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An Assessment of Some Nasal Parameters in Urhobos

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ABSTRACT

Nasal parameters are important cephalometric measurements useful in forensic medicine, plastic surgery and rhinoplasty. This study was aimed at providing empirical data of nasal parameters in Urhobos. It involved 500 Urhobo volunteers (220 male and 280 female) whose nasal parameters were measured using a vernier calliper after obtaining consent from each subject. The nasal index calculated as the percentage ratio of the nasal width to the nasal height and the results of this study showed that male subjects had significantly higher nasal dimensions than their female counterparts ($P < 0.05$) and further demonstrated the prevalence of platyrrhine nose type in the studied population. The conclusion of this study therefore is that the Urhobo nose is platyrrhine and that gender strongly influenced some nasal parameters in the studied population.

Key words; Nose, Forensic, Rhinoplasty, Platyrrhine

INTRODUCTION

Measurements of the human face as part of the body have been performed since the Greek era, and many aspects of ancient measurements can be found in modern clinical anthropometry.¹ Nasal parameters are among the most important cephalometric measurements useful in forensic medicine,²⁻³ plastic surgery and rhinoplasty.⁴⁻⁸

Nasal types have been classified into leptorrhine {long and pointed}, mesorrhine {intermediate height and width} and platyrrhine {flat and broad} based on the nasal index.⁹⁻¹¹ This index can be determined in the living as well as in the preserved skull.¹²⁻¹³ The evaluation of nasal parameters on the living has been through direct clinical measurements (morphometry), by photography, plain radiography and more recently, three-dimensional (3D) scans and digitizers.¹⁴⁻¹⁵

Several anthropometric measurements have been shown to be influenced by geographical, racial, gender and age factors.^{16,17} Despite slight individual variations, the average nasal index of a given population of people may show clear uniformity.⁹ This distinction has led anthropologists to consider nasal index in race determination.^{2,18} The shape and dimensions of the nose has also been reported to display sexual dimorphism.¹⁹⁻²¹

This study was therefore aimed at providing empirical data of some nasal parameters in the studied population (Urhobos). The results of this study will no doubt be of

extensive importance in forensic identification, reconstructive and cosmetic surgery involving the nose.

MATERIALS AND METHODS

A total of 500 subjects comprising 220 male and 280 female volunteers were randomly sampled in the index study. The subjects recruited were all Urhobos of non-mixed origin with direct grand parentage. Subjects with congenital nose abnormalities, previous history of trauma to the nose, nasal surgery and uncertain ancestry were excluded from the study. The significance of the study was explained to the subjects and informed consent (permission from guardians of individuals below 18) was obtained from each subject before each measurement.

The age range of the subjects was between 15 to 34 years and were grouped into; 15-19, 20-24, 25-29 and 30-34 years. A sliding calliper was used to measure the nasal parameters with the subject setting comfortably on a chair and the head in the anatomical position. The parameters measured included; nasal height (the distance from nasion to the subnasale; nasal width; (the distance between both alae of the nose), and the nasal index calculated from the formulae below.²²⁻²³

Nasal index = $\frac{\text{Width of nose}}{\text{Height of nose}} \times 100$

Height of nose = 1

The sample means were analysed with t tests using SSPS software version 20.0 and the results displayed (cm in two decimal places) in tables.

RESULTS

The descriptive statistics of nasal parameters among the sexes of the population is shown in table 1. A total of five hundred (500) subjects were involved in the study composed of 220 males (44%) and 280 females (56%). The mean nasal index, height and width were 101.03±13.15cm, 3.89±.36cm and 3.91±.44cm respectively. The age range of subjects in this study was between 15 – 34 years with a mean age of 23.51 years and a median age of 23 years. The mean values for the males were higher than that of the females in all the parameters measured (p<0.05).

Nasal Index

As displayed in table 1, the mean nasal index for males was 103±12.52cm while that of females was 99.40±13.43cm. The nasal index for males was significantly higher (p < 0.05) than that of their female counterparts in all the age intervals as shown in table 2.

Nasal Height

In table 1, the mean nasal height for males was 4.01±.37cm and that of females was 3.80±.32cm. In table 3, the nasal height for males was shown to demonstrate higher values than their female counterparts and the differences were significant (p < 0.05) across most age groups.

Nasal Width

Similarly, table 1 also showed that the mean nasal width for males was 4.09±.47cm and that of females was 3.77±.36cm. The mean nasal width for males was significantly higher (p < 0.001) than that of the females in almost all the age groups studied (table 4).

Nasal Indices and Age

As shown in table 2, age demonstrated minimal effects on all the nasal parameters in most age groups analysed (p > 0.05). The only exception was within the second age interval where the effect was observed to be significant.

Table 1: Nasal Index, Nasal Height, and Nasal Width among the Male and Female Subjects

Variable	Gender	N	Mean	SD	P-values
Nasal index	Male	220	103.04	12.52	<0.002
	Female	280	99.40	13.43	
Nasal height	Male	220	4.01	0.36	<0.000
	Female	280	3.81	0.31	
Nasal width	Male	220	4.10	0.38	<0.000
	Female	280	3.79	0.38	

Table 2: Gender Effect on Nasal Index Among the Age Categories

Age Interval	Mean± SD		p-val
	Male	Female	
15-19	102.62±11.49 □	99.65±11.59 □	0.430*
20-24	102.18±14.02 □	98.57±14.74 □	0.034**
25-29	103.72±11.01 □	102.34±10.44 □	0.630*
30-34	106.32±10.65 □	96.98±12.02 □	0.79*

*P>0.05; **p < 0.05, □ = male; □ = female

Table 3: The Effect of Gender on Nasal Height

Age Interval	Mean±SD		p-val
	Male	Female	
15-19	3.98±.69 □	3.77±.33 □	0.007**
20-24	4.03±.41 □	3.82±.31 □	0.000**
25-29	4.04±.35 □	3.73±.32 □	0.000**
30-34	3.89±.32!	4.00±.29 □	0.462*

*P>0.05; **p < 0.05, □ = male; □ = female

Table 4: The Effect of Gender on Nasal Width

Age interval	Mean± SD		p-value
	Male	Female	
15-19	3.92±.83 □	3.73±.25 □	0.000**
20-24	4.08±.43 □	3.76±.40 □	0.000**
25-29	4.16±.33 □	3.80±.30 □	0.000**
30-34	4.11±.24 □	3.86±.34 □	0.462*

**p < 0 .001; *p > .05; □ = male; □ = female

DISCUSSION

The nose is one of the components of the face and the study of its form is of importance in plastic surgery²⁴ and facial reconstruction.²⁵⁻²⁶ Similarly, the nasal index, the ratio between the width and height of the nose has been shown to be an important cephalometric parameter utilized in the description of the variation and similarities among races, ethnic groups and across gender.^{12,27} This study demonstrated the platyrrhine nasal characteristic in most of the individuals studied as has been earlier observed in some west other African populations.^{2,19} These similarities could be explained by the common African origin of all the studied populations unlike the leptorrhine pattern of Europeans.^{9,12,28} An analysis of the African-American nose showed a marked degree of variability of the nasal indices (57-102) which can be explained by their triethnic origin.^{10,22}

Similarly, the nasal parameters were shown to demonstrate significantly higher values among the males than in the females (P<0.05) and higher results than previous reports amongst Igbo's (males, 95.9; females, 90.8), Yoruba's (males, 90.0; females, 88.1) and Ijaw's (males, 98.6; females, 94.2) respectively.¹⁹ In the review of nasal parameters of Chileans, Pazos et al. demonstrated significant gender dimorphism in nasal dimensions of 180 subjects with the male population showing a larger nasal width (mean, 37.34 mm) and nasal length (mean, 50.09 mm) than the female group (mean of 35.17 mm and 46.86 mm respectively).²⁰ Similarly, distinct sexual differences have also reported with the Igbo, Yoruba and Ijaw males having a significantly higher (P<0.05) nasal index than their female counterparts.¹⁹ The reasons for these observations have been suggested to be a consequence general growth changes which apparently affect males than females.²⁹ The observation that growth in males persisted a few years longer than in females may further explain the relative larger indices in males as was observed in this study.

In general, species variations of nasal dimensions have been shown to be influenced by several factors.^{28,30} These concepts have therefore led to the conclusion that nasal variations were a result of man's adaptation to the

environment and that the average nasal index of various groups of living populations could be affected by the average temperature and average humidity of their habitat.³¹ Proponents of these concepts therefore concluded that it was likely that the platyrrhine nasal index was associated with a hot, moist climate while a leptorrhine nasal index was found in a cold and dry climate. Weiner in 1954 corroborated these observations when upon re-examination of Thomson and Buxtons' data, he further stressed that a strong correlation existed between nasal index and absolute humidity¹² as had been earlier emphasized.²⁸

Though nasal indices have been shown to be affected by age,³² the results of this study demonstrated that age had diminutive effects on the analysed nasal parameters. The explanation for this observation was clearly a consequence of the age intervals studied which was restricted to early to mid adulthood wherein rapid physical body growth must have gradually diminished.

CONCLUSION

The conclusion of this study therefore is that the Urhobo nose is platyrrhine and that gender strongly influenced some nasal parameters in the studied population.

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