

Anthropometric Studies of Nasal Indices of the Ekpeye and Ikwerre Ethnic Groups in Nigeria

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Abstract: 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. This study was carried out to compare the nasal indices between the Ekpeye and the Ikwerre ethnic groups of Rivers State in Nigeria. Five hundred (500) subjects were randomly selected from each ethnic group who were purely of either Ikwerre or Ekpeye origin by both parents and grand parents. These comprised two hundred and fifty (250) males and two hundred and fifty (250) females. The age of the subjects ranged from 18-32 years. Nasal height (NH) and breadth (NB) of these subjects were measured using a sliding caliper and nasal index (NI) was calculated as $NB/NH \times 100$. The result was analyzed statistically using z-test. The result showed that the Ekpeye males and females had mean nasal indices of 93.72 ± 0.57 and 88.99 ± 0.61 , respectively while the Ikwerre males and females had mean nasal indices of 84.81 ± 0.57 and 93.17 ± 0.51 . These values were significantly different between the two group ($p < 0.05$). The mean nasal index of the Ekpeyes irrespective of gender was found to be 93.36 ± 0.59 and that of the Ikwerres was 88.99 ± 0.54 . 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. 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.

Key words: Anthropometry, nasal height, nasal breadth, nasal index, mesorrhine, platyrrhine

INTRODUCTION

The Ekpeye and Ikwerre ethnic groups are indigenous people of Rivers State in Niger Delta region of Nigeria. They are predominantly farmers and fishermen (Okafor, 1997).

Physical anthropology relies mainly on external measurements and descriptions of the human body and in particular upon the skeleton. Such measurements are useful in the analysis and classification of fossil remains as well as study of living population (Alex *et al.*, 1996). The nasal index measurement is one of the methods anthropologists have used to differentiate living race and subspecies of man (Risely, 1915). Analysis using nasal index ratio by (\times) 100 of the greatest width of nasal aperture to height of nasal skeleton has aided in the classification of nasal index into three different nose types (Williams *et al.*, 1995; Porter and Olson, 2003). Based on the index, the nose has been classified into: leptorrhine or fine nosed (≤ 69.9), mesorrhine or medium nosed (70.0-84.9) and platyrrhine or broad nosed (≥ 85.0) (Risely, 1915).

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

Table 1: Mean, Standard Deviations and Standard Error of Nasal Indices of Ekpeye and Ikwerre Ethnic Groups.

Tribes and sex	Ekpeye males	Ikwerre males	Ekpeye females	Ikwerre females	Total Ekpeye	Total Ikwerre
Mean(X)	93.72	84.81	88.99	93.17	91.36	88.99
Standard Deviation(S.D)	9.01	8.94	9.64	7.99	9.33	8.47
Standard Error	0.57	0.57	0.61	0.51	0.59	0.54
Variance	81.19	79.84	93.03	68.89	87.11	74.37
Sample Size	250	250	250	250	250	250

p<0.05

findings showed a mean nasal index >85.0 in the three Nigerian ethnic groups studied. Oladipo *et al.* (2009) also conducted a study on the nasal parameters of Andoni and Okrika ethnic groups of Rivers State, Nigeria. Their findings showed that the mean nasal indices of Andonis and Okrikas were 81.86±2.26 and 86.38±1.35 respectively. Thus the Okrikas fall within the platyrrhine nose type while the Andonis fall within mesorrhine.

The present study was carried out to compare the nasal indices of Ekpeye and Ikwerre ethnic groups of Rivers State and to provide a baseline data of nasal indices, which could be vital in forensic medicine, anthropological studies, and clinical practice especially in nasal surgery.

MATERIALS AND METHODS

This study was conducted between June-December 2008. A total number of one thousand (1000) subjects which comprised five hundred (500) Ekpeyes and five hundred (500) Ikwerres were used in the study. The age of the subjects ranged from 18-32 years. Two hundred and fifty (250) of the Ekpeyes were males while two hundred and fifty (250) were females. Two hundred and fifty (250) of the Ikwerres were males while two hundred and fifty (250) were females. Subjects were selected randomly from the University of Port Harcourt, Rivers State University of Science and Technology- Port Harcourt, Emuoha and Choba in Rivers State. Subjects were either Ekpeyes or Ikwerres by both parents and grand parents. 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 ala to 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 $NH/NB \times 100$ (Romo and Abraham, 2003). The data was subjected to statistical analysis using z-test.

RESULTS AND DISCUSSION

The Ekpeye males had the highest mean nasal index of 93.72 while the Ikwerre males had lowest mean value of 84.81. The mean values of the Ekpeye males, females and the Ikwerre females which were 93.7, 88.9 and 93.17,

Table 2: Comparative data on Nasal Indices (N.I) of various Populations

Country	People authors and dates	Nasal index
Lebanon	Daniel (2002)	63.30
Alawite	Daniel (2002)	62.74
Damascus	Daniel (2002)	63.26
Homs-Hama-Aleppo	Daniel (2002)	58.66
Armenians	Daniel (2002)	63.80
Greeks	Daniel (2002)	68.49
Arabic	Daniel (2002)	74.48
Indo-Aryans	Risely (1915)	73.25
Indian Negriod(sudriods)	Risely (1915)	84.10
African Americans	Porter <i>et al.</i> (2001)	79.70
Rajputs	Mulchand (2004)	71.60
Africans	Risely (1915)	90-100
Nigerian Igbo's	Akpa <i>et al.</i> (2003)	116.70
Nigerian Igbo's	Oladipo <i>et al.</i> (2006)	94.10
Nigerian Yoruba's	Oladipo <i>et al.</i> (2006)	89.20
Nigerian Ijaws	Oladipo <i>et al.</i> (2006)	96.37
Nigerian Ogonis	Oladipo <i>et al.</i> (2007)	98.50
Nigerian Okrika	Oladipo <i>et al.</i> (2009)	86.38
Nigerian Andonis	Oladipo <i>et al.</i> (2009)	81.86
Nigerian Ekpeyes	Present study (2009)	91.36
Nigerian Ikwerres	Present study	88.99

respectively were above 85 and therefore fell under the platyrrhines (broad nose) type while the Ikwerre males had a mean value of 84.81 which fell between 70.0 and 84.9 (mesorrhine) (Table 1). From Table 2, the Ikwerres and Ekpeyes had characteristic nasal indices which were different from other Nigerian populations and other populations of the world previously reported.

The nose is one of the best clues to racial origin (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.*, 2009). Most Caucasians are leptorrhine having long and narrow nose with nasal index of 69.9 or less. The Bantu speaking Negroids and Australioids with nasal index of 85.0 and above (platyrrhine). While the Caucasoid of the early indo-Aryan were mesorrhine (Risely, 1915). In a similar study, Oladipo *et al.* (2006) reported that the mean values for Nigerian Igbos were 95.9 and 90.8 for males and females respectively. Thus, the Igbos have platyrrhine nose type and also show sexual dimorphism.

Risely (1915) reported that the nasal index for Africans is basically platyrrhine; this does not agree with our present study which showed that the Ikwerre males

have mesorrhine type of nose. Morphometric parameters are dependent on age, race and sex so mesorrhine nose could be typical to the Ikwerre males, though this suggestion warrants further supportive studies.

In Nigeria, Oladipo *et al.* (2007) reported a platyrrhine type of nose in morphometric analysis of nasal parameters of Igbo, Ijaw and Yoruba ethnic groups in Southern Nigeria with males having significantly higher nasal index than females ($p < 0.05$). This report is at variance with the findings of the present study as Ikwerre females had significantly higher nasal index ($p < 0.05$) than males. Thus for the first time a Nigerian ethnic group (Ikwerres) shows higher nasal index in females than males. It has also shown that ethnicity, even within the same geographical, location affects nasal index. The present findings have shown platyrrhine kind of nose for the Ekpeye ethnic group and sexual dimorphism was observed in all groups. This is in agreement with previous authors (Oladipo *et al.*, 2006, 2007, 2009; Akpa *et al.*, 2003).

Report by Oladipo *et al.*, 2009 has also shown that Andoni ethnic group has mesorrhine type of nose which agrees with the report of Risely, 1915 that not all Africans are platyrrhines. The present work is in agreement with these reports as Ikwerre males has mesorrhine nose type.

CONCLUSION

The Ekpeyes and the Ikwerre females fall within the platyrrhine nose type while the Ikwerre male fall within the mesorrhine nose type. Study has so far shown that each ethnic group in Nigeria irrespective of their location has a characteristic nose pattern different from other groups occupying the same location. Thus a parameter value for each ethnic group is needed for the purpose of clinical practice (plastic surgery), forensic medicine and anthropological study. This data should therefore be of importance in the above listed areas when the Ikwerres and Ekpeyes of Nigeria is of interest as they have been properly investigated.

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