



Comparison between Male and Female Facial Parameters an Anthropometric Study in Malwa Region

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ABSTRACT :

Anthropometric measurements of the face are very important for forensic laboratories to determine the sex of the available remains of the deceased. Present study was conducted in department of anatomy, index medical college, Indore M P, on 250 medical students 125 males and 125 females in age group 18-25 years. Two measurements, the morphological facial length and bi-zygomatic breadth were taken by using digital vernier caliper. The study conducted revealed many interesting facts which could be of great help in calculating various parameters. Data of this study will be useful for anthropologists, plastic surgeons, anatomists and forensic experts.

Keywords-anthropometry, facial index, mesoprosopic, euryprosopic,

Introduction –

Anthropometry is a science which deals with the measurement of human skeletal material, whether living or dead and constitutes a series of systematized measuring techniques of expressing quantitatively the form of the human body and skeleton (1) (krishan and kumar, 2007). The human facial contour has always been interesting subject for anatomist, anthropologist, plastic surgeons and artists (2) (Manoharrao Save et al., 2012). The facial anthropometric measurements were used to describe the racial and sexual difference (3-4) (Heidari et al., 2006 and jahanshahi et al., 2008). Accurate facial analysis is essential for diagnosis of genetic and acquired anomalies, for the study of normal and abnormal growth and morphometric investigation (2) (manoharrao save et al., 2012). Anthropometric measurements especially facial measurements are important for determining various shapes of the face (5) (William P. Dyson et al., 1995). Some climatic adaptation and nutritional factors are also reported to be harmful for body shape and size (6) (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 (7) (Shetti et al., 2011).

Material & methods :

The study was conducted in the department of anatomy, index medical college, indore. The material for study included 250 participants (125 males and 125 females) within the age ranging between 18 to 25 years. The participants were well 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 on a chair in relaxed position keeping the mouth closed and teeth in central occluded position and head in anatomical position.

All the measurements were carried out after careful palpation of the head for anatomical landmarks and measurements were taken to nearest 1mm. All measurements were repeated three times & mean of the measurements was taken for further analysis. A digital spreading caliper was used for all measurements.

Morphological facial height

Maximum Facial Height (MFH) The distance between nasion and gnathion was measured by digital vernier caliper with the fixed tip of the caliper placed at the subjects gnathion and the movable part was moved and placed on the nasion.

Maximum facial breadth (MFB) is the distance between the two zygomatic prominences (zy-zy). It is measured by digital caliper after palpation by finger to locate the most lateral point of the zygomatic arch.

Total facial index

(TFI) it is the ratio of maximum facial height and maximum facial breadth and can be calculated according to the formula mentioned below $TFI = (N - GN / ZY - ZY) \times 100$. 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
Euriprosopic	80-84.9	Broad face
Mesoprosopic	85-89.9	Round face
Leptoprosopic	90-94.9	Long face
Hyperleptoprosopic	≥ 95	Very long face

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

Parameters	Mean+standard deviation Age group(18-20) Male	female	Age group(21- 23yrs.) Male	Female	Age group(24- 25 yrs) male	Female
Facial height	112.50 \pm 4.52	102.50 \pm 3.42	110.80 \pm 4.50	98.46 \pm 1.95	111.57 \pm 5.22	99.56 \pm 2.00
Facial width	112.50 \pm 3.03	113.72 \pm 2.75	124.84 \pm 57.33	110.31 \pm 5.75	111.99 \pm 3.19	112.55 \pm 3.55
Facial index	100.11 \pm 5.63	90.23 \pm 4.58	88.76 \pm 12.15	89.41 \pm 3.53	98.71 \pm 3.37	88.53 \pm 2.90

Table-2 distribution of facial index in male and female in different age group

Facial index	Age group 18-20yrs.		Age group 21- 23 yrs.		Age group 24-25		Total
	male	Female	Male	female	male	Female	
Hypereuryprosop ic	No	No	02	No	no	No	02
Euryprosopic	No	06	No	02	no	01	09
Mesoprosopic	No	13	No	47	no	16	76
Leptoprosopic	12	19	15	06	no	01	53
Hyperleptoprosopic	44	05	22	08	30	01	110
Total	56	43	39	63	30	19	250

Statistical analysis :

The data were recorded, tabulated & statistically 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.

Discussion :

As indicated in table no. 1 the mean & standard deviation in males with regard to facial height shows minimal variation varying from 110 to 112. and in females the same variation is between 98 to 102 (approx.) the facial width in males shows a variation in SD and mean ranging between 111 to 124 which is significant and the maximum variation was found in the males was in the age range of 21—23 years. the variation in SD and mean with regard to females was observed to be ranging between 111 to 113 which is not so significant.

The facial index in males was observed to be ranging between 88 and 100 which is significant but at the same time when we see the facial index in females it shows a bare minimum variation between the three study age groups.

Based on our calculated facial index data we grouped the cases into various categories defined by Vaibhav Saini et al. in the year 2017.

The obtained results are tabulated in table no.2

As indicated hyperuryprosopic we have seen only two males and none of the male showed features of euryprosopic but 09(7.2%) females were recorded with these features. Mesoprosopic was noted only in females to a level of 60.8%. in leptoprosopic more or less same number was observed in males as well as females. hyperleptoprosopic was mainly dominated by males taking it to as high as 76.8%.but in females it was only 11.2%.

Comparing it with other studies in Rajasthan and Malaysia mesoprosopic shape dominated whereas in Indore Madhya Pradesh hyperleptoprosopic prevailed.

Comparing our study with turkey where males were mesoprosopic in our study males were in hyperleptoprosopic similar results were also reported from Gujrat also.

So we conclude that the facial index varies in different regions of India also.

CONCLUSION :

The present study was undertaken with the aim to compare the male and female measurements in different age groups.

The other aim was to formulate the standard anthropometric measurements with facial index to help the Forensic experts in assessing the sex of the remains of the deceased in different regions of our country .

In our study we found significant facial dimorphism in the individuals of Malwa region of Indore.

We found similarity in the facial index of females and males almost similar in hyperleptoprosopic.

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