

Nose Pattern of Ekowe Indigenes, Bayelsa State

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Abstract

Anthropometry is the numeric assessment of body segments for specific reasons. The present study is aimed at specifying the nose type and pattern of Ekowe indigenes in Bayelsa State of Nigeria. A total of 300 subjects were recruited for this study with sex difference of 179 males and 121 females. The measured parameters include nasal breadth, nasal height and nasal index. The results showed mean values of nasal breadth as 4.87 ± 0.42 and 4.62 ± 0.42 for males and females. Nasal height values are 4.43 ± 0.37 and 4.13 ± 0.40 for male and female. Nasal index for males and females are 110.64 ± 12.52 and 112.89 ± 14.43 . Sexual dimorphism exists amongst the measured parameters and there was statistical significant difference for nasal breadth and height ($p < 0.05$). With reference to nose classification by Martin and Sallar, 1957; the males and females of Ekowe indigenes possess platyrrhine (broad and short) nose shape.

Key words: Platyrrhine, Nasal Index, Sexual dimorphism.

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INTRODUCTION

The nasal index is one of the most cited parameter useful in the prediction of sex of unknown individual. It is also an indicative parameter for human racial origin. It has been posited that human evolved due to natural selection and climatic condition, as people whose ancestors evolved or lived in cold and dry environment tend to have narrow and thinner nose due to their nose heating more cold air, while those living in warm, and moist climate possesses broader and short nose to allow much air in [1]. Nose shapes have been divided into three different categories by its index [2]. Nasal index < 70 is Leptorrhine (Long and narrow nose), Nasal index between 70-84.9 is Mesorrhine (moderate or medium size nose) and Nasal index > 85 is Platyrrhine (wide nose). Nasal index plays a significant role in determining sex and race, thus, helpful to forensic investigators. It is also useful for plastic surgeons while performing rhinoplasty of a particular region as it shows ethnic specificity [3]. Different genes plays significant role in nose size and breadth. A study on human nose structure in correlation to genes; four different phenotypic characteristics relates directly to nose shape [4]. When humans gets older or ages, it is a natural process for the nose to bending or downward tips. This transformation is due to facial resorption as

the bones starts deteriorate which have effect on the whole facial structure [5]. The male nose is typically larger than the female nose by 10%. There is an increase in the nasal height in males, and their nose has less integration with the facial skeleton [6]. The sizes of the nostrils match the temperature and the absolute humidity of an area. This structure is due to people's adaptation to their climates [7]. The nasal index, as the ratio between nasal height and nasal width, multiplied by 100 is the most commonly used parameter in nasal anthropometry. It is based on both bony and cartilaginous landmarks, which makes it different from most other anthropological indices [8]. Based on the nasal index, the nose has been classified as leptorrhine or fine ($NI \leq 69.90$), mesorrhine or medium nose ($70.0 \leq NI \leq 84.90$), or platyrrhine or broad ($NI \geq 850$) [9]. The nose of individuals with a high nasal index is broad and those with a low index have a narrow nose.

The differences between nose shapes of people from different parts of the world are the results of evolutionary adaptation to climate [10, 11]. The nasal index has been correlated with average temperature and humidity [12, 13] and nasal size with oxygen consumption [14]. A low nasal index was associated with cold and dry climates, while a high nasal index was associated with hot and moist climates.

MATERIALS AND METHODS

Subjects recruited for this study were 300 adults of Ekowe origin, of which 179 males and 121 females of Ekowe indigenes and were between the age range of 18 years and above. The measured anthropometric parameters for this study were nasal breadth, nasal length with the help of a standardized spreading (vernier) caliper. Nasal index was calculated as nasal breadth/nasal length multiplied by 100. The values obtained from these variables were documented and analyzed statistically. All measurements were taken with the subjects sitting on a chair in a relaxed mood and the head in an anatomical position. All subjects were free from any form of facial deformity. Verbal informed consent was sought from subjects before measurement procedure.

Measurement procedure

Nasal height was measured by placing one end vernier caliper at the nasion and the other end at the sub-nasale.

Nasal breadth was measured as the distance between the right and left nasal ala.

Nasal Index was calculated as nasal breadth / nasal height multiplied by 100.

RESULTS

The data obtained from the measured parameters were analyzed statistically and the results are presented in the tables below.

Table-1: Showing means value of ekowe males and females

S/N	PARAMETER	MALE	FEMALE
1	NASAL BREADTH	4.87±0.42	4.62±0.42
2	NASAL HEIGTH	4.43±0.37	4.13±0.40
3	NASAL INDEX	110.64±12.52	112.89±14.43

Key: All values for male and females = Mean±S.D,

Table-2: Showing mean±s.d, z-test of evaluated parameters of ekowe males and females

S/N	PARAMETER	MALE	FEMALE	Z- CALCULATED	INFERENCE
1	NASAL BREADTH	4.87±0.42	4.62±0.42	-5.02	p<0.05*
2	NASAL HEIGTH	4.43±0.37	4.13±0.40	-6.44	p<0.05*
3	NASAL INDEX	110.64±12.52	112.89±14.43	1.40	p>0.05

Key: All values for male and females = Mean±S.D, * = statistically significant

Table-3: Frequency (percentage) of nose shapes of ekowe indigenes

S/N	NOSE SHAPE	FREQUENCY (%)		
		TOTAL	MALE	FEMALE
1	Leptorrhine (≤69.90)	0 (0)	0(0)	0(0)
2	Mesorrhine (70-84.9)	2 (0.70)	0(0)	2 (0.70)
3	Platyrrhine (≥85)	298 (99.0)	179 (59.7)	119 (39.70)

Table-4: Comparasion of nasal index and nose types of ekowe indigenes and other nigerian tribes

RESEARCHER/YEAR	TRIBE	MALE (NI)	FEMALE(NI)	NOSE TYPE (SEX)
Anas <i>et al.</i> (2013)	Yoruba	100.0±8.90	94.1±8.0	Both: Platyrrhine
Anas <i>et al.</i> (2013)	Hausa	71.0±11.30	67.2±8.3	M: Mesorrhine F: Leptorrhine
Oladipo <i>et al.</i> (2009)	Andoni	79.83±4.19	83.77±1.09	Both : Mesorrhine
Oladipo <i>et al.</i> (2009)	Okrika	88.23±1.74	86.46±2.37	Both: Platyrrhine
Eboh <i>et al.</i> (2011)	Bini	99.13±9.26	99.27±11.67	Both: Platyrrhine
Esomonu <i>et al.</i> (2013)	Bekwara	94.65±6.42	90.33±6.45	Both: Platyrrhine
Present study (2021)	Ekowe	110.64±12.52	112±14.43	Both: Platyrrhine

Keys: NI = Nasal Index, M = Male, F= Female, All values = Mean ± SD.

Table-5: Comparasion of nasal index and nose types of ekowe indigenes with various races

RESEARCHER/YEAR	RACE	MALE (NI)	FEMALE (NI)	NOSE TYPE (SEX)
Farkas <i>et al.</i> (2005)	Caucasians	65.50	64.20	Both: Leptorrhine
Burkitt and Lightoller (1923)	Australoid	62.4		Leptorrhine
Koirala <i>et al.</i> (2014)	Mongoloid	74.60±3.10	75.90±5.10	Both : Mesorrhine
Present study(2021)	Ekowe (Negroes)	110.64±12.52	112±14.43	Both: Platyrrhine

Key: NI = Nasal Index.

DISCUSSION

Different categories of nose have been specified. All nose types performs same functions (inhalation, exhalation and contribute to the person's esthetics). In this present study, the results indicates that the males have a large nasal breadth and nasal height with mean values as 4.87 ± 0.42 and 4.62 ± 0.42 for male and female nasal breadth., 4.43 ± 0.37 and 4.13 ± 0.40 for male and female nasal height and was statistically significant ($p < 0.05$). The nasal index for Ekowe males is lower than the females with mean values as 110.64 ± 12.52 and 112.89 ± 14.43 for males and females and the difference was not statistically significant. Since nose shapes have been classified according to the value of nasal index, no percentage was recorded in the leptorrhine shape (long nose) for both male and female Ekowe indigenes. Only 0.7% (2) of the total female subjects falls into the mesorrhine shape (moderate or medium nose) but none for the males. About 99.0% (298) of the total subjects fall in the platyrrhine shape of nose (broad nose). Of this percent, 59.70% (179) of the male subjects were platyrrhines and 39.70% (119) of the female subjects were platyrrhines. This result is in line with the findings of [15] results of the Yorubas with nasal index of 100.0 ± 8.90 and 94.1 ± 8.0 for males and females possessing platyrrhine nose. Study on the Okrika people reveals same platyrrhine nose shape with value for males and females as 88.23 ± 1.74 and 86.46 ± 2.37 [16]. The Bini people also possess platyrrhine nose shape as published by [17] with nasal index of 99.13 ± 9.26 for males and 99.27 ± 11.67 for females. Study on the Bekwara people by [18] also reveals platyrrhine nose shape, with mean nasal index value of 99.13 ± 9.26 and 99.27 ± 11.67 for males and females. But research on the Hausa population of Nigeria tend to tilt the opposite direction where their males are Mesorrhines and their females Leptorrhines with mean nasal index values of 71.0 ± 11.30 and 67.2 ± 8.3 . Study of the Andoni people reveals that both sexes possess Mesorrhine nose shape [16].

CONCLUSION

Comparison of our results with other findings indicates ethnic variant within the Nigerian population. Consequently, with reference to table (5), inter racial variation have been recorded when extrapolating our findings with other researchers on different races. The Caucasians are Leptorrhine for both sexes, Australian is also Leptorrhine for both sexes, the Mongoloid are Mesorrhine for both sexes while the present study (Negroes) is platyrrhine for both sexes. This nose shapes variations could result from sample size difference, nutritional, climatic, genetic factors. In summary, Nose shape has been a sign of beauty and premium has been placed on it, thus, the result of this study is useful in aesthetic, Rhinoplasty and forensics research.

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