



Original article

Variation in Facial index of Gujarati Males - A Photometric study

Uttekar Kanan^{1*}, Achleshwar Gandotra², Apurva Desai³, Rashida Andani⁴

¹Assistant Professor, ²Professor, Department of Anatomy, Surat Municipal Institute of Medical Education and Research, Umarwada, Near Sahara Darwaja, Surat, Gujarat, India.

³Professor and Head, Department of Computer science, VNSGU, Surat India.

⁴Associate Professor, Department of Anatomy, Gujarat Cancer Research, Ahmedabad, Gujarat, India.

ABSTRACT

Facial anthropometry has its well known implications in fields like forensic science and reconstructive surgery. Facial index and face type provides an indication about the races and individuality. The present study aimed to examine Facial Index in Gujarati Males and to find out the distribution of their face type. Presence of the morphometric variations in the faces makes it necessary to have baseline data for reconstruction and forensic science. Mean facial index of Gujarati Male was 81.7 whereas dominant face type was Euriprosopic (42.96%) and rare type of face was Leptoprosopic (3.64%). We found significant variation in the face type in adult males of Gujarat.

KEYWORDS: Facial Index, Gujarati Males, Photometric Study.

INTRODUCTION

Intra and inter population variation in different Morphometric characters have long been interest of anthropologist [1]. Measurements and evaluation of human body is done by physical anthropometry [2,3]. Anthropometric studies have been conducted by various scientists on different age, gender, racial groups in certain geological zones[4]. Cephalometry is one of the important branches of anthropometry in which dimensions of head and face are measured. Cephalometric analysis are useful in forensic medicine, Plastic surgery, Oral surgery and diagnostic comparisons between patient and normal populations [2]. Consistent quality photographs are always important for photometric study. Photographic

documentation used in the present study is the most convenient and helpful method for facial analysis [5, 6]. Photographic documentation is easy, subject friendly and reduces human error.

Present study has been conducted in Gujarati population to study morphometric variations in male faces. The aim of the study is to investigate morphometric facial type and their predominance in Gujarati Male. Data is available about face type and Facial index of Santhals of West Bengal [1] Iran Sistani and Baluchi females [7], Turkman and Fars males and females [8, 11]. But no data is available for Gujarati Males. Facial index can be a very important clue to identify the unknown identity of the person. Such data is useful in

forensic science, evolution, comparative study and reconstructive surgeries.

MATERIALS AND METHODS:

Present study was conducted in various regions of Gujarat, India. The population of study were adult males between the age group of 18 to 25 years residing in Gujarat. The study has been approved by the ethical committee of Surat Municipal Institute of Medical Education and Research. Consent was obtained from individuals after explaining the procedure to them. All males and their forefathers were belonging to Gujarat and they were all pure breeds. Selection criteria included pleasing face with no craniofacial abnormality. None of individual undergone for plastic, maxillofacial or reconstructive surgery. Details about individuals, origin of parents, grandparents were collected.

Frontal Photographic documentation was done with the help of 10 mega pixel digital camera. Tripod was used to adjust the height of individuals in Frankfurt's horizontal plane. A round was marked on the floor in which each subject stood. Each documentation was taken in normal day light. Before taking every document the operators ensured that all the desired landmark were clearly visible. Photographs were subjected to soft tissue anthropometric software system designed in MATLAB Version7. Magnification of photograph was life size. Photographs were analysed by one

observer to prevent inter observer error. All soft tissue landmarks were reproduced on the photograph using software. The analysed data were taken on Microsoft excel file. The collected data was analysed using SPSS version 10.

Facial measurements (Fig 1)

Facial Length – It is distance between Nasion (n) to Menton (mn)

Face Width – It is distance between Zygoin (zy) of Right and Left side.

Facial Index (Prosopic Index)- Face length (n-mn)/face width (zy-zy) X 100

The above index was determined based on international anatomical descriptions (4)

Based on the above index the different types of face were categorized according to Banister classification[2] (Fig 2).

- Hypereuriprosopic means Facial index is lesser than or equal to 79.9
- Euriprosopic means facial index is between 80 to 84.9
- Mesoprosopic means facial index is between 85 to 89.9
- Leptoprosopic means facial index is between 90 to 95
- Hyperleptoprosopic means facial index is more than 95

Fig 1: Showing Landmark Nasion, Zygoin (Right & Left), Menton

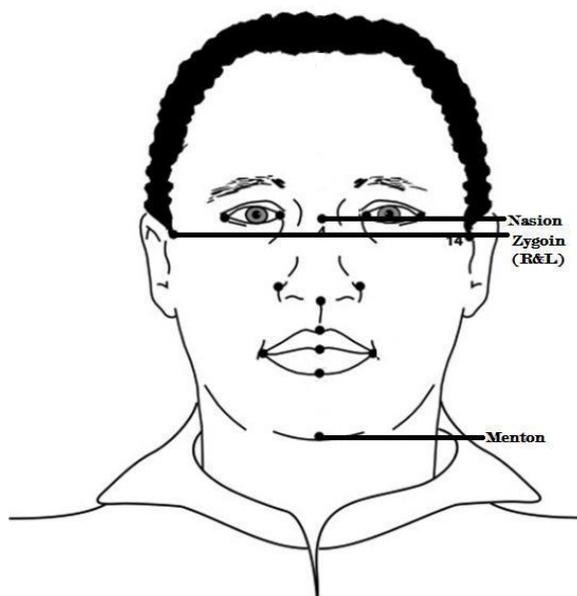


Fig 2: Photographs showing various Face type in Gujarati Male.



Hypereuriprosopic Gujarati Male



Euriprosopic Gujarati Male



Mesoprosopic Gujarati Male



Leptoprosopic Gujarati Male

RESULTS

The study results shows that the mean and standard deviation of Facial index in Gujarati males was 81.7 (Table 1). Minimum facial index was 80 and maximum was 87.5. Standard deviation was 4.2.

The dominant type of male face was Euriprosopic (42.96%) and rare type of face was Leptoprosopic (3.64%) Hyperleptoprosopic type of faces was not found in present study. (Table 2)

Table 1: Mean, Standard Deviation, Maximum and Minimum values for Facial Index

Variable	Mean	Standard Deviation	Maximum	Minimum
Facial Index	81.7	4.2	87.5	80

Table 2: Distribution of Face type in Gujarati Males.

Type of Face	Hypereuriprosopic	Euriprosopic	Mesoprosopic	Leptoprosopic	Hyperleptoprosopic
Gujarati Males	35.10%	42.96%	18.20%	3.64%	0.0%

DISCUSSION:

The facial dimensions are expressed by facial index which is ratio of face length to face width. Present study revealed that mean facial index of Gujarati males was 81.7. Facial index of Northeast Iran's Fars and Turkman males was 71.9 and 78.15 [8] respectively which is lower than that of Gujarati males. Facial index of Sistani and Baluchi males of Zahedan was 86.7 and 85.5. Which is considerably higher than our findings [9]. Mean facial index of Turkman was 80.9 and Fars was 72.9 in study of Golipour [11]. Their findings were higher than ours. Facial indexes of Malaysian males were 85.7 and Indian males were 87.1 which is relatively higher. The above result States that there is variation in facial index across all populations[12].

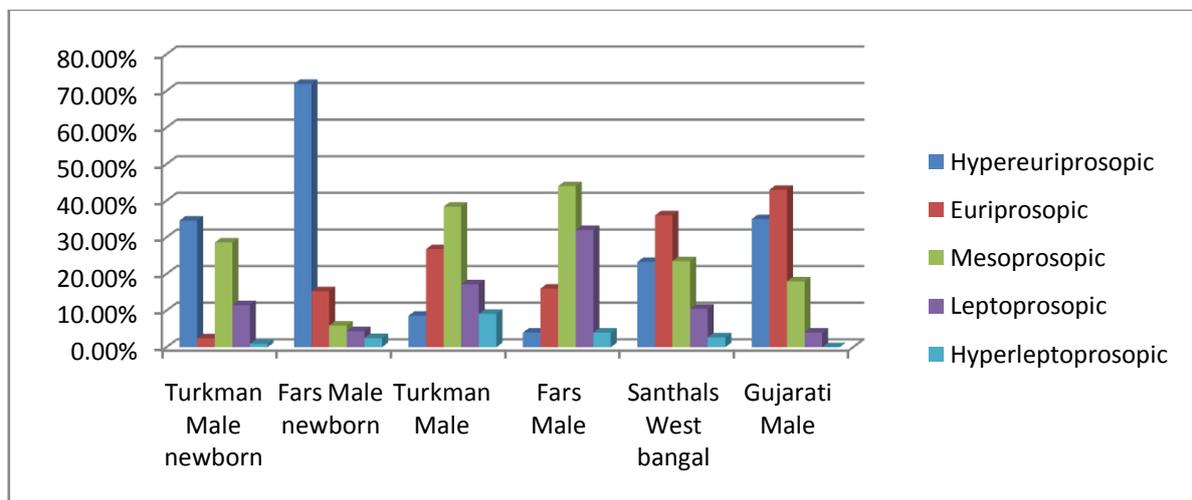
Based on facial index dominant type of face shape in Gujarati males was Euriprosopic (42.96%) similar findings were observed in Jat Sikhs (39.8%)[10]. In Baniyas (44.5%) dominant type of face was Hypereuriprosopic which suggest that they have broad face than Gujarati males[10]. Dominant type of face was Hypereuriprosopic in Turkman (34.6%) and Fars (71.9%) and rare type

of face was Hyperleptoprosopic in Turkmans (0.9%) and Fars (2.5%) [12]. Which do not confirm with our findings. All above results suggest that Hyperleptoprosopic type of face was very rare in all studies.

Major population of Northern Irani males had Euriprosopic (39.2%) in Baluchi and Sistani groups [8]. Negow WC found that Malaysian Indian male had Euriprosopic type of face mainly which is similar to our findings[13]. Major type of face in males of Iran was Mesoprosopic [14]. But in our study it was Euriprosopic which suggest that there is variation in dominance of face shapes of males in different countries.

Newborn of Turkmans and Fars had Hypereuriprosopic type of face whereas the adult of same race had Mesoprosopic type of face which suggests the developmental pattern[8, 11]. Such findings should be further investigated in different group which could be very useful to study growth pattern of face. Facial index of Malaysian Indian [13] males was 85.5 which were higher than Gujarati males. (Graph 1)

Graph 1: Showing comparison of face type in various populations



From the above it is obvious that Adult Turkman shows dominant of Mesoprosopic type of face but newborn of both races shows Hypereuriprosopic type of face. Extensive data is available from various population of Iran from northern and southeast Iran. No such data is available from population of Gujarat. This study is a progressive

step for collection of morphometric variation from the Gujarat region. No such study is available for the face type in various ethnic backgrounds. There is a need to conduct such study in diverse racial and ethnic groups which generate database for various morphometric face type and their predominance in different racial groups.

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*Corresponding author: Dr. Uttakar Kanan

E mail: kannanrahulsurve@yahoo.co.in