ORIGINAL RESEARCH

# Morphometric Data of Nose in Western Maharashtra Population: A Cross Sectional Study

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## ABSTRACT

**Introduction:** The nose is considered as one of the best clues to racial origin as each race has its own special beauty. Nose not only has characteristic variations according to age, sex, ethnic group and race but also nasal measurements are affected by environment and socioeconomic status. Facial anthropometry has become an important tool used in genetic counselling, reconstructive surgeries and forensic investigations It is a scientific art to reconstruct the face for forensic purpose or in plastic surgery. What it requires is to visualise faces on bony framework of face. To achieve this goal, baseline data on facial parameters and indices will be helpful.

**Materials and Methods:** Total 200 (100 male and 100 female) subjects from western Maharashtra between 18-25 yrs of age were recruited in the study. The subjects were selected according to preset inclusion and exclusion criteria. Length of the nose was measured as the straight distance between nasion and subnasale by using sliding vernier calliper.

**Results:** Out of 200 subjects 34%, 39% and 36.5% of males, females and total group had their maximum nose lengths in the interval of 48.1 – 51.0 mm while 2% of males, 3% of females and 2.5% of total group had minimum nose lengths in the interval of 57.1 – 60.0 mm.

**Conclusion:** The parameters evaluated in this study are comparable with previous studies and provide an important data for forensic investigations, physical anthropometry data base and to guide surgeons in rhinoplasty, nasal reconstructions.

**Keywords:** Facial anthropometry, nasion, subnasale, vernier calliper, rhinoplasty

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## INTRODUCTION

Throughout the history of mankind, location of nose is such that it sticks out in front of his other facial features and is termed as the projecting "bull's eye" of the face. It also has lot of importance as the nose has been disfigured for punishment; shot, blown off and burned in battle; bitten, avulsed and sloughed in peacetime; it is shrinked from within by disease; deteriorated by cancer; deformed by surgery; burnt by the sun; crunched on the road and most often punched in the ring for customs or pleasures.[1]

The nose is considered as one of the best clues to racial origin. But also each race has its own special beauty. Like in Caucasian, the person is considered beautiful when the nasal bridge is high, straight and slim with the naso-labial angle of 90 to 100 degrees in the males and up to 120 degrees in the females and having golden triangle tilt at the tip. In Africans, generally the bridge height is low with broad tip, short columella and the flared nostrils. While in case of Asians, the nose seems to lie between Caucasians and Blacks in bridge height, tip width, columella length and alar flare.[2]

Nose demonstrates characteristic variations according to age, sex, ethnic group and race. Nasal measurements are also affected by environment and socioeconomic status. There are certain variables that determine the shape of the nose, these variables include: race, tribes and environmental climatic conditions with narrower nose being favoured in cold weather and dry climate and broader nose in warmer climate.[3, 4]

Facial anthropometry has become an important tool used in genetic counselling, reconstructive surgeries and forensic investigations.[5,6] It is a scientific art to reconstruct the face for forensic purpose or in plastic

surgery. What it requires is to visualise faces on bony framework of face. To achieve this goal, baseline data on facial parameters and indices will be helpful.

## MATERIALS AND METHODS

The present crossectional study was done on 100 males and 100 females of age group 18-25 years. The subjects included were the students from the dental, medical and nursing colleges in Mumbai and surrounding region. The subjects who were residents of Western Maharashtra region like Mumbai, Thane, Ratnagiri, Raigad and Sindhudurg districts were included for the study. The subjects who have undergone any facial plastic or reconstructive surgery, subjects having history of nasal trauma either acquired through road traffic accidents or any other forms of trauma, subjects having any obvious nasal deformity like congenital or developmental discrepancies were excluded from the study. The study procedure was explained to each participant in detail and written informed consent was taken prior to the measurements. The study was approved by institutional ethics committee.

The measurements were obtained using sliding vernier calliper, transparent protractor, measuring ruler and stadiometer. Before listing the measurements made to determine the various dimensions of the nose, it is necessary to define the landmarks from which such measurements are conventionally made.[7]

Nasion (n) – The point at which a horizontal tangential to the highest points on the superior palpebral sulci intersects the mid-sagittal plane with the subject looking straight ahead.

Subnasale (sn) – The point at which the nasal septum, between the nostrils, merges with the upper cutaneous lip in the mid-sagittal plane.

### Length of the nose (n to sn)
It is measured as the straight distance between nasion and subnasale.

## STATISTICAL ANALYSIS

All the data was collected and tabulated on excel sheet. The values in the study were expressed in terms of mean and standard deviation (SD) by using Microsoft excel software. The data was a quantitative type of data. The data was analysed by using statistical software named "Graphpad instat, version 3, California, Sandiago". For comparison between different values in different groups unpaired 't' test was applied. P value < 0.05 was considered to be significant.

## RESULTS

| Class intervals of nose length (mm) | Males | | Females | | Total group | |
|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % |
| 42.1 – 45.0 | 05 | 05 | 04 | 04 | 09 | 4.5 |
| 45.1 – 48.0 | 26 | 26 | 29 | 29 | 55 | 27.5 |
| 48.1 – 51.0 | 34 | 34 | 39 | 39 | 73 | 36.5 |
| 51.1 – 54.0 | 25 | 25 | 19 | 19 | 44 | 22 |
| 54.1 – 57.0 | 08 | 08 | 06 | 06 | 14 | 07 |
| 57.1 – 60.0 | 02 | 02 | 03 | 03 | 05 | 2.5 |
| **Table-1:** Nose length measurements in 200 subjects | | | | | | |

Out of 200 subjects (100 males and 100 females), 34% of males, 39% of females and 36.5% of total group had their maximum nose lengths in the interval of 48.1 – 51.0 mm while 2% of males, 3% of females and 2.5% of total group had minimum nose lengths in the interval of 57.1 – 60.0 mm.

## DISCUSSION

The present study shows the mean length of the nose (± SD) in a total group of 49.7 ± 3.1 mm. The male group and female group show mean nasal length (± SD) of 49.9 ± 3.2 mm and 49.5 ± 3.0 mm respectively. There is no significant statistical difference between the nasal lengths in both sexes (p = 0.3945).

The present study results are more similar to the study by Kurulkar GM et al[8] but they had examined 200 Indians from various castes and religions. When the present study results are compared with the study in Maharashtra by Karve I , it is found that there is a little increase in the nose length among males but the females show quite a large difference. This difference can be due to regional variation as in the present study the adults from Western region of Maharashtra are examined while Karve I[9] examined the subjects from entire Maharashtra. On comparing the results of present study with that of studies done on Nigerian population by Garandawa HI et al and Oladipo GS et al[10,11] it is found that the Nigerian population which is classically described as Black race, have shorter nose in both male and female groups than the Indian population. This difference in nose length can be because of different growth environment and climatic conditions between the Indians and the Blacks. The comparison of the present study with the study of Choe KS et al[12] suggests that the Indian women have short nose than the white women. The same can't be compared for males as most of the

previous workers studied parameters in white women only.

## CONCLUSION

The parameters evaluated in this study are comparable with previous studies and provide an important data for forensic investigations, physical anthropometry data base and to guide surgeons in rhinoplasty, nasal reconstructions.

There is a need to study larger samples to establish ethnic norms from nasal parameters and nasal index for the entire Indian population of different age groups and in both sexes that may not have manifested in this small study.

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