

# The Study of Facial Index among Medical Students

Sushila Shekhawat<sup>1</sup>, Manish Dev Sharma<sup>2\*</sup>

<sup>1</sup>Senior Demonstrator, J.L.N. Medical College, Ajmer, Rajasthan, India.

<sup>2\*</sup>Senior Demonstrator, Bharatpur Medical College, Bharatpur, Rajasthan, India.

## ABSTRACT

**Background:** Craniofacial anthropometry, as an important part of anthropology and medicine, is used for the determination of the morphological characteristics of the head and face. Face shape depends on many factors, such as gender, race and ethnicity, climate, socio-economic, nutritional, and genetic factors.

**Material and Method:** The present study was conducted in Department of Anatomy, J.L.N. Medical College, Ajmer on medical students comprising of 100 males and 100 females aged 18 to 25. Two measurements, the morphological facial length, bizygomatic breadth were taken and compared.

**Results:** It was observed that the mean morphological facial length was 11.32 in males and 10.71. Bizygomatic breadth was 13.02 in males and 12.04 in females. The facial index (mean) was in males 88.73 and 86.61 in females.

**Conclusion:** Data of this study will be useful to anthropologist, plastic surgeons, anatomists and forensic experts.

**Keywords:** Anthropometry, Facial Height, Facial Breadth.

## \*Correspondence to:

**Dr. Manish Dev Sharma,**  
Senior Demonstrator,  
Bharatpur Medical College, Bharatpur, Rajasthan, India.

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## INTRODUCTION

Facial analysis is anthropologically useful to identify the racial, ethnic, and sexual differences. Anthropometry constitutes the techniques of expressing qualitatively the form of the body and the sexual dimorphism refers to phenotypic characteristics that differ between males and females of same species. The determination of facial parameters is of great importance for the evaluation of facial trauma, congenital and traumatic deformities and easier identification of certain congenital malformation.<sup>1-3</sup>

Types of faces, as determined by craniofacial measurements, were divided into five international anatomical categories: hypereuryprosopic, euryprosopic, mesoprosopic, leptoprosopic and hyperleptoprosopic.<sup>4</sup> For evaluation of variations in craniofacial morphology, standards of anthropometric measurements should be established for particular population. A person with euryprosopic facial type favours the nasal breathing mode. Facial form may be an important factor in increasing susceptibility to obstructive sleep apnea. The human facial contour has always been an interesting subject for anatomists, anthropologists, plastic surgeons and artists.

## MATERIALS AND METHODS

This study was conducted on 100 persons (50 males and 50 females), aged 18-25 years. Measurements were performed at the Department of Anatomy, J.L.N. Medical College; Ajmer.

Written consent was taken from each subject. Subjects were asked to sit in a relaxed state and straight and to look forward. The morphological facial height was measured with digital slide

caliper with scale from nasion(n) to gnathion(gn). Face width was measured as the straight distance between the right and left zygion (zyzy). The anatomical landmarks were defined as follows.

**Nasion (n):** The point on the root of the nose where the midsagittal plane cuts the nasofrontal sutures.

**Gnathion (gn):** The lowest point of mandible where the lower margin of the lower jaw is intersected by the midsagittal plane.

**Zygion (zy):** It is the most laterally placed point on the zygomatic arch.

**Prosopic index (PI) = (Facial height/Facial width) × 100.**

**Total facial index (Martin –Seller scale)\***

Face shape Range of facial (prosopic) index (FI)

**Male Female: Range of prosopic index**

- (1) Hypereuroprosopic (very broad face) <79.9
- (2) Europrosopic (broadface) 80–84.9
- (3) Mesoprosopic(roundface) 85–89.9
- (4) Leptoprosopic (longface) 90–94.
- (5) Hyperleptoprosopic (verylongface) >95

## RESULTS AND DISCUSSION

The comparison of the changes in facial index between parents, offspring, and sibling can give the clue to genetic transmission of inherited characters. Human facial contour has always been an interesting subject for anatomists, anthropologists, plastic surgeons, and artists and also the identification of an individual's race is an essential component in forensic identification and reconstructive surgery.

This present study showed that the range of morphological facial height for female students was 10.71 and in males was 11.32. The range of morphological facial width was 12.04 and 13.02 for females and males, respectively. In general, all female values are lesser than those of males.

Ngeow and Aljunid<sup>5</sup> carried out a similar study on young adult Malaysian Malays and found that width of the face was greater (male 121.0–153.0, female 123.0–142.0mm) than the height of the face (male 106.3– 134.7, female 93.9–128.9mm) which was similar to the present study.

Eliakim - Ikechukwu et al. (2012)<sup>6</sup>, Omotoso et al. (2011)<sup>7</sup>, and

Osunwoke et al (2011)<sup>8</sup> had carried out studies on Nigerian population on sexual dimorphism and significant difference was found between male and female facial indexes; this may be due to the male hormone testosterone which causes the changes in the shape of the face between the two sexes.

The study conducted in the Turkman ethnic group of northern Iran showed that the dominant facial phenotype in males was mesoprosopic (38.4%), and for females, euryprosopic (51.7%). For the Far ethnic group of northern Iran it was shown that the dominant facial phenotype in males was mesoprosopic (44%), and euryprosopic (37.7%) for females.<sup>9,10</sup>

**Table 1: Facial measurements**

PARAMETERS	SEX	MEAN	SD
Morphological Facial Length	Male	11.32	0.79
	Female	10.71	0.56
Bizygomatic Breadth	Male	13.02	0.68
	Female	12.04	0.83
Facial Index	Male	88.73	7.98
	Female	86.61	6.08

**Table 2: showing classification of subjects based on facial index**

FACE SHAPE	FREQUENCY	
	Males	Females
Hypereuriprosopic	11	25
Euriprosopic	24	19
Mesoprosopic	50	35
Leptoprosopic	12	19
Hyperleptoprosopic	3	2

**CONCLUSION**

From above study it was concluded that the dominant type of face shape in males was mesoprosopic (50 subjects) followed by euriprosopic (24 subjects), leptoprosopic (12 subjects), Hypereuriprosopic (11 subjects) & Hyperleptoprosopic (3 subjects). In females the dominant type of face was also mesoprosopic (35 subjects) followed by Hypereuriprosopic (25 subjects), euriprosopic (19 subjects), leptoprosopic (19 subjects) and hyperleptoprosopic (3 subjects) so the data of this study will be very useful to anthropologist, anatomists plastic surgeons forensic examiner.

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