



ANTHROPOMETRIC STUDY OF NASAL PARAMETERS FOR SEX DETERMINATION AMONG MEDICAL STUDENTS.

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ABSTRACT

Introduction: Nasal anthropometry is an important factor in forensic investigations and facial reconstructive surgeries. It is strongly related to ethnicity and environmental factors and is known to be sexually dimorphic. Our study was aimed to determine the sexual differences in external nose measurements of Adult Jammu & Kashmir population which will be helpful for reconstructive cosmetic surgeons and forensic experts. **Methods:** This study was conducted on 100 healthy participants (50 males & 50 females) belonging to Jammu & Kashmir. Nasal height, nasal width were measured using Vernier calliper. The nasal index was calculated for each subject. The data obtained was subjected to statistical analysis. **Results:** The mean nasal index for males and females was 91.51 and 86.54 respectively. The mean nasal height and width for males was 44.57 & 40.79. The mean height and width for females was 42.96 & 37.18. The morphological classification showed mesorrhine type of nose as the most prevalent in both male and female subjects. **Conclusion:** The study exhibits mesorrhine type of nose as the most prevalent in both male and female subjects of Jammu & Kashmir population. The nasal parameters shows sexual dimorphism.

KEYWORDS : Nasal Index, Nasal width, Nasal height, Sexual dimorphism.

INTRODUCTION

Nose is the Pyramidal structure located in the midline of face and is attached to the facial skeleton made up of bones, cartilages, muscles and soft tissue. (1) The bony part is formed by nasal bone, frontal bone and maxilla. The cartilaginous part is mainly formed by septal, major alar, lateral cartilage and few minor cartilages (2).

Different parameters are measurable in the nose like nasal height, breadth, nasofrontal angle, nasofacial angle, nasolabial angle etc. All these parameters vary with respect to gender, race, ethnicity and environmental factors. The nasal index is regional and racial sensitive anthropometric index. (3)

Facial anthropometry plays an important role in forensic investigation, especially in the examination of facial skeleton. (4) On the basis of nasal index, the nose can be categorized into three types: Leptorrhine (long and narrow nose), Mesorrhine (medium) and Platyrrhine (broad nose). (5,6)

Nasal parameters are also important for Aesthetic and reconstructive surgery as well as genetic counselling in different sexes. Such study is crucial not only for identifying gender but also for facial cosmetics or rhinoplasty surgeries. (7)

Any alteration in the shape of the nose leads to gross change in the facial appearance of an individual. Hence, population specific data regarding the nasal morphology are of utmost importance for plastic surgeons in reconstruction studies and forensic investigators in facial identification and reconstructions. In any reconstructive procedure, there should be thorough analysis of nasal morphology of particular geographic area. Hence, plastic surgeons and forensic investigators both can benefit from a regional database regarding nasal anthropometry. (8)

The present study aims to measure and compare the nasal index and shape of nose among male and female medical students of Government Medical College Anantnag, which will be helpful tool for forensic investigators and reconstructive surgeries.

METHODS

The present study was a cross-sectional study, conducted among 100 students of Government Medical College, Anantnag J&k. The study was done over a period of 6 months from May 2022 to October 2022. Ethical clearance was taken from the Institutional Ethical Committee. Informed consent was taken from each student. Students were selected randomly. Students with any facial deformity, injury or any past reconstructive surgery on face were excluded. The following parameters were taken:

Nasal height and nasal width were measured using Vernier calliper. The distance of the widest extension of the nose from one side of ala to other was taken as the nasal breadth. The nasal height was measured from root of nose to subnasale (nasolabial junction) at the lower border of nasal bone anterior to nasal spine, perpendicular to the nasal width. The nasal index was calculated by dividing nasal width and nasal height, multiplied by 100. Based on the nasal index, the nose shape was classified into following five types:

1. Hyperleptorrhine (< 54.9); very long and narrow nose
2. Leptorrhine (55 to 69.9); long and narrow nose
3. Mesorrhine (70 to 84.9); moderate nose
4. Platyrrhine (85 to 99.9); broad nose
5. Hyperplatyrrhine (> 100); very broad nose

All the data was entered in excel sheet and analyzed using Statistical Package for Social sciences version 26.0. Mean of nasal breadth, nasal height and nasal index was calculated using frequency statistics.

RESULTS

Table 1 : Mean Value Of Different Metric Nasal Parameters Among Male And Female Study Subjects

GENDER	NASAL HEIGHT (mm)	NASAL WIDTH (mm)	NASAL INDEX (mm)
MALE	44.57	40.79	91.51
FEMALE	42.96	37.18	86.54
BOTH	43.77	38.35	88.64

Table 2: Morphological Classification Of Nasal Index

Among The Study Subjects

GENDER	Hyperleptorrhine	Leptorrhine	Mesorrhine	Platyrrhine	Hyperplatyrine	Total
MALES	0	8(16%)	33(66%)	4(8%)	3(6%)	50
FEMALES	0	12(24%)	30(60%)	6(12%)	2(4%)	50
TOTAL	0	20(20%)	63(63%)	10(10%)	5(5%)	100

NASAL WIDTH & NASAL HEIGHT :

Nasal width and nasal height were found to be significantly different among male and female subjects. Both parameters were found to be higher in males and lower for females. In case of males mean nasal height was 44.57 & mean nasal width was 42.79. In case of females mean nasal height was 42.96 & mean nasal width was 37.18. (Table 1)

NASAL INDEX:

Nasal index was found to be higher in males than females. Mean nasal index for males was 91.51% & mean nasal index for females was 86.54%. (Table 1)

NASAL MORPHOLOGY :

Among males 66% had mesorrhine type, 16% had leptorrhine, 8% had platyrrhine type and 6% had hyperplatyrhine type of nose. Among females 60% had mesorrhine type, 24% had leptorrhine, 12% had platyrrhine type and 4% had hyperplatyrhine type of nose. (Table 2)

DISCUSSION

The importance of nasal index in anthropological studies has been reported by many authors. Anthropometric measurements of nose vary with sex & ethnic background. Knowledge of these parameters is essential for surgeons undertaking esthetic repair and reconstruction of nose (8). The study conducted by Oladipo et al(9) suggests that males have nasal index of 90 and females have 88.1. Patil et al (10) conducted study on South Indian population and suggested the current study on Kashmiri population shows mean index of males to be 91.51% and mean nasal index of females to be 86.54% and found that nasal index of males were higher than females. In our study nasal index were higher in males as compared to females. This is in accordance with previous study conducted by Sharma et al and Kaushal et al (7,11).

The present study found that nasal breadth and nasal height of males were more than females. The mean nasal height and width among males were 44.57 and 40.79. The mean nasal height and width among females were 42.96 and 37.18. This is similar with the study conducted by Akpa et al, Patil et al (12,10).

The present study concludes that the general shape of nose based on nasal index were mesorrhine followed by leptorrhine, platyrrhine and hyperplatyrhine among both males and females.

From the above data , we can understand that in J&K Population, the mean nasal index, nasal height and nasal width are having significant sexual dimorphism. Hence we can use nasal index as useful parameter for the identification of gender for J&K Population. Nasal anthropometric and morphologic study of various ethnic groups of India will help to establish baseline database of all the nasal parameters as these parameters change with geographic and environmental conditions. This data will be of great importance in corrective surgeries of nasal and paranasal structures, forensic facial identification and future anthropological studies.

CONCLUSION

Nose is the most prominent feature of face and it shows significant variation of an individual. The significant differences in the metric and morphological parameters may be useful for the reconstructive and corrective surgery of nose. This study shows significant differences in the mean values of the nasal index, nasal height and nasal width among males

and females, which may help forensic experts for facial identification and gender determination. Main nasal type among both male and female population of Jammu & Kashmir were found to be mesorrhine type followed by leptorrhine and platyrrhine.



Figure 1 Measurement of Nasal Height



Figure 2 Measurement of Nasal width

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