

## Short Communication

# Nasal indices among major ethnic groups in southern Nigeria

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**Nasal index is an ethnicity sensitive anthropometric index; it is one of the important anthropometric parameters for suggesting the race and sex of an individual whose identity is unknown. In the present study, authors have worked out nasal indices in subjects of Igbo, Yoruba and Ijaw ethnic groups. 750 subjects each of Igbo and Yoruba with 175 subjects of Ijaw ethnic groups were measured for nasal height (NH) and nasal breadth (NB). Then the nasal indices were calculated from the measurements. The results showed that on the average, the Igbos had a mean nasal index of  $94.1 \pm 0.37$ , Yorubas  $89.2 \pm 0.30$  and the Ijaws  $96.37 \pm 1.06$ . Thus the Ijaws had a significantly higher nasal index ( $p < 0.05$ ) than either the Igbos or Yorubas. Sexual dimorphism was also observed in all the ethnic groups studied with males having significantly higher ( $p < 0.05$ ) nasal index than the females. However, the three ethnic groups still fall within the same nose type platyrrhine (short and broad nose) expected of an African population. The result of this study has confirmed anthropological differences amongst the three Nigerian ethnic groups investigated.**

**Key words:** Nasal indices, ethnic differences, Igbo, Yoruba, Ijaw.

## INTRODUCTION

The Igbos, Yorubas and Ijaws are the indigenous people of South-Eastern, South Western and South-Southern parts of Nigeria, respectively. All the three groups are of African decent and south of the Sahara. Ethnicity is a variable that affects craniofacial dimensions (Rajakshmi et al., 2001). Nasal index is very useful in anthropology in distinguishing racial and ethnic differences (Franciscus, 1991; Porter and Olson, 2003; Aung et al., 2000). It also exhibits sexual differences (Zhang et al., 1990). And it has become a useful tool in Forensic Science (Xu et al., 2001).

Variables that determine the shape of the nose include race, tribe and environmental climatic conditions (Last, 1981), with narrower noses being favored in cold and dry climates and broader noses in warmer, moister ones as a consequence of natural selection in human evolution (Hall and Hall, 1995). The importance of nasal morphometric parameters is recognized in nasal surgical and medical management (Akpa et al., 2003; Romo and Abra

-ham, 2003; Daniel, 2003; Hansen and Mygind, 2002; Allanson et al., 1999; Zankl et al., 2002; Ochi and Ohashi, 1986; Macho, 1986).

There are various categories of nose on the basis of nasal height, nasal breadth and nasal index. The three categories are commonly accepted (Williams et al., 1995; Porter and Olson, 2003). Values of the nasal height, breadth and index of African tribes from various geographical regions and ethnic make up are not as readily available as figures from other parts of the world. In Nigeria, Akpa et al., has done a study on morphometric study of the nasal parameters in Nigerian Igbos (Akpa et al., 2003). This study was carried out to document and provide a baseline data of nasal index which could be of importance in clinical practice, forensic and anthropological studies.

## MATERIALS AND METHODS

A total number of 1675 subjects which comprised 750 Igbos, 750 Yorubas and 175 Ijaws with ages ranging from 22 - 30 years were used for the study. Four hundred and ninety (490) of the Igbos were males while 260 were females. Four hundred and forty three (443) of the Yoruba subjects were males while 307 were females. One

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**Table 1.** Mean standard deviation (SD) and standard error (SE) of nasal index in Nigerian Igbo, Yoruba and Ijaw ethnic groups.

Groups	Igbo		Yoruba		Ijaw		Total Population		
	Male	Female	Male	Female	Male	Female	Igbo	Yoruba	Ijaw
Mean	95.9	90.8	90.0	88.1	98.6	94.2	94.1	89.2	96.4
S.D	9.8	9.9	8.1	8.3	9.7	9.6	10.1	8.2	7.7
S.E	0.44	0.61	0.38	0.47	0.93	1.18	0.37	0.30	1.06
n	490	260	443	307	109	66	750	750	175

$p < 0.05$ , SD = standard deviation, SE = standard error, n = number of subjects.

hundred and nine (109) of the Ijaws were males while 66 were females. Participants were of non-mixed direct and grand parentage were selected at random in out patients clinics of public and private hospitals from Yenegoa, Port Harcourt, Owerri, Nsukka, Ibadan and Ile-ife all in Southern Nigeria. Subjects who had trauma of the nose, prior plastic or reconstruction surgery of the face or cleft lips were excluded in the study.

The height of the nose (NH) was measured with the help of sliding caliper, from nasion to nasospinale. The nasal breadth (maximum breadth of the nose) was measured at right angle to the nasal height from ala to ala. All the measurements were taken with the subject sitting in chair in a relaxed condition and head in the anatomical position. Nasal index was calculated as follows: Nasal index = (Nasal breadth / Nasal height) (Romo and Abraham, 2003). The data was subjected to statistical analysis.

## RESULTS AND DISCUSSION

In all, mean nasal index  $> 85.0$  were observed in the three Nigerian ethnic groups studied. The Ijaws had the highest nasal index (96.4) followed by Igbos (94.1) while the lowest value was observed in Yorubas (89.2) (Table 1). Males had a higher nasal index than the females in all the ethnic groups. The differences observed were statistically significant ( $p < 0.05$ ).

A number of studies have indicated racial and ethnic differences in nasal index amongst different populations. Most Western Europeans are leptorrhine, having long and narrow nose with a nasal index of 69.9 or less; the Bantus and Bushmen of Africa as well as indigenous Australians are platyrrhine, having broad nose with nasal index or 85.0 and above (Romo and Abraham, 2003; Risley, 1915) The sudroid race have a nasal index similar to indigenous Africans south of the Sahara and indigenous Australians with a nasal index of 85.0 and above i.e. platyrrhine, while the German's nasal index is similar to that of the general Western European's average of nasal index of 71.0 and below- leptorrhine (Risley, 1915; Akpa et al., 2003) showed that the mean nasal length and with of Nigerian Igbos were 6.22 and 7.26, respectively (Akpa et al., 2003). Thus the Igbos is therefore expected to have a platyrrhine type of nose.

All authors above agree with racial differences in nasal index. Our results conform with them and especially with that of Risley (1915) on African population of nasal index

of 90 - 100 (platyrrhine). The result shows that the Ijaws have a significantly higher nasal index than the Igbos and Yorubas ( $p < 0.05$ ). Also males have significantly higher nasal index than females ( $p < 0.05$ ). This confirms the existence of ethnic differences and sexual dimorphism amongst the major ethnic groups in Southern Nigeria.

## Conclusion

The mean nasal index of the major ethnic groups has been determined and compared. This should be of relevant importance in national physical anthropometry, forensic investigations and in clinical practice.

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