006). Accurate facial analysis is essential for diagnostic of genetic and acquired anomalies, for the study of normal and abnormal growth and for morphometric investigation [8] (Manoharrao Save et al., 2012). Anthropometric measurements especially facial measurements are important for determining various face shapes [12] (William P, Dyson et al., 1995). Climate adaptations and nutritional factors are found to be harmful to body shape and size [13] (Jasuja et al., 2011). Comparison of changes in facial index between parents, offspring and siblings can give a clue to genetic transmission of inherited characters [14] (Shetti et al., 2011).

MATERIALS & METHODS

The study was conducted at the department of anatomy, NIMS medical college, Jaipur. The material for study consisted of 140 participants (70 males and 70 female) with age group of 17-25 & 25-30 & 30-35 years of Rajasthan population. Students & peoples taken from NIMS medical college and near to university campus for study. The participants were informed about the nature of the study, its importance and the measurement process was explained to each subject.

All measurements were performed in the same way. The subject was asked to sit in a chair in relaxed position keeping the mouth closed and teeth in central occluded position and head in anatomical position. Measurements were performed during the period from 14.00-16.30 pm to eliminate discrepancies in relation to diurnal variation. All the measurements were carried out after careful palpation of the head for anatomical landmarks and measurements were taken to the nearest 1mm. all measurements were repeated three times & mean value of the measurements was taken for further analysis. A standard spreading caliper was

used for the measurement of facial parameters.

Morphological facial height (MHF): the distance between nasion (n) and gnathion (gn). It is measured by standard caliper with the fixed tip of the caliper was placed at the subject's gnathion and the movable part was moved and placed on the nasion.

Maximum facial breadth (MFB): the maximum breadth of face is the distance between the two zygomatic prominences (zy-zy). It is measured by spreading caliper with scale after palpation (by fingers) to locate the most lateral point of the zygomatic arch.

Total facial index (TFI): it is the ratio of morphological facial height and maximum facial breadth and can be calculated according to the formula:

TFI = (n-gn / zy-zy) x 100. The values of TFI were used to determine the incidence of certain facial types.

Classification of facial index-

Facial shape	Range of facial index (in cm.)	Type of face
Hypereuriprosopic	<79.9	Very broad face
Euriprosopic	80-84.9	Broad face
Mesoprosopic	85-89.9	Round face
Leptoprosopic	90-94.9	Long face
Hyperleptoprosopic	>95	Very long face

Statistical analysis

The data were recorded, tabulated & statistically analyzed using Microsoft office excel 2007 and statistical package for social science (SPSS) version 16. The statistical significance of sex differences in mean values of the measured parameter was examined by using an independent t-test.

RESULT

On the basis of two measurements the usual constants for various facial measurements like mean, standard deviation of male and female under the study are presented in table-1 & 2.

Table 1: distribution of facial parameters in different age group of male & female (in mm)

Parameters	Mean + standard deviation					
	Age group (17 to 25 yrs.)		Age group (26 to 30 yrs.)		Age group (31 to 35 yrs.)	
	Male	Female	Male	Female	Male	Female
Facial height	110.52+4.74	100.69+4.47	104.59+5.34	100.31+5.24	108.58+6.41	98.21+4.80
Facial width	125.57+4.78	118.11+3.40	122.78+4.76	121.73+2.71	127.26+3.21	121.96+3.86
Facial index	88.13+5.45	85.58+4.11	85.12+3.77	82.42+4.38	85.28+4.04	82.21+8.59

Table 2: distribution of facial index in males and females in different age group

Facial index	Age group 17 to 25 yrs.		Age group 26 to30 yrs.		Age group 31 to 35 yrs.		Total
	Male	Female	Male	Female	Male	Female	
Hypereuryprosopic	1	3	2	7	4	9	26
Euryprosopic	6	8	9	12	6	14	55
Mesoprosopic	12	11	11	5	12	1	52
Leptoprosopic	4	3	3	1	3	0	14
Hyperleptoprosopic	2	0	0	0	0	1	3
Total	25	25	25	25	25	25	150

DISCUSSION

In a study by Bhasin, ^[11] Indians showed dominant type face shape is Mesoprosopic. The mean value of facial index among Indians was 86.34. The study was in correlation with present study indicating that Mesoprosopic face shape is dominant type of face shape in Rajasthan population in the age group 17 to 25 years.

When our study was compared with Malaysian Indians a study by Ngeow & Aljunid (2009) ^[15] showed that facial index of males was 85.5 and in females it was 85.4 which showed to be Mesoprosopic. Present study showed slight higher value of facial index males and females (88.13 and 85.58) in comparison to above study.

In a study of native Fars and Turkman ethnic groups done by Jahanshahi et al., (2008) ^[10] the dominant type of face shape in both native Fars and Turkman females was Euryprosopic (37.7% and 51.7%, respectively). The dominant type of face shape in both native Fars and Turkman males was Mesoprosopic (44% and 38.4%, respectively). The study was in correlation with present study indicating dominant type of face in male is Mesoprosopic and in female is Euryprosopic in the 25 to 35 years of age group.

Similar results were obtained in a study done by Sapana Shah et al., (2012) ^[16] who found that the value of facial index 89.86 and 87.06 in Gujarat region and concluded that males have Mesoprosopic and females have Euryprosopic facial shape.

CONCLUSION

The primary aim of the study was to evaluate the comparison of facial anthropometric parameters between male and female in different age group 17-25 year, 25 to 30, 30 to 35 years of Rajasthan

population. A highly significant difference is found in between both the gender with a value being higher in males than females in the present study. Distribution according to face shape shows that in the age group of 17 to 25 the mesoprosopic is most common type in both males and females.

Than in the age group of 25 to 30 years & 31 to 35 years most common type of facial shape in males are mesoprosopic and common facial type in females are euryprosopic. This study is important in medical applications such as cosmetology and orthodontists, facio-maxillary surgeons, plastic surgeons, anatomists, physical anthropologist and forensic experts for various anthropological purposes.

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