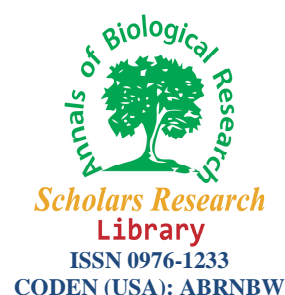




Scholars Research Library

Annals of Biological Research, 2011, 2 (6):408-413
(<http://scholarsresearchlibrary.com/archive.html>)



Anthropometric study of the nasal parameters of the Isokos in Delta State of Nigeria

Ese Anibor, Mabel O. Etetafia, Dennis E. O. Eboh and Ogheneyeseno Akpobasaha

Department of Human Anatomy and Cell Biology, Faculty of Basic Medical Sciences, College of Health Sciences, Delta State University, Abraka, Nigeria.

ABSTRACT

The study was done to determine and compare the nasal parameters of male and female Isokos. The sample comprised two hundred and ten (210) males and two hundred (200) females of Isoko descent. The ages of the subjects ranged from 18-35 years. Nasal width and nasal height were obtained with the aid of a sliding caliper and nasal indices were calculated as the ratio of nasal width and nasal height multiplied by 100. The data were subjected to statistical analysis using descriptive statistics and t-test. Males had mean nasal width, height and index of 4.22cm, 4.60cm and 92.35 respectively, while those of females were 3.87cm, 4.35cm and 89.51 respectively. The mean nasal index of the Isoko males was significantly higher than that of the females ($P < 0.05$). The Isoko ethnic group has a mean nasal index of 91.0. The results of this study have shown that the mean nasal index of the Isokos falls within the platyrrhine (broad nose) type.

Key words: Nasal index, anthropometry, forensic science, platyrrhine, Nigeria.

INTRODUCTION

Measurement of human individuals for the purpose of understanding human physical variation has been a long time practice. Today this practice is called anthropometry. Anthropometry is a series of systematized measuring techniques that expresses quantitatively the dimensions of the human body and skeleton [1].

In ancient times, anthropometry was used in criminology where criminals were identified by measuring parts of their body. During the early 20th century, one of its primary uses became the attempted differentiation between differences in the races of man [2]. Anthropometry stems

from the measurement of the whole human body to individual body parts e.g. face, nose, limb and orbit. Nasal anthropometry is the measurement of the different parameters of the nose. It is considered as one of the best clues to racial origin [3].

The nose is the uppermost part of the respiratory tract and the organ for smell. Its shape including the nasal bridge, slope of the tip, septum and nares differs from race to race, tribe to tribe and from one environmental region of the world to the other [4].

Nasal index is the most common nasal parameter which may be related to regional and climatic differences, with longer narrower noses in cold and dry climate while broader noses are seen in warmer, moisten region. Nasal index is the ratio of nasal width to nasal height multiplied by 100 [5]. The nose has been classified into three major groups based on the nasal parameters: leptorrhine or fine nose (nasal index of 69.9 or less), mesorrhine or medium (nasal index of 70.0 – 84.9), platyrrhine or broad nose (nasal index of 85.0 or more) [6]. Most Africans fall under the platyrrhine nose type with broad noses while Europeans fall under the leptorrhine with longer and narrower noses. Most Western Europeans are leptorrhine of 69.9 or less. While Bushmen of Africa as well as indigenous Australian are platyrrhine, having broad nose with nasal index 85.0 and above [7].

Photogrammetric analysis of the facial profile in a Galician sample in North-western Spain was undertaken. There was no sexual dimorphism either in the nasal tip height or in the nasal labial angle [8]. Nichani carried out a study on the variation of nasal indices in four different races: Western Europeans, Africans, Germans and Australians. He concluded that there is a racial difference in relation to nasal parameters [9]. In Brazil, an investigation was carried out in 2006, on nasal width as a guide for the selection of maxillary complete denture anterior teeth in four racial groups [10]. Francicus and Long did a research on the variation in human nasal height and nasal width. The result shows that the intrinsic variation in nasal breadth is greater than that for nasal height within populations and that nasal breadth and nasal height exhibit equivalent intrinsic variation among populations [2]. Sexual dimorphism of the nose morphotype in adult Chileans has been demonstrated [11].

In Nigeria, Akpa *et al.*, did a morphometric study of the nasal parameters among the Igbos. Igbo males have a higher mean nasal length and width than females [12]. Oladipo *et al.*, (2007) did a study of nasal indices among major ethnic groups in Southern Nigeria to show or demonstrate tribal differences in nasal parameters. They saw ethnic differences and sexual dimorphism amongst the major ethnic groups of Southern Nigeria [13]. In 2009, a study was done on the morphometric nose parameters in adult Nigerians. There was no significant difference in the distribution of nostril type between sexes [14]. Oladipo *et al.*, (2009) did a study of nasal parameters among the Yorubas of Nigeria. There was sexual dimorphism of nasal parameters and the Yorubas fall within the African nasal classification (platyrrhine or broad nose) [15]. In 2009, Oladipo *et al.*, investigated the nasal parameters of Itsekiris and Urhobos of Nigeria. Sexual dimorphism was observed within these ethnic groups, with males having significantly higher nasal index values than females. Anthropological differences were seen amongst the two Nigerian ethnic groups examined [16]. Eboh and John (2010) in a study of face and nose shapes among the Ukwuanis, reported platyrrhine as the nose shape [17]. A comparative study of nasal indices was carried out on subjects from Andoni and Okirika tribes of Rivers State in the Niger

Delta region of Nigeria. The Okrikas fall within the platyrrhine nose type while the Andonis fall within the mesorrhine nose type [18]. An anthropometric study was done to document some craniofacial parameters: head circumference, nasal height, nasal width and nasal index of adult Omoku indigenes of Nigeria [19]. Anthropometric study of some craniofacial parameters: head circumference, nasal height, nasal width and nasal index of adult Ijaws of Nigeria has been undertaken [20]. Anthropometric studies of nasal indices of the Ekpeye and Ikwerre ethnic groups in Nigeria have also been done. The Ekpeye males, Ekpeye females and the Ikwerre females had a nasal index which is above 85 and so fall within the classification platyrrhine while the Ikwerre males had a nasal index between 70.00 and 84.9 so fall within the mesorrhine nose type [21].

Numerous studies on the nasal parameters of various tribes in Nigeria have been carried out. Literature search did not reveal any study on the nasal parameters of the Isokos. The Isoko ethnic group is one of the minority ethnic groups occupying the northwestern part of Niger Delta in Delta State, Nigeria. The Isokos speak a similar language with that of their Neighbors, the Urhobos. They have large petroleum production fields [22].

Nasal analysis is vital before performing rhinoplasty (plastic surgery). It is also important in forensic science. Hence research on the nasal parameters of various ethnic groups is very important. The normal values of nasal parameters are vital measurements in the evaluation and diagnosis of craniofacial deformities. The aim of this study is to determine the nasal index in male and female adults of the Isoko ethnic group.

MATERIALS AND METHODS

Four hundred and ten subjects of the Isoko ethnic group with age ranging from 18 to 35 years were involved in this study. The sample was made up of 210 males and 200 females. The subjects comprised of individuals with normal craniofacial configuration. Subjects with trauma of the nose and congenital abnormalities were excluded.

The instruments used in this research include: a digital sliding vernier caliper, scientific calculator and a data sheet. The readings were taken in millimeters, converted to centimeters and the data were recorded on the data sheet.

Subjects were told to sit upright in a relaxed mood with head in an anatomical position while taking measurements. The sliding vernier caliper after been adjusted to an accurate point was used in measurement of nasal height and width. Nasal height was measured by placing the upper fixed divider arm of the vernier caliper on the nasion of the nose superiorly and then the lower moveable divider arm on the subnasale. The readings were read from the digital screen of the caliper and then recorded. The nasal breadth (maximum breadth of the nose) or nasal width was measured at right angle to the nasal height from ala to ala. The nasal index was calculated as the ratio of nasal width to the nasal height multiplied by 100.

Readings were taken twice and the average was recorded to reduce the error of measurements. It was ensured that the caliper was placed properly and accurate readings were taken. It was also ensured that each subject did not smile or change facial expressions while taking measurements

in order to get accurate values. The data obtained were subjected to statistical analysis using descriptive statistics and t-test.

RESULTS AND DISCUSSION

Table 1: Age, nasal height, nasal width and nasal index for total population (both male and female)

Statistics	Age (years)	Nasal height (cm)	Nasal width (cm)	Nasal index
Mean	22	4.48	4.05	90.97
Standard Deviation	3.50	0.35	0.33	8.26
Standard Error	0.17	0.02	0.02	0.41
Minimum	18	3.53	3.09	70.1
Maximum	35	5.59	5.04	129.1
n = 410				

Table 2: Mean nasal parameters and standard deviation of male and female Isokos

Nasal parameters	Male n= 210 Mean :Standard Deviation	Female n= 200 Mean : Standard Deviation
Nasal height (cm)	4.60 : 0.34	4.35 : 0.31
Nasal width (cm)	4.22 : 0.29	3.87 : 0.28
Nasal index	92.35 : 8.53	89.51 : 7.71
n = 410		P< 0.05

Tables 1 and 2 show male and female mean nasal height, nasal width and nasal index with males having significantly higher values than females ($P < 0.05$).

Table 3: Comparison of nasal indices among various populations

RACE/POPULATION	NASAL INDEX	AUTHOR/YEAR
Sudroid	89.8	Franciscus, 1991
Aryans	83.0	
Western Europeans	69.9	Nichani, 2004
Bantus	85.0	
German	71.0	
Igbo - Male	95.8	Oladipo et al., 2009
- Female	90.8	
Yoruba - Male	90.02	Oladipo et al., 2009
- Female	83.58	
Urhobo	89.63	Oladipo et al., 2009
Itsekiri	90.74	
Ukwuani - Male	97.47	Eboh & John, 2011
-Female	98.08	
Isoko - Male	92.35	Present study
- Female	89.51	

Studies have indicated racial and ethnic differences in nasal parameters amongst different populations. Risley [7] reported that the nasal index of Africans is basically platyrrhine. In Nigeria, Oladipo et al., [13] also reported a platyrrhine kind of nose in a morphometric analysis of the nasal parameters of Igbo, Ijaw and Yoruba ethnic groups in Southern Nigeria with males

having significantly higher nasal indices than females. In a related study among the Ukwuanis in Nigeria, Eboh and John [17] reported a platyrrhine kind of nose. This present study concurs with the above authors on the platyrrhinity of most African ethnic groups and the existence of sexual dimorphism in nasal parameters. However, this research does not concur with that of Oladipo *et al.*, in which the Andoni tribe of Rivers State in Nigeria falls within the mesorrhine nose type [18]. Ikwerre males also fall within the mesorrhine nose type [21].

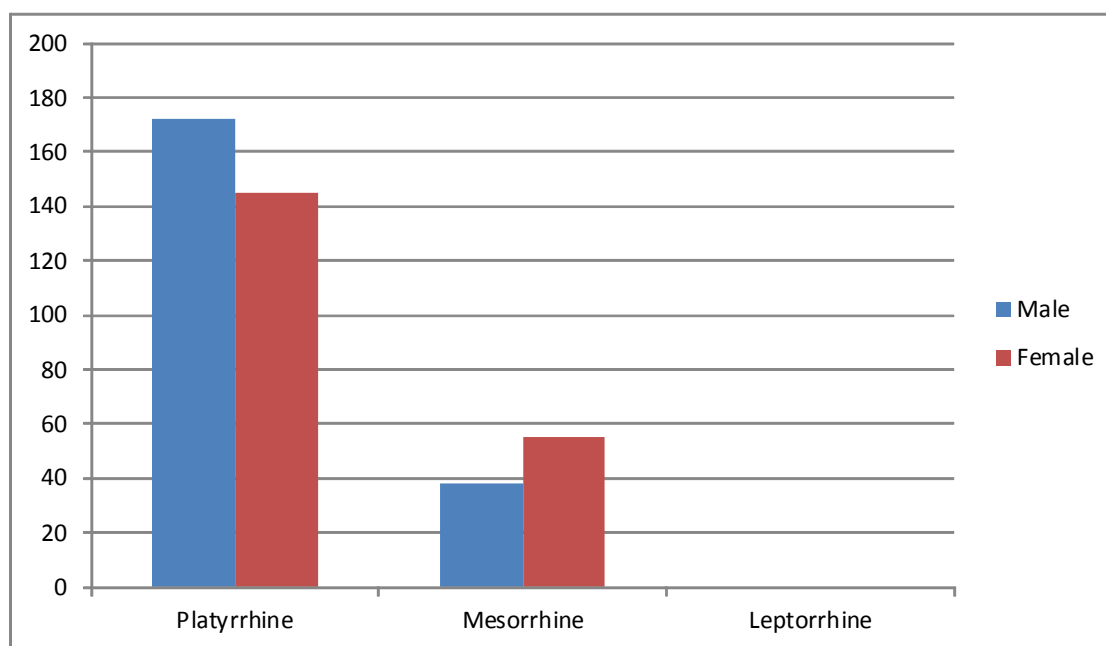


Figure 1: A comparison of male and female nasal type.

This study indicates sexual dimorphism, with significantly higher values of all the nasal parameters in males compared to the females ($p < 0.05$). Sexual dimorphism was observed in the Itsekiri and Urhobo ethnic groups of Nigeria with males having significantly higher nasal index values than the females [16]. Sexual dimorphism, with significantly higher values of all the nasal parameters in males compared to the females was also seen with the Omoku indigenes of Nigeria [19]. Other authors also reported sexual dimorphism in the nasal height, nasal width and nasal index of tribes like the Ijaws of Nigeria [20]. Among the Ukwuanis of Nigeria, only nasal height exhibited statistically significant higher values in males compared to females; no significant differences were observed in nasal width and nasal index between genders [17].

From tables 1 & 2, the Isoko males have significantly higher ($P < 0.05$) values in nasal height, nasal width and nasal index than females. Figure 1 shows comparison between male and female nasal types. The percentage with leptorrhine in the male and female population is 0%. For mesorrhine, the percentage for males is 18.1% (38); that for females is 27.5% (55). For platyrrhine the percentage of males is 81.9% (172) while that for females is 72.5% (145). The Isoko females have a larger percentage of mesorrhine than the males. The Isoko ethnic group still falls under the platyrrhine with a mean nasal index of 91.0.

CONCLUSION

This study shows significant differences in Isoko male and female nasal indices. The Isoko ethnic group falls under the platyrrhine (broad nose) which is the typical African nose type. This study was carried out using standard anthropometric method, hence this result is recommended to forensic experts, plastic surgeons and anthropologists.

REFERENCES

- [1] K. Krishan, *The Internet J. Forensic Sci.* **2007**; 2(1): 18-22.
- [2] R.G. Franciscus, J.C. Long, *Am. J. Physical Anthropol.* **1991**; 85(4): 419-427.
- [3] G. Madison. The passing of the great race. Language and nationality. **2004**; Chapter 2, 2-4.
- [4] R.J. Last. Anatomy applied and regional. Churchill livingstone. **1981**; 6th edition, 398-403.
- [5] R.L. Hall, D.A. Hall. Geographic Variation of native people along the pacific coast. Human Biology. **1995**; 67(5) : 407-426.
- [6] P. L. Williams, R. Warwick, M. Dyson., L. H. Bannister. Grays Anatomy 37th Edition, Churchill Living Stone London. **1995** : 601-612.
- [7] H.H. Risley. The people of Indian. **1915**; Crooke W Pupliching Company Philedephia. 2nd edition: 395-399.
- [8] M. Shirley, B. Edna, A.M. Arenson, *J. Exp. Clin. Anat.* **1991**; 2(2): 27-28.
- [9] J.R. Nichani, *Clinically Otolaryngology and Allied Sci*, **2004**; 10(6) : 5-6.
- [10] F.M. Varjao, S.S. Nogueira. U.S National Library of Medicine. **2006**; 6(2): 418-430.
- [11] P.J.A. Troncoso, G.I.C. Suazo, L.M. Cantin, *Internet J. Morphology*. **2008**; 26(3): 537-542.
- [12] A.O.C. Akpa, C. Ugwu, A. O. Maliki, S.O. Maliki, *J. Exp. Clin. Anat.* **2003**; 2(2): 24-25.
- [13] G.S. Oladipo, A.O. Olabiyi, A.A. Oremosu, C.C. Noronha, Scientific Research and Essay. **2007**; 2(1): 20-22.
- [14] H.I. Garandawa, O.G.B. Nwaorgu & O.M. Oluwatosin, *The Internet J. Otorhinolaryngol.* **2009**; 10 (2)
- [15] G.S. Oladipo, H.B. Fawehinmi, Y.A. Suleiman. *The Internet J. Biological Anthropol.* **2009**; 3(2) : 18-22.
- [16] G.S. Oladipo, A.I. Udoaka, E.O. Afolabi, I. F. Bob-Manuel. *The Internet. J. Biological Anthropol.* **2009**; 3(1) : 20-25.
- [17] D.E.O. Eboh, E.A. John. *J. Exp. Clin. Anat.* **2011**; 10(1): 4-8.
- [18] G. S. Oladipo, M. A. Eroje and H. B. Fahwehinmi, *Internat. J. Med. Med. Sci.* **2009**; 1(4): 135-137.
- [19] G. S. Oladipo, P.D. Okoh, P.A. Akande, M.O. Oyakhire, *Am. J. Sci. Ind. Res.* **2011**; 2(1): 54-57.
- [20] G. S. Oladipo, P.D. Okoh and J.S. Hart. *Asian J. Med. Sci.* **2010**; 2(3): 111-113.
- [21] G.S. Oladipo, M.O. Oyakhire and A.A. Ugboma Henry, *Asian J. Med. Sci.* **2010**; 2(4): 167-169.
- [22] S.O. Obaro . The Isoko tribe. **2002**. Caston Press limited, Ibadan. Chapter 2: 3-9.