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Study to identify prosopic (Facial) Index between male and female of Central India with Its clinical Importance.

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Abstract:

Background: Since craniofacial morphology develops differently across racial and ethnic lines, the Facial (Proscopic) index is a useful anthropological parameter for classifying human populations. **Aim:** The aim of the present study was to identify prosopic (Facial) Index between male and female of Central India with Its clinical Importance. **Materials & methods:** A random sample of 400 students (200 males and 200 females) between the ages of 18 and 25 was taken after first obtaining approval from the ethical committee of the institution and then obtaining the participants' informed consent to take part in the study. The participants were given full disclosure regarding the nature of the study. The examination of these students did not take place until after they had provided their informed agreement to take part in the research. Everyone who agreed to take part in the study was in generally good health, and not a single one of them had ever previously undergone plastic or reconstructive surgery to treat facial deformities or injuries in the past. **Results:** Using Banister's categorization system, the study population is broken down into its several face phenotypes. The total facial index of an individual is used to determine this face phenotype's characteristics (Table 3). According to the figures in the table, mesoprosopic faces are the most prevalent in both genders, accounting for 47% and 44.5% of the population, respectively. Mesoprosopic faces also account for the majority of the population. After this comes the Europrosopic faces, then the Hypereuprosopic faces, and finally the Leptoprosopic faces. On the other hand, people who have hyperleptoprosopic vision make up a relatively small percentage of the population. **Conclusion:** This study could be a useful starting point for researchers who are interested in learning more about the people who reside in northern India because it provides demographic information about those people.

Introduction:

All of the individuals who are now residing on Earth are considered to be members of the species Homo sapiens. Even monozygotic twins will behave and look slightly different due to environmental factors, which may be the origin of these variances. These differences may be caused by the fact that monozygotic twins have two sets of genes. It's possible that these

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distinctions are what's causing the inequalities. From the moment of conception until the time of death, these characteristics are vulnerable to change and development as a result of a wide variety of circumstances, including those that are related to the environment, the area, biology, race, gender, and age [1-3].

An individual's gender, body type, and overall morphology are all examples of anthropometric attributes. Another example of an anthropometric feature is facial characteristics. Morphology is the study of an individual's outward appearance in its whole. These anthropometric traits are all markers of the interior structure and tissue components of a person, which are in turn determined by both the environment in which a person lives and the genetic inheritance that they have received. The use of anthropometric elements could be of use when attempting to define the physical characteristics of a person. Accurate measurements of the whole face index are accorded a substantial amount of weight in a variety of different disciplines of research, including the study of human development and demographic diversity, cosmetic surgery, forensic science, plastic surgery, and dentistry, amongst others. In recent years, a significant number of individuals who work in the field of medicine have brought attention to the fact that it is vitally important to have a face that is proportionate to the rest of the body. With the intention of supporting any and all medical subspecialties that have an interest in facial anatomy and physiology, If we live long enough, there is a good chance that the fundamental structure of our faces will change in some way as we become older. It is natural for the density of each of the 14 bones that comprise the face to decrease with age, just as it is normal for the density of the bones in the rest of the body to decline [6]. This is a perfectly normal procedure that takes place all throughout the body. Take into mind the fact that the facial bones, which serve as the framework for the face, are what make up the structure of your face [4]. When these bones resorb and become thinner, they are unable to provide as much support for the components of the face that are more visible [7]. [Note: Utilizing total facial index measures can be advantageous to the study of human development and demographic variance, in addition to the fields of cosmetic surgery, forensic science, plastic surgery, and dentistry [8]. These other areas can also profit from the utilisation of total face index measurements that are performed in dentistry. [9] When contemplating facial cosmetic surgery, a large number of different surgeons have emphasized how important it is to examine the face "in proportion" in order to arrive at an educated decision. This is so that the patient can make an educated choice about whether or not to proceed with the procedure. It is needed that every branch of medicine that is interested in improving the aesthetics of the face take measurements of the face in order to quantify the changes that are intended to be made to the face. This is the case even if the goal is just to improve the overall appearance of the face. This is due to the fact that it is essential to enhancing the natural beauty of the face.

Kabuki syndrome, Angel face syndrome, Marfan's syndrome, Noonan syndrome-me, and Dubowitz syndrome are some examples of diseases or abnormalities that can be inherited or present at birth and have the potential to change the facial index [11]. In addition, Noonan syndrome-me and Dubowitz syndrome are also examples of conditions that can affect the nose.

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Other instances of disorders or abnormalities include the Kabuki syndrome, Angel face syndrome, Marfan's syndrome, Noonan syndrome, and Dubowitz syndrome [11]. A number of acquired diseases, such as Bell's palsy and Sjogren's disease, as well as facial traumas that generate asymmetry, are also capable of changing the index of the face [12]. In addition to the circumstances that have already been outlined, these additional conditions are also possible.

Since craniofacial morphology develops differently across racial and ethnic lines, the Facial (Proscopic) index is a useful anthropological parameter for classifying human populations, therefore the aim of the present study was to identify prosopic (Facial) Index between male and female of Central India with Its clinical Importance.

Materials & methods:

A random sample of 400 students (200 males and 200 females) between the ages of 18 and 25 was taken after first obtaining approval from the ethical committee of the institution and then obtaining the participants' informed consent to take part in the study. The participants were given full disclosure regarding the nature of the study. The examination of these students did not take place until after they had provided their informed agreement to take part in the research. Everyone who agreed to take part in the study was in generally good health, and not a single one of them had ever previously undergone plastic or reconstructive surgery to treat facial deformities or injuries in the past. The objective of the study was to investigate the aftereffects of surgical procedures on participants who had previously been subjected to similar treatments. In addition, not a single one of them has ever shown the smallest bit of interest in contributing to the study in any way, shape, or form.

This study employs the approach suggested by Hooten [16] and makes use of the data gathered from it in order to calculate the total face index for each participant. Specifically, this index is based on the subject's profile photo. Before beginning the experiment, the participants were given very detailed instructions that required them to ensure that they were seated in a relaxed position, with their lips closed, and their teeth in a centrally occluded position. Additionally, they were instructed to ensure that their eyes were closed throughout the duration of the experiment. They were also told to ensure that their eyes remained closed for the entirety of the treatment. It was expected that this would be finished in advance of the start of the trial. After initially palpating the skull to establish anatomical landmarks, all of the measures were obtained with an accuracy of one millimeter. This was accomplished before taking any of the measurements. This was finished before any of the measurements were considered or taken into account.

During the process of determining the height of the face from the Nasion to the Menton, both a sliding caliper and a spreading caliper were utilized as measuring instruments. These calipers were utilized in the process of determining the length of the journey from the Nasion to the Menton. It was necessary to make use of the sliding caliper in order to gain an accurate measurement of the height of the face from the Nasion to the Menton. This was done in order to obtain accurate information regarding the angle. An accurate measurement of the distance between the Zygion on each side of the face was achieved by using the spreading caliper.

Statistical analysis:

The results of a measurement-based computation that was done to determine constants for a variety of facial measurements in both males and girls. The Mean, Standard Deviation, and Z-value for each measurement are all included in these results.

Results:

The average height of the male and female face is 11.12 centimeters, while the average width of the male face is 12.9 centimeters, and the average width of the female face is 12.1 centimeters. When comparing the two distinct approaches to calculating facial symmetry, there was a distinction that could be considered statistically significant ($p < 0.001$) (Facial height and Facial width). There is a facial index difference that is statistically significant between males and females, with males having a mean of 86.4 and girls having a mean of 85.1. This difference is since males have larger faces than females.

Table 1: Distribution of gender facial parameters and overall facial index

Parameters and Index	**Mean (in cm)**		**Standard deviation**		**Z-value**	**p-value**
	Male (n=200)	Female (n=200)	Male (n=200)	Female (n=200)		
Facial height	11.12	9.9	0.982	0.613	10.99	**0.0001**
Facial width	12.9	12.1	1.2	0.9	9.74	**0.0001**
Facial index	86.4	85.1	5.1	6.1	2.32	**0.012**

Using Banister's categorization system, the study population is broken down into its several face phenotypes. The total facial index of an individual is used to determine this face phenotype's characteristics. According to the figures in the table, mesoprosopic faces are the most prevalent in both genders, accounting for 47% and 44.5% of the population, respectively. Mesoprosopic faces also account for the majority of the population. After this comes the Europrosopic faces, then the Hypereuprosopic faces, and finally the Leptoprosopic faces. On the other hand, people who have hyperleptoprosopic vision make up a relatively small percentage of the population.

Table 2: Differences between genders in the distribution of facial indices

Gender	Male (n=200)	Female (n=200)	Total
Hypereuriprosopic	21	29	50
Euriprosopic	51	67	118
Mesoprosopic	97	87	184
Leptoprosopic	21	11	32
Hyperleprosopic	10	6	16

Discussion:

Craniofacial anthropometry is a method that is used to determine the morphological qualities of the head and face, and it gets its name from the combination of the words cranio and facial. Craniofacial anthropometry is a technique that was developed in the 1960s. Many different factors, such as a person's gender, race and ethnicity, environment, degree of socioeconomic status, level of education, the foods they eat, and their genetics, can all influence the shape of their face. These are just some of the factors that can play a role. The facial parameters are used for evaluation in order to assist in the diagnosis of a wide variety of congenital malformations and injuries to the face, as well as congenital and traumatic deformities of the face. In addition, the facial parameters are utilized in order to assist in the treatment of congenital and traumatic deformities of the face. In addition, anomalies of the face can be evaluated using the parameters of the face. The information that was gathered can be use in reconstructive face surgery, as well as in the fields of anthropology and forensic medicine, where it can be used to determine racial and sexual distinctions. In addition, the information can be used in reconstructive face surgery. In addition, the data can be put to use in surgical procedures that correct facial deformities.

Previous research has demonstrated that the mean value of the whole face index differs greatly between human populations that can be differentiated by race and ethnicity. In this particular study, the average total facial index that was observed was higher than the one that was noticed in the central population. This was the case since the study was conducted in a more rural area. The TFI numbers for Croatia come in at 80.08, however the region of Croatia known as southern Dalmatia has a FI rating of 93.3 [13]. The total FI value for the population of Croatia is 63.07, whereas the FI value for the population of Syria is 83.12 [14]. The TFI values that were obtained in our study were higher in both males and females when compared to those that were obtained in the following populations: the Onge population of India [15], which had 77.98 males and 75.29 females [16]; the population of Malaysia, which had 85.72 males and 87.71 females [17]; the population of India, which had 87.19 males [18].

The current study found that the mean value of the total facial index of both sexes was higher than that obtained in a previous study that was conducted among adult Hungarians in

Vojvodina (Serbia) and found that the phenotype with the highest incidence was mesoprosopic (mean total facial index = 87.9; highest incidence = mesoprosopic) [19]. This finding contradicts the findings of a previous study that was conducted among adult Hungarians in The mesoprosopic phenotype was determined in the prior investigation [20]. According to the value of the total facial index, the leptoprosopic facial phenotype was the one that occurred the most frequently in our research. This study is in line with the findings of Pavlica et al., [20] who carried out research on Montenegrins in the Serbian province of Vojvodina and discovered that leptoprosopic was the most common facial phenotype in that region [19,20].

Craniofacial measurements were collected from members of the Lithuanian male and female populations for the aim of a study that was conducted by Nagle and colleagues [21]. Their investigation discovered that the mean value of the morphological facial height of male subjects was 12.48 ± 0.5, which was a higher value than the one we found in our research due to the fact that our subjects were younger (Table 1). In addition to this, the mean maximum face breadth of girls in Latvia was measured at 11.8 centimetres 0.65, which was a greater figure than the one that we discovered through our research (Table 1).

A study found that the Turkman ethnic group that lives in northern Iran has a predominant facial phenotype that is mesoprosopic (38.4%) in males and euryprosopic (51.7%) in females. Mesoprosopic individuals make up 38.4% of the population of the Turkman ethnic group. The mesoprosopic facial phenotype is more prevalent in male members of the Far ethnic group who live in the north of Iran, while the euryprosopic facial phenotype is more common in female members of this group (37.7%) [18].

When studying anthropometric characteristics of the head and face among adult populations of northwest Baka, a study [19] discovered that the prevalence of euryprosopic, mesoprosopic, and leptoprosopic facial phenotypes were equivalent in this population. This was found when they compared the three phenotypes to each other (Serbs, Montenegrins, and Hungarians). After doing research on the anthropometric characteristics of the head and face in adult populations living in the northwest of Baka, they reached this understanding as a result of their findings. An analysis of the anthropological characteristics of adult Poles residing in northern Banat (which was a part of Yugoslavia in the past and is now part of present-day Serbia) revealed that the euryprosopic phenotype was the most prevalent face shape among members of this population [22]. Some other studies also observed the similar findings [23-25].

Conclusion:

This research is significant for the medical field of cosmetology, as well as orthodontists, facio-maxillary surgeons, plastic surgeons, anatomists, physical anthropologists, and forensic experts, all of whom will find the data beneficial. The field of cosmetology is a great illustration of a significant medical application. The industry of cosmetology is an excellent illustration of this type of application. This study could be a useful starting point for researchers who are interested in learning more about the people who reside in northern India because it provides demographic information about those people.

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Conflict of interest:

None declared.

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