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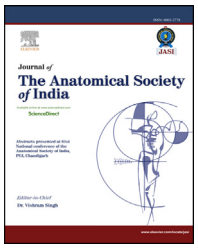

Original Article

A comparative study on nasal ergonomics of Madhya Pradesh & Uttar Pradesh males

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ABSTRACT

Introduction: Nasal index is an ethnic sensitive anthropometric index. It is an important anthropometric parameter for classifying the race and sex of an individual whose identity is unknown. The present study was undertaken to observe the midline nasal ergonomics of MP & UP males.

Materials and Method: A random sample of males of 18–28 years age group was chosen for examination. Nasal breadth (NB), nasal height (NH) and nasal depth (ND) were measured with the help of Digital Vernier Caliper. Nasal index (NI) and nasal elevation index (NEI) of each group were calculated as NB/NH × 100 & ND/NB × 100.

Result: The result was analyzed statistically using Unpaired Student *t*-test with significant relationship ($p < 0.001$) of NI & NEI between the two groups. The result showed that the MP males had mean NI of 68.73 ± 8.25 while that of UP males had NI of 76.91 ± 6.25 ($p < 0.001$).

Discussion: The NI of MP males is <70 and so fall within the classification leptorrhine while the UP males had a NI between 70.00 and 84.9 so fall within the mesorrhine nose type. The NEI of MP males is 51.08 ± 7.33 which was greater than UP males which had 44.13 ± 6.54 which indicates that MP males have a significance protruded longer & more elevated nose than UP counterpart. The data obtained showed difference in nose types. Thus the data of this study is recommended in anthropological studies and reconstructive surgery amongst the ethnic groups under study.

1. Introduction

The human nose can be found in many shapes and sizes and ethnic influences can result in different appearances of the nose.[1] Nasal anthropometry is the study concerned with the measurements of the proportion, size and shape of the human nose. Dimensions obtained have a great potential to guide clinical decision, public health policy, relevant in esthetic and reconstructive surgery, forensic investigation as well as studying variation in humans.[2]

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The knowledge of the nasal anthropometry is employed in forensic science and physical anthropology, as one of the tools used in identification of different races, ethnicity and the gender of an individual.[1,3,4]

Over the centuries, there have been remarkable changes in anthropometric measurements due to geographical, cultural, genetic and environmental factors as well as worldwide mingling of races. Therefore, isolation of pure races has proved to be a difficult problem. However, anthropometric studies continue to play an important role in distinguishing pure race and local mingling of races.[5]

The shape of the nose can be determined by environmental climate condition.[6,7] The narrower noses are favored in cold and dry climates while broader noses in warmer, moister ones as a consequence of natural selection in human evolution.[8]

Craniofacial anthropometry also includes nasal height, nasal width, and nasal index. It is very important for the study of human growth and variation in different races and also for clinical diagnosis and treatment.[9,10]

Nasal index is very useful in anthropology in distinguishing racial and ethnic differences.[11,12] It is one of the methods anthropologists have used to differentiate living race and subspecies of man.[13] It also exhibits sexual differences.[14]

On the basis of nasal height and breadth index, Martin and Sallar (1957)[15] divided noses into the following categories:

Categories	Size of nose	Nasal index		
		On living head	On Skull	On statistical basis (by Hajnis, 1986)[16]
Hyperleptorrhine	Long narrow nose	40–54.9	–	−2SD to −1.5SD
Leptorrhine	Moderately narrow nose	<70	<47	−1.5SD to −0.5SD
Mesorrhine	Moderate or medium size	70–84.9	47–50.9	−0.5SD to +0.5SD
Platyrrhine	Moderately wide nose	85–99.9	51–57.9	+0.5SD to +1.5SD
Hyperplatyrrhine	Very wide nose	100 or more	58 or more	+1.5SD to +2SD

The purpose of this study is to provide baseline data on males of the two north Indian communities i.e. from U.P. and M.P. and the comparisons that emerge there in and to determine the nasal index and nasal elevation index and to classify their nose type. The present study will provide a normative data of nasal index, which will be relevant in physical anthropology, forensic medicine and rhinoplastic and facial reconstruction surgery.

2. Material and methods

2.1. *Selection criteria*

A random sample of 260 male MBBS undergraduate students of first year to final year of Gajra Raja Medical College and general population, in the age group of 18–28 were selected. This age group was selected, as age negligibly affect the facial parameters in subject above 18 years of age. The selected subject were from ethnic communities, Madhya Pradeshis (130 subjects) and Uttar Pradeshis (130 subjects) whose ancestors were the residents of their respective region for atleast two generations.

2.2. *Exclusion criteria*

Subjects who had trauma of the nose, prior plastic or reconstructive surgery of the face or cleft lips and other congenital facial malformations were excluded in the study.

Five relevant nasal surface landmarks selected were:

1 **Nasion**, the point on the root of the nose where the mid-sagittal place cuts the nasofrontal suture.
2 **Subnasale**, the point at which the nasal septum merges with the upper cutaneous lip in the mid-sagittal plane.
3 **Pronasale**, the point at the tip of nose.
4 **Alare**, the point at the most prominent side wall of the nose.

2.3. *Measurement procedure*

The following projective measurements (shortest distance between 2 point) of the nose were taken with a **Digital Vernier Caliper** with accuracy of 0.01 mm. To reduce technical error of the measurements, each measurement was taken thrice and average taken.

The subject was seated on a chair in a well-illuminated room. All the measurements were taken with the subject sitting on a chair in a relaxed condition with the head in the anatomical position. The facial muscles were relaxed in order not to alter the size of the nose. The measurement was done by one observer to prevent inter-observer error.

- Measurement of **Nasal Height (NH)** – measured from nasion to subnasale (Fig. 1)
- Measurement of **Nasal Breadth (NB)** – maximum breadth at right angle to the nasal height from ala to ala (Fig. 2)
- Measurement of **Nasal Depth (ND)** – from pronasale to subnasale (Fig. 3)

The following nasal indices were calculated for each group:

a) **Nasal index (NI) was calculated as = NB/NH × 100**
b) **Nasal elevation index (NEI) was calculated as = ND/NB × 100**