

Difference in anthropometric measurements of nose among North and South Indians

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Received: 08-06-2021 / Revised: 15-07-2021 / Accepted: 29-08-2021

Abstract

Background: The shape of nose varies with ethnicity, race, age, sex and the “normalcy” of nose differs with region and culture. Our objective is to document the differences among North and South Indian population which can be taken as references. **Materials and Methods:** This study includes measurement of different parameters of nose among 14 North Indian (9 males; 5 females) and 61 South Indian medical students (27 males; 34 females) using vernier calliper and was statistically analysed. **Results:** 1) Morphological width of the nose -3.1cm (North Indians) and 3.1 cm (South Indians). 2) Columella length -1.8 cm (North Indians) and 1.7 cm (South Indians). 3) Columella Width -0.66cm (North Indians) and 0.58 cm (South Indians). 4) Alar Width -0.52 cm (North Indians) and 0.48 cm (South Indians). 5) The most common type of cheek alar groove was cheek type followed by labial and tube type in both North and South Indians. **Conclusion:** The evaluation of difference in nasal parameters is helpful in quantifying the nasal deformities pertaining to different regions within a country so that the “ideal nose” is achieved post surgery.

Key words: alar width, cheek alar groove, columella length, columella width.

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Introduction

The sense of beauty is culture-specific as it expresses the tastes and values of that society. It varies with race, ethnicity, age, sex and it deals with social acceptance. Thus, a common aesthetic sense prevails that serves as a base for aesthetic judgements of taste. Though the Indian population is a blend of Negrito Mongoloid, Caucasoid, and Australoid races that reflects diversified culture of the country, there is huge difference in genetic and physical make up between North and South Indian populations[1]. For rhinoplasty, studying these variations of will give an idea about the nasal parameters of northern and southern population. The face is divided into three equal portions by four horizontal lines[2].

- ▶ Glabella-Bony triangular area on frontal bone between the supraorbital ridges[2].
- ▶ Nasion-Junction of upper end of suture between nasal bones with frontal bones[2].
- ▶ Rhinion-The lower end of suture between the nasal bones[2].
- ▶ Subnasal-Point at the nasal spine where the nasal septum merges with upper lip in the mid saggital plane[2].
- ▶ Frankfort line-A line along intraorbital border and tragus[2].
- ▶ Gnathion-Lowest point in the midline of chin[2].

Materials and Methods

Institutional ethics committee clearance and consent were obtained from 61 South Indian (males-27; females-34) and 14 North Indian (males-9; females-5) medical students aged between 21 and 25 years, procedure was explained to them. Pictures of basal view, frontal view, profile view of nose of the students were taken methodically by single observer to prevent inter-observer error. Vernier calipers were used for measurements and statistically analysed by Pearson’s Chi Square test. Students who underwent nasal surgery or having nasal disease or history of nasal trauma were not included in the study.

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The photographic set up consisted of Canon SX610 HS Digital camera with camera effective pixels of approx 20.2 megapixels. Aspect ratio 4:3. All images are taken under uniform illumination. The subjects were asked to sit against a dark coloured backdrop and were asked to look straight into the camera in natural head position with facial muscles relaxed. All the photographs were taken at a distance of 5 feet for a sharp image.

The parameters measured were

1. Morphological width of the nose -The maximum length between the most lateral point in the curved base line of each ala[3].
2. Columella length-The distance between subnasal and highest point of columella[3].
3. Columella width-The distance between midpoints of columella[3].
4. Alar width- The distance between the midportion of the alae where the thickness of each ala is measured[3].
5. Cheek alar groove-The shape and resiliency of the nostril and the posterior half of the alar side walls depend on dense fibro-fatty connective tissue. The variations of the cheek alar groove are-a) Cheek type. b) Labial type. c) Tube type[4].

Results

The mean values of different nasal parameters are enlisted below:

Morphological width of the nose- a) Among North Indians, the mean morphological width of nose was 3.1cm and it varied from 2.78cm to 3.42 cm (Table 1). Out of 14, 10 (71.43%) are within the range, 3 (21.43%) more than the range and 1 (7.14%) less than the range. b) The mean morphological width of nose among South Indians, was 3.1 cm and it varied from 2.75cm to 3.45 cm (Table 2). Out of 61, 42 (68.85%) lie within the range, 10 (16.39%) more than the range and 9 (14.75%) less than the range.

Columella length- a) Among North Indians, the mean columella length was 1.8cm and it varied from 1.46cm to 2.14 cm (Table 1). Out of 14, 10 (71.43%) lie the range, 1 (7.14%) more than the range and 3 (21.43%) less than the range. b) The mean columella length among South Indians was 1.7 cm and it varied from 1.35 cm to 2.05 cm (Table 2). Out of 61, 49 (80.33%) lie within the range, 4 (6.55%) more than the range and 8 (13.11%) less than the range.

Columella Width- a) Among North Indians, the mean columella width was 0.66cm and it varied from 0.53 cm to 0.79 cm (Table 1). Out of 14, 8 (57.14%) lie the range, 4 (28.57%) more than the range and 2 (14.28%) less than the range. b) The mean columella width among

South Indians was 0.58 cm and it varied from 0.47 cm to 0.69 cm (Table 2). Out of 61, 39 (63.93%) lie within the range, 15 (24.6%) more than the range and 7 (11.47%) less than the range.

Alar Width- a) Among North Indians, the mean alar width was 0.52 cm and it varied from 0.46 cm to 0.58 cm (Table 1). Out of

14, 9 (64.28%) lie the range, 4 (28.57%) more than the range and 1 (7.14%) less than the range. b) The mean alar width among South Indians was 0.48 cm and it varied from 0.39 cm to 0.57 cm (Table 2). Out of 61, 45 (73.77%) lie within the range, 12 (19.67%) more than the range and 4 (6.56%) less than the range.

Table 1: Mean with standard deviation of different nasal parameters in North Indians

Nasal Parameters	Mean	Standard deviation	Minimum	Maximum
Morphological width of nose(cm)	3.1	0.32	2.78	3.42
Columella Length(cm)	1.8	0.34	1.46	2.14
Columella Width(cm)	0.66	0.13	0.53	0.79
Alar Width(cm)	0.52	0.06	0.46	0.58

Table 2: Mean with standard deviation of different nasal parameters in South Indians

Nasal Parameters	Mean	Standard deviation	Minimum	Maximum
Morphological width of nose(cm)	3.1	0.35	2.75	3.45
Columella Length(cm)	1.7	0.35	1.35	2.05
Columella Width(cm)	0.58	0.11	0.47	0.69
Alar Width(cm)	0.48	0.09	0.39	0.57

5. Cheek alar groove- The most common type of cheek alar groove was found to be cheek type followed by labial and tube type in both North Indians and South Indians. In North Indians, out of 14, 6 (42.85%) had cheek type, 3 (21.43%) had labial type and 5 (35.71%) tube type. In South Indians, out of 61, 35 (57.38%) had cheek type, 22 (36.06%) had labial type and 4 (6.56%) had tube type (Table 3).

Table 3: Frequency of cheek alar groove in North and South Indians

Gender	Cheek	Labial	Tube
North Indians	6(42.85%)	3(21.43%)	5(35.71%)
South Indians	35(57.38%)	22(36.06%)	4(6.56%)

Studying variations of nose gives us an idea about the variations of anthropometric aspects of nose between the two different regions.

Discussion

The nose makes up the central portion of face. As there are variations of nose according to ethnicity, race, age, and sex, this study is aimed to describe the differences in various nasal anthropometric measurements among North and South Indians. The mean morphological width of nose for North Indians was found to be 3.3 ± 0.32 cm (Table 1) which is less than South Indians (3.3 ± 0.35 cm) (Table 2). This was similar to the study conducted by Ahmet Uzgun *et al*[3] in Turkish males but shorter than Afro-American[5], Chinese[6], Japanese[7], Canadian/Caucasian[8], African[9], Afro-Caucasian noses[9], and Afro-Indians[9]. The mean columella length for North Indians was found to be 1.8 ± 0.34 cm (Table 1) which is more than South Indians (1.7 ± 0.35 cm) (Table 2). This was more than the Turkish men[3], Chinese[6], Caucasian[5] and Afro-American [5], Afro-Indians[9] but shorter than Japanese[7]. The mean columella width for North Indians was found to be 0.66 ± 0.13 cm (Table 1) which is more than South Indians (0.58 ± 0.11 cm) (Table 2). This is greater than what was found by Ahmet Uzgun *et al*[3]. The mean alar width for males was found to be 0.52 ± 0.10 cm (Table 1) which is more than females (0.45 ± 0.07 cm) (Table 2). This is greater than what was found by Ahmet Uzgun *et al*[3]. The most common type of cheek alar groove was cheek type followed by labial and tube type in both males and females (Table 3).

Summary

The shape of nose varies with ethnicity, race, age, sex and the "normalcy" of nose differs with region and culture. Our objective is to document the differences among North and South Indian population which can be taken as references. This study includes measurement of different parameters of nose among 14 North Indian (9 males; 5 females) and 61 South Indian medical students (27 males; 34 females) using vernier calliper and was statistically analysed. 1) Morphological width of the nose - 3.1 cm (North Indians) and 3.1 cm (South Indians). 2) Columella length - 1.8 cm (North Indians) and 1.7 cm (South Indians). 3) Columella Width - 0.66 cm (North Indians) and 0.58 cm (South Indians). 4) Alar Width - 0.52 cm (North Indians) and 0.48 cm (South Indians). 5) The most common type of cheek alar groove was cheek type followed by labial and tube type in both North and South Indians. The evaluation of difference in nasal parameters is

Conflict of Interest: Nil

Source of support: Nil

helpful in quantifying the nasal deformities pertaining to different regions within a country so that "ideal nose" is achieved post surgery

Conclusion

The evaluation of difference in nasal parameters among North and South Indians will help in understanding the idea of ideal nose in two different regions of the country so that "ideal nose" can be achieved post rhinoplasty.

Ethical standards

"The authors assert that all procedures contributing to this work comply with the ethical standards of our institutional guidelines on human experimentation and with the Helsinki Declaration of 1975, as revised in 2000. Ref no. MDC/DOME/512"

Informed consent

From all the participants informed consent was obtained before the start of the study.

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