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RESEARCH ARTICLE

CLINICAL IMPLICATIONS OF ANTHROPOMETRIC STUDY OF FACIAL INDEX IN FIRST YEAR MEDICAL STUDENTS OF SKIMS MEDICAL COLLEGE

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Abstract

Introduction: The structure of face is dependent on various attributes such as gender, ethnic background, race, climate, socioeconomic status and genetics. The facial index is the ratio of facial height (distance between Nasion and Gnathion) and maximum facial breadth (distance between two zygomatic prominences from Right zygionion to Left zygionion).

Methods: A total of one hundred and twelve (112) First year medical students studying at Sheri Kashmir Institute of Medical Sciences Bemina Srinagar, Kashmir were chosen as the subjects for the present study. The study was carried out at Department of Anatomy, Sheri Kashmir Institute of Medical Sciences Bemina Srinagar Kashmir.

Results: The conducted research provides important information concerning the total facial index (TFI), face shape, and facial phenotype in the adult population. The mean values of the morphological facial height and facial breadth in males were, respectively 150mm and 155.5mm. while in females, respectively were: 142.5 mm and 170.0mm.

Conclusion: Keeping in view the results obtained in this study we concluded that the dominant facial phenotype in the medical students of sheri Kashmir Institute of medical sciences is Euryproscopic and Leptoproscopic in male students and in male students. The results obtained may be harnessed as a reference for facial analysis that will be further useful in Orthodontics, anthropological research, forensics, genetic research and reconstructive surgery.

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Introduction:-

The structure of face is dependent on various attributes such as gender, ethnic background, race, climate, socioeconomic status and genetics.¹ The facial index is the ratio of facial height (distance between Nasion and Gnathion) and maximum facial breadth (distance between two zygomatic prominences from Right zygionion to Left zygionion) multiplied by 100.² Human beings differ in their structure and body dimensions. The human facial

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structure has always been an engrossing and fascinating topic for Anatomists, Anthropologists, Plastic surgeons and Orthodontists.²Types of face are grouped into five Subgroups: hypereuryprosopic, euryprosopic, mesoprosopic, leptoprosopic and hyperleptoprosopic.³Comparison of changes in facial index between parents, offspring and siblings can give a clue to genetic transmission of inherited characters⁴. Accurate facial analysis is essential for diagnosis of genetic and acquired anomalies, for the study of normal and abnormal growth and for morphometric investigation⁵.

Methods:-

A total of one hundred and twelve (112) First Year medical students studying at Sheri Kashmir Institute of Medical Sciences Bemina, Srinagar, Kashmir were chosen as the subjects for the present study. The study was carried out at Department of Anatomy, Sheri Kashmir Institute of Medical Sciences Bemina Srinagar Kashmir after due Consent from HOD Anatomy. A fixed time 10:00 am to 1:00 pm was selected for the physical measurement to eliminate the discrepancies due to diurnal variation. The measurements were done with the help of a spreading caliper. Students were informed about the study, its benefits, and informed consent was taken. The information regarding the exclusion criteria was collected by visual observation. Students with history of facial trauma, craniofacial abnormalities (congenital or acquired) were excluded from the study. Students were instructed to sit in a relaxed manner, straight and looking forward in a natural head position. Landmarks used in measuring of the parameters were nasion- the midpoint of the nasofrontal suture; gnathion- in the midline, the lowest point on the lower border of the chin and zygomatic prominences- the most lateral point on the zygomatic arch.

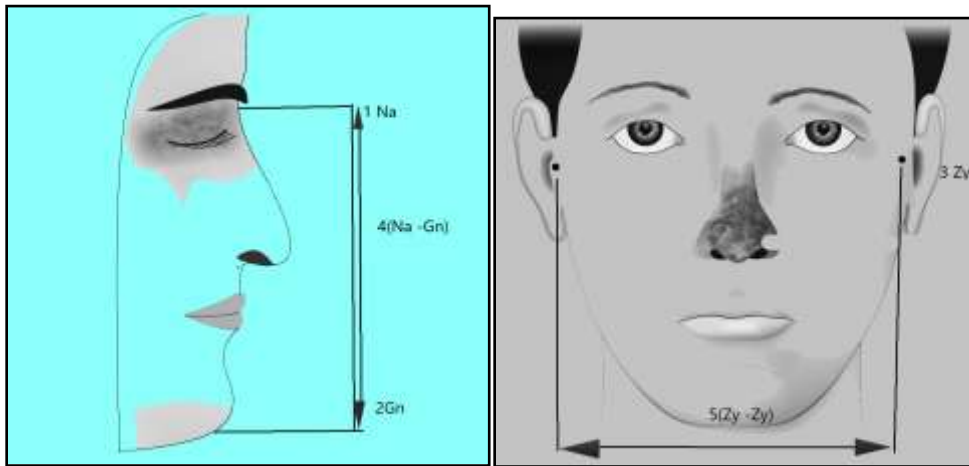


Figure 1:-

Figure 2:-

Figure 1 & 2 depicts (a) How facial length and bizygomatic breadth were measured 1: nasion (Na) 2: gnathion (Gn) 3: zygionion (Zy) 4: Total facial height (Na-Gn) 5: breadth of bizygomatic arch (Zy-Zy). The greatest breadth of bizygomatic arch is seen near the ear. Spreading caliper was placed about 2cm distant from tragus by gripping its tips between thumb and first finger. Then tip was positioned slowly over the zygomatic arch in such a way that the thumb touched the upper margin and the first finger the lower margin of the zygomatic bone. The joint of the caliper was placed in the mid-sagittal plane of the head. It was made sure that measurements of related individuals and persons with physical deformities are excluded. The methodology for measurements was emulated from Singh and Bhasin (1968)⁶. Figure 3 depicts the photographs taken of students which participated in the study.



Frontal View Profile View



Frontal view

Profile view

Figure 3:-

Statistics

Data collected from the present study was subjected to statistical computation and the results have been depicted in table II and III and IV.

Results:-

The conducted research provides important information concerning the total facial index (TFI), face shape, and facial phenotype in the Study Group. The mean values of the morphological facial height and facial breadth in males were, respectively 150mm and 155.5mm (Table 2), while in females, respectively were: 142.5 mm and 170.0mm (Table 3). It has been seen that males in the studied sample have significantly higher morphological facial height where as facial breadth is more in females. The predominant type of facial phenotype in the studied population, according to the value of total facial index was Leptoproscopic in males which was 59.32% and Euryproscopic 33.96% in females (Table 4).

Table 1:- Classification of human face based on facial index.

FACIAL INDEX (RANGE)	SHAPE OF FACE
< 79.9	Hyper euryproscopic (very broad face)
80 – 84.9	Euryproscopic (broad face)
85-89.9	Mesoproscopic (round face)
90-94.9	Leptoproscopic (long face)
>95	Hyperleptoproscopic (very long face)

Table 2:- Descriptive statistics of measurement for male students

PARAMETERS	SAMPLE SIZE	MINIMUM	MAXIMUM	MEAN
Facial height-(mm)	59	130	170	150
Facial width-(mm)	59	140	171	155.5

Table 3:- Descriptive statistics of measurement for female students.

Parameters	SAMPLE SIZE	MINIMUM	MAXIMUM	MEAN
Facial height-(mm)	53	125	160	142.5
Facial width-(mm)	53	155	185	170

Table 4:- Classification of students based on facial index.

Shape of Face	FREQUENCY		PERCENTAGE (%)	
	MALE	FEMALE	MALE	FEMALE
Hypereuryproscopic	0	8	0	15.09
Euryproscopic	1	18	1.69	33.96
Mesoproscopic	20	11	33.89	20.75
Leptoproscopic	35	9	59.32	16.98
Hyperleptoproscopic	3	7	5.08	13.20

Table 5:- Total Facial index of First Year Medical Students.

Sex (n)	Facial index	P value
Females	83.82	≤0.05
Males	96.46	≤0.05

Discussion:-

In our Study, 59.32% of male students have leptoproscopic facial structure which is in accordance to the study done by Kamble N B and Kamble D.⁷ In our study 33.89% of male students have a mesoproscopic facial shape which is in accordance to the study done by Bhasin MK.⁸ 33.96% of female students have Euryproscopic facial shape which is in accordance to the study performed by Singla M⁹ in which 39.53% of Jat Sikhs had Euryproscopic facial structure. Facial height values obtained in our study (150 ± 5.89 mm in males and $142.5 \text{ mm} \pm 6.45$, females) were lower than the values obtained in the population of northeastern part of Nigeria ($141.15 \text{ mm} \pm 7.5$, males and $141.29 \text{ mm} \pm 7.6$, females)¹⁰, the population of Sri Lanka ($140.2 \text{ mm} \pm 10.3$, males and $138.8 \text{ mm} \pm 12.9$, females).¹¹ TFI values obtained in our study were higher in both males and females than the values obtained in the Japanese adult females conducted by Hossain et al.¹² The mean morphological facial height observed in our study ($146.25 \text{ mm} \pm 6.398$) was higher than the value obtained in a survey conducted among West Africans (108.4 mm).¹³ In a study by Shetti VR et al.¹⁴, 100 (66 males & 34 females) medical students of Kasturba Medical College and Melal Mani Medical College, Manipal were measured for facial index. The mean facial index for males and females were 87.19 and 86.75 respectively.¹⁴ In comparison with table 3 and table 4 both measurements were higher in males than in females. With the help of above statistics, the sex as well as race of the deceased can be determined accurately and this knowledge can be of immense importance.

Conclusion:-

Keeping in view the results obtained in this study we concluded that the dominant facial phenotype in the medical students of Sheri Kashmir Institute of medical sciences is Leptoproscopic in males and Euryproscopic in females. The data obtained in our study may be harnessed as a reference for facial analysis that will be further useful in Orthodontics, anthropological research, forensics, genetic research and reconstructive surgery.

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