

Morphometry of Nose in Indian Population: A Feature That Could be Useful in Identification

Pankaj Verma¹, Abhishek Varun², Chandra Shekhar Waghmare³, Divyesh Saxena^{4*}

¹Assistant Professor, Department of Forensic Medicine and Toxicology, JNUIMSRC, Jaipur, Rajasthan, India

²Assistant Professor, Department of Forensic Medicine and Toxicology, Sri Aurobindo Institute to Medical Science, Indore (MP), India

³Assistant Professor, Department of Forensic Medicine and Toxicology, Gajra Raja Medical College, Gwalior, Madhya Pradesh, India

⁴Assistant Professor, Department of Forensic Medicine and Toxicology, Gajra Raja Medical College, Gwalior, Madhya Pradesh, India

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Abstract

Background: The anthropometry of nose has a unique point in the identification in the field of forensic medicine. There are different types of classification based on this calculation. This is very useful in identification in the field of forensic medicine as there are only a handful number of studies and has never been done in this population. It is said that the geography and the behavior of the population also influences the measurements. This study puts in an effort to find the nasal index and morphometry of nose in this part of the world. **Methods:** This study is done in the Department of Forensic Medicine, JNUIMSRC, Jaipur from October 2020 to June 2021. Two hundred seventeen subjects were involved for the study. **Results:** The mean nasal index measurements in the subjects were found to be 74.80 with a standard deviation of ± 2.68 . **Conclusion:** This work is intended to be very helpful for the practicing Forensic Medicine Specialists and also practicing plastic surgeons in this area.

Keywords: Indian, Identification, Cross-Sectional, Nasal, Index.

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Introduction

Anthros means man and metron means to measure[1]. Anthropometry can be defined as a subdivision of morphometry and it is useful in measuring different features of the human[2].The nasal morphometry means documenting the measurements of nasal measurements. There are a plethora of studies on this topic which has been done in different continents across different races[3-6].The nasal index is the width divided by height percentage calculation. This is highly accepted in the world of Anthropometry and morphometry[7,8]. There are different types of classification based on this calculation. This is very useful in identification in the field of forensic medicine as there are only a handful number of studies and has never been done in this population. It is said that the geography and the behavior of the population also influences the measurements[9-11]. The data is also useful in the field of plastic reconstruction as there is a known diversity in this country.The Indian population is actually a mixture of mongoloid, Caucasoid and Australoid races so there is a huge scope for morphometric studies[12-15]. There are also studies which have reported different genetic and anthropometric parameters of nose in Indian Population. This study puts in an effort to find the nasal index and morphometry of nose in this part of the world.

*Correspondence

Dr. Divyesh Saxena

Assistant Professor, Department of Forensic Medicine and Toxicology, Gajra Raja Medical College, Gwalior, Madhya Pradesh, India.

E-mail: drdivyesh.saxena@gmail.com

Aims and Objectives

To study the morphometry of nose and also to calculate the nasal index of this population.

Materials and Methods

This study is done in the Department of Forensic Medicine, JNUIMSRC, Jaipur from October 2020 to June 2021. Two hundred seventeen subjects were involved for the study.

The subjects were all MBBS students from Rajasthan. They were invited at specific time so that their routine would not be hampered. Three hundred students came to the Department out of which two hundred seventeen were randomly selected.

Procedure:Nasal height and nasal breadth were measured using sliding calliper. Nasal height is defined as the distance between nasion and subnasale. The nasal breadth is defined as the straight distance between the two alaria

Nasal Index=Nasal Breadth/Nasal Height X 100. Some other parameters were also measured and reported.

Inclusion Criteria

Students who belonged to Rajasthan

Exclusion Criteria

Any nasal deformity.

Results

The mean height which was measured in 217 subjects was found to be 5.09 cms with a standard deviation of ± 0.16 cms.

The mean width which was measured in 217 subjects was found to be 3.68 cms with a standard deviation of ± 0.41 cms.

The mean nasal index measurements in the subjects were found to be 74.80 with a standard deviation of ± 2.68

Table 1: Mean Height of the nose

Number	Mean Height Measurement	Std deviation
217	4.77	±0.17

Table 2: Mean Width of the nose

Number	Mean Width Measurement	Std deviation
217	3.56	±0.13

Table 3: Nasal Index

Number	Mean Nasal Index Measurement	Std deviation
217	74.80	±2.65

Table 4: Mean Nasal Depth (from the pronasale to the subnasale)

Number	Mean Nasal Depth Measurement	Std deviation
217	1.74	±0.09

Table 5: Mean Width of columella (measured at the base from one ala to the other - alacrepidon)

Number	Mean width of columella Measurement	Std deviation
217	1.42	±0.06

Table 6: Alar Width (from alacrepidon to subnasale)

Number	Mean Alar Width Measurement	Std deviation
217	4.7	±0.4

Table 7: Alar Length (from alacrepidon to pronasale)

Number	Mean Alar Length Measurement	Std deviation
217	2.73	±0.4

Table 8: Mean Nostril Width

Number	Mean Nostril Width Measurement	Std deviation
217	1.21	±0.6

Discussion

In a study reported by Last et al. the shape and size can be reconstructed by knowing the environmental and climatic conditions in the vicinity in which the population stayed[16]. This is a breakthrough in the field of forensic medicine. Its not a Eureka movement but a simple understanding that in cold and dry climate the human needs a narrow nose and in warmer climate they need a broader nose. This was also reported in a study conducted by Hall et al[17] There are a few reports on the Negro population and Caucasian population. Risley et al reported the index and other values in Indo-Aryan population[18]. Daniel et al have reported the nasal indices in Lebanon as 63.30, Alawite as 62.74, Damascus as 63.26, Greeks as 68.49 and Arabic as 74.48. Akpa reported a comparative study in males and females of Igbos and reported respectively[20]. Oladipo et al. conducted a study in Yoruba ethnic groups in Southern Nigeria[21]. In an interesting study conducted in South India one study conducted by Shishirkumar et al. reported the nasal indices in population of MBBS students from Karnataka and Kerala and went on to say that language also influences the nasal structure[22]. This is indeed very interesting and it was an eye opener for us to further hone our knowledge in this field.

Conclusion

Nasal morphometry and nasal index have been successfully been measured in this study. This work is intended to be very helpful for the practicing Forensic Medicine Specialists and also practicing plastic surgeons in this area.

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