



RESEARCH ARTICLE

STUDY ON NASAL INDEX IN SOUTH INDIAN POPULATION

*Dr. Girish V. Patil, Dr. Shishirkumar, Dr. Apoorva D, Dr. Thejeswari, Dr. Javed Sharif,
Dr. C. Sheshgiri and Mr. Sushanth, N. K.

Department of Anatomy, DM- Wayanad Institute of Medical Sciences, Meppadi, Wayanad, Kerala, India

ARTICLE INFO

Article History:

Received 17th May, 2014
Received in revised form
06th June, 2014
Accepted 27th July, 2014
Published online 31st August, 2014

Key words:

Anthropometric, Nasal index, Parameters,
Plastic surgery and South Indian.

ABSTRACT

Nasal index is a regional and racial sensitive anthropometric index. It is also one of the important anthropometric parameter for classifying the race and sex of an individual in the world. This study was carried out in 250 south Indian populations. The result shows the mean nasal breadth in males is 49.28mm while in females its 38.02mm, nasal height in males was found to be 58.04 and 56.12 in females, also nasal index was found to be 84.91 in males and 67.75 in females. All the measurements are found to be higher in males than females. Present study which showed that the south Indian males have mesorrhine type of nose and south Indian females have leptorrhine type of nose. Such regional studies parameters will help for the purpose of clinical practice (plastic surgery), forensic medicine and anthropological study.

Copyright © 2014 Dr. Girish V. Patil et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Human physical anthropology is branch which mainly deals with the measurements and descriptions of the human body and its skeleton. Such measurements are useful in the analysis and classification of fossil remains as well as study of living population (Alex *et al.*, 1996). Human beings can be classified depending on the nasal index of the different races in the world (Risely 1915). Nasal index= Greatest breadth of the nose (NB) / Height of the nose (NH) X 100 Based on the nasal index, the nose has been classified (Table 1)

The shape of the nose can be determined by environmental climatic conditions (Last 1981). The narrower noses are favored in cold and dry climates whereas broader noses in warmer, moister ones as a consequence of natural selection in human evolution (Hall and Hall 1995). Several reports exist on nasal indices of Caucasian populations with a few on African population and few on Nigerians. Risely (1915) reported the nasal indices of Indo-Aryan and Sudroid (Indian Negroids). The Indo- Aryan were reported to have nasal indices of 66.9-79.6 while Sudroid have a nasal index of 73.1-95.1. Daniel (2002) reported nasal indices for various races as follows: Lebanon 63.30, Alawite 62.74, Damascus 63.26, Armenians 63.80 Greeks 68.49 and Arabic 74.48. Mulchand (2004) stated that Rajput race had a nasal index of 71.6. Akpa *et al.* (2003) reported nasal length, height and width of male and female Igbos as 6.31, 1.99, 7.50 and 6.04, 1.92, 6.80,

respectively. Oladipo *et al.* (2007) conducted a study on the morphometric analysis of the nasal parameters of Igbo, Ijaw and Yoruba ethnic groups in Southern Nigeria. Their findings showed a mean nasal index >85.0 in the three Nigerian ethnic groups studied.

The present study was carried out to know the nasal indices of the south Indian population. Results of this study may be a baseline data of nasal indices in south Indians, which could be vital in forensic medicine, anthropological studies, and clinical practice especially in nasal surgery.

MATERIALS AND METHODS

This study was conducted on randomly selected 250 (125 male and 125 female) south Indian population of Mangalore town, after taking necessary consent from subject. The age of the subjects ranged from 18-32 years. Subjects who had trauma of the nose or cleft lips were excluded from the study. The nasal height (NH) was measured with a sliding caliper, from nasion to nasospinale. The breadth (NB) which is the maximum breadth of nose was measured at right angle to the nasal height from right ala to left ala. All measurement was taken with subject sitting on a chair in a relaxed mood and head in anatomical position. The measurement was done by one observer to prevent inter-observer error. Nasal index was calculated as NB/NH×100 (Romo and Abraham 2003). The data was subjected to statistical analysis.

*Corresponding author: Dr. Girish V. Patil,
Department of Anatomy, DM- Wayanad Institute of Medical Sciences,
Meppadi, Wayanad, Kerala, India.

RESULTS

Table 2 shows the mean nasal breadth in males is 49.28mm while in females its 38.02mm, nasal height in males was found to be 58.04 and 56.12 in females, also nasal index was found to be 84.91 in males and 67.75 in females. All the measurements are found to be higher in males than females. The difference between males and females indices were statistically significant ($p < 0.05$).

Table 1. Classification of nose depending on Nasal index

Nose classification (Risely 1915)	Nasal index
leptorrhine or fine nosed	Less than 69.9
mesorrhine or medium nosed	70.0-84.9
platyrrhine or broad nosed	More than 85.0

Table 2. Showing the nasal index in the present study

	Male		Female	
	Mean	SD	Mean	SD
Sample size	125		125	
Nasal breadth	49.28 mm	5.38	38.02 mm	6.58
Nasal height	58.04 mm	8.32	56.12 mm	7.86
Nasal index	84.91	0.52	67.75	0.48

Table 3. Comparative data on Nasal Indices (N.I) of various Population

Country or Region	Authors and dates	Nasal index
Lebanon	Daniel (2002)	63.30
Arabic	Daniel (2002)	74.48
Indo-Aryans	Risely (1915)	73.25
African Americans	Porter et al. (2001)	79.70
Rajputs	Mulchand (2004)	71.60
Nigerian Ogonis	Oladipo et al. (2007)	98.50
South Indians	Present study	Male- 84.91 (Mesorrhine) Female - 67.75 (Leptorrhine)

DISCUSSION

The nose is one of the part of body which shows very characteristic changes during the racial evolution (Madison Grant 2004). The nasal index is very useful in anthropology as it is one of the clinical anthropometric parameters recognized in nasal surgery and medical management (Hansen and Mygind 2002; Zankl et al., 2002). Nasal index is related to regional and climatic differences (Farkas et al., 1986). Thus racial difference have been reported by several authors (Franciscus and Long 1991; Romo and Abraham 2003; Oladipo et al., 2007). Present study which showed that the south Indian males have mesorrhine type of nose and south Indian females have leptorrhine type of nose. This shows that even within the same geographical location different nasal indices are seen. The present work is in agreement with the previous researchers on nasal parameters.

Conclusion

In the present study, we measured the average nasal parameters of young male and female south Indians and compared them with each other and with the results found in the literature. Such regional studies parameters will help for the purpose of clinical practice (plastic surgery), forensic medicine and anthropological study. Anthropometric parameters are dependent on age, race and sex so this warrants more regional studies should be done for the standardisation of the values for the particular races in the world. It helps the physical anthropologists to know the migration pattern of the early civilization.

REFERENCES

- Akpa, A.O.C., C. Ugwu and S.O. Maliki, 2003. Morphometric study of the nasal parameters in Nigerian Igbos. *J. Exp. Clin. Anat.*, 2(2): 24-25.
- Alex, F.R., B. Steven and G.L. Timothy, 1996. Human Body Composition. 4th Edn., Human Kinetics Publishers, pp: 167-172.
- Daniel, B., 2000. Racial Anthropology and Genetics of the Lebanese. Retrieved from: www.nasalindexoflebanese.com, pp: 1-2.
- Farkas, L.G., J.C. Kolar and I.R. Munro, 1986. Abstract on the geography of the nose, a morphometric study. *Aesthetic Plastic Surg.*, 10(4): 191 - 223.
- Franciscus, R.G., J.C. Long, 1991. Variation in human nasal height and breadth. *Am. J. Phys. Anthropol.*, 85(4): 419-427.
- Hall, R.L. and D.A. Hall, 1995. Geographic variation of native people along the Pacific Coast. *Hum. Biol.*, 67(3): 407-426.
- Hansen, B. and N. Mygind, 2002. How often do normal persons sneeze and blow the nose? *Rhinol.*, 40(1): 407-426.
- Last, R.J., 1981. Anatomy Applied and Regional. 6th Edn., Churchill Livingstone, pp: 398-403.
- Madison, G., 2004. The Passing of the Great Race. Part 1 Language and Nationality. Chap. 2, pp: 1-6.
- Mulchland, C., 2004. Scythic Origin of the Raiput Race. pp: 1-2.
- Oladipo, G.S., E.J. Olotu and B.C. Didia, 2007. Anthropometric study of the nasal parameters of the Ogonis in Nigeria. *Sci. Afr.*, 6(10): 69-71.
- Porter, J.P. and K.L. Olson, 2003. Analysis of the African American female nose. *Plastic Reconstruct. Surg.*, 111(2): 627-628.
- Risely, H.H., 1915. The People of India. 2nd Edn., Crooke W. (Ed.), 1969, pp: 395-399.
- Romo, T. and M.T. Abraham, 2003. The ethnic nose. *Facial Plastic Surg.*, 19(3): 269-278.
- Zankl, A., L. Eberie and A. Schinzel, 2002. Growth chart for nose length, nasal protrusion and philtrum length from birth to 97 years. *Am. J. Med. Genet.*, 111(4): 388-391.
