

Assessment of the Need for Cosmetic Rhinoplasty in a Nigerian Population

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Author's contributions

The sole author designed, analyzed and interpreted and prepared the manuscript.

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ABSTRACT

Background: Many individuals are affected psychologically either when they perceive a real or imagined deviation of any part of their face or when they desire the morphology of such parts to be like others. The purposes of our study were to determine tribal and sexual dimorphism of nasal indices of subjects in Nigerian population and to assess the satisfaction with the morphology of their nostrils.

Method: Two hundred subjects were recruited from the four tribes. Subjects were taken by random collection. Direct measurement technique was employed using a tape. Nasal height was measured from the frontonasal suture superiorly to the nasal sill inferiorly. The nasal width (maximum breadth of the nose) was measured between the two lateral crura of the ala base. All measurements were taken with the subject sitting in a chair in a relaxed condition and the head in a neutral anatomical position.

Result: There was a sexual dimorphism between the male and female whereby the female has a smaller nose than the male when compared. There were also differences in the nasal indices amongst the four groups, 95% were satisfied with their nose and 4.5% were not satisfied with their nose (5 females and 4 males).

Conclusion: Few subjects were not very satisfied with the form of their nostril and would have preferred the long, narrower and elevated nostrils but they did not desire cosmetic surgery.

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1. INTRODUCTION

The nostril is one of the important organs relevant for facial esthetics. Nasal index is very useful in the analysis and classification of fossil remains as well as the study of living population [1]. It is used clinically in nasal surgery and medical management [2]. The measurement of nose can also help to reveal the course of the evolution leading to the modern varieties of man [3]. This has been useful in the determination of race and sex of individual or groups whose identity is unknown and in forensic medicine at large [4]. The narrower noses are favored in cold and dry climates whereas broader noses in warmer, moister ones as a consequence of natural skeleton in human evolution [5].

There are three categories of forms of nostril on the basis of nasal index. Platyrrhine means broad flat nose with a nasal index of 85 and above. Mesorrhine having a nose of moderate size with a nasal index of 47.0 to 50.9 on the skull or 70.0 to 84.9 on the living head. Leptorrhine having a long narrow nose with a nasal index of less than 47 on the skull or of less than 70 on the living head. It was first recorded used in 1880. [6,7]. Carey et al. [8]. showed that the Negroid race mainly of African descent have the Platyrrhine nose type. It has been established that the morphology of this nostrils differs amongst racial groups however we need to ascertain if there are differences in the form amongst tribal and ethno-cultural groups within these races and also the desire for corrective rhinoplasty. Female and male nostrils are quite different in terms of size and shape, but in facial feminization surgeries, it is necessary to appreciate that the size of the nose has to be in proportion to whole face. Therefore the aims of this study were to determine tribal and sexual dimorphism of nasal index amongst a selected population, to compare the level of satisfaction in relation to the morphology and to assess desire of surgical intervention to improve the nasal morphology.

2. SUBJECTS AND METHODS

This was a prospective study that was carried out at the Department of Maxillofacial surgery and Human Anatomy, University of Port Harcourt, Rivers state. The subjects used for the study were two hundred (200) comprising of Yoruba, Igbo, Ijaw and Ikwerre indigenes and all gave

their informal verbal consent. Fifty subjects were recruited from each of the four tribes. Subjects were taken by random collection. Direct measurement technique was employed using a 1.5 60 inches flexible flat tape (WINTAPE). The nasal height was measured from the frontonasal suture superiorly to the nasal sill inferiorly. The nasal width (maximum breadth of the nose) was measured between the two lateral crura of the ala base, Figs. 1 and 2. All measurements were taken with the subject sitting in a chair in a relaxed condition and the head in a neutral anatomical position (midway between flexion and extension of the neck). All measurements were performed and repeated by same operator 1 week later. Method error was assessed by using Dahlberg's method. The ratio of nasal width to the nasal height of the nasal multiplied by 100 is the nasal index. Thus, Nasal Index was expressed as:

$$\text{Nasal Index} = \frac{\text{Nasal width} \times 100}{\text{Nasal Height}}$$

Subjects were asked about their satisfaction with the shape and size of their nostril and the desire for surgery was also inquired from those who were not satisfied. Data was fed into the IBM task (SPSS version) and descriptive statistical analysis was done using the SPSS version 16 (Illinois, Chicago, USA). Results were expressed in simple frequencies, percentages, mean and standard deviation. Comparison of value was done using the student t-test and ANOVA.

3. RESULTS

Age ranges of 200 subjects are reflected in Table 1, Figs. 3 and 4. The mean nasal index values for the Yoruba male and female were 98.79 and 94.32 respectively. The mean value for Igbo male and female were 96.14 and 92.60. The mean value for Ijaw male and female were 91.89 and 93.15. The mean value for Ikwerre male and female were 96.28 and 94.92 respectively. The Yoruba males had the highest nasal index and the Ijaw male had the lowest when compared. Also, the Ikwerre female had the highest nasal index and the Igbo females had the lowest when compared. (Tables 2 & 3).

However, the result of this study shows that there was a sexual dimorphism between the male and female whereby the female has a smaller nose than the male when compared. The difference

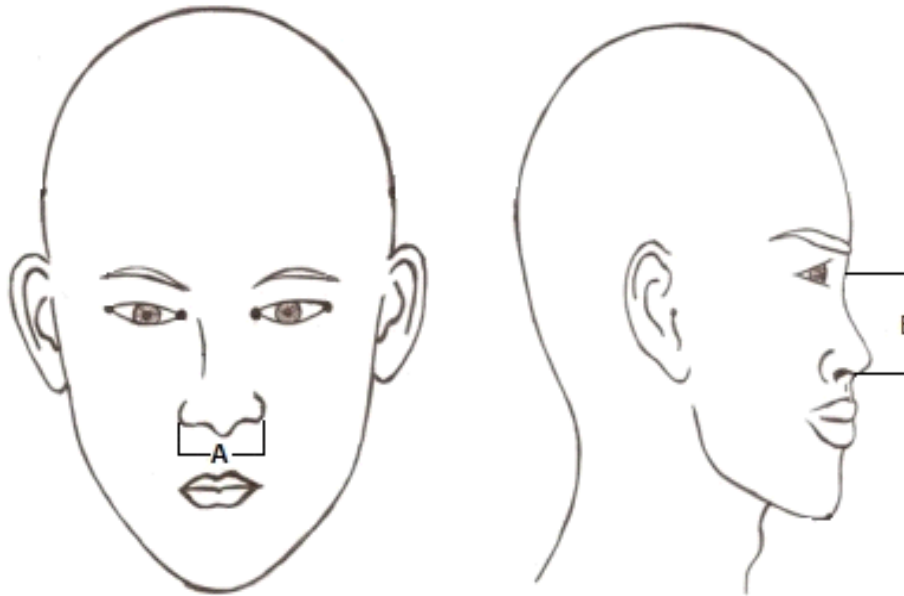
Table 1. Age, frequency distribution and percentage of all male and female subjects

Age range	Males	Females
	N(%)	N(%)
16 – 20	18(9)	15(7.5)
21 – 25	35(17.5)	35(17.5)
26 – 30	20(10)	30(15)
31 – 35	11(5.5)	20(10)
36 – 40	16(8)	0(0)
Total	100	100

was however not significant, (Table 4) the correlation coefficient for male and female was 0.157 at $p > 0.05$. The mean nasal index for the male and female were 95.78 and 93.75 respectively. Statistical analysis with the paired t-

test revealed that there is an estimate of nasal index between male and female ($p = 0.079$), (Table 5).

There was also no significant difference amongst the four tribes, $p < 0.05$. The results show that the four groups being studied have the Platyrrhine type of nose. From the result found, 95% were satisfied with their nose and 4.5% were not satisfied with their nose (5 females and 4 males), when asked their preferences, they indicated they would have preferred the leptorhinne form and the females wanted the nose tips lifted more than it was, however none of these desired a cosmetic rhinoplasty.



Figs. 1 and 2. show the points measured
(A) represents nasal width and (B) represents nasal height

Table 2. Mean, standard deviation and Standard error of Nasal Indices of Yoruba, Igbo, Ijaw and Ikwerre ethnic groups

Groups	Yoruba		Igbo		Ijaw		Ikwerre	
	Male	Female	Male	Female	Male	Female	Male	Female
MEAN	98.79	94.32	96.14	92.6	91.89	93.15	96.28	94.92
S.D	8.59	9.93	9.04	7.84	8.52	9.03	6.80	9.83
S.E	1.72	1.98	1.81	1.57	1.70	1.81	1.36	1.97
N	25	25	25	25	25	25	25	25

$P > 0.05$

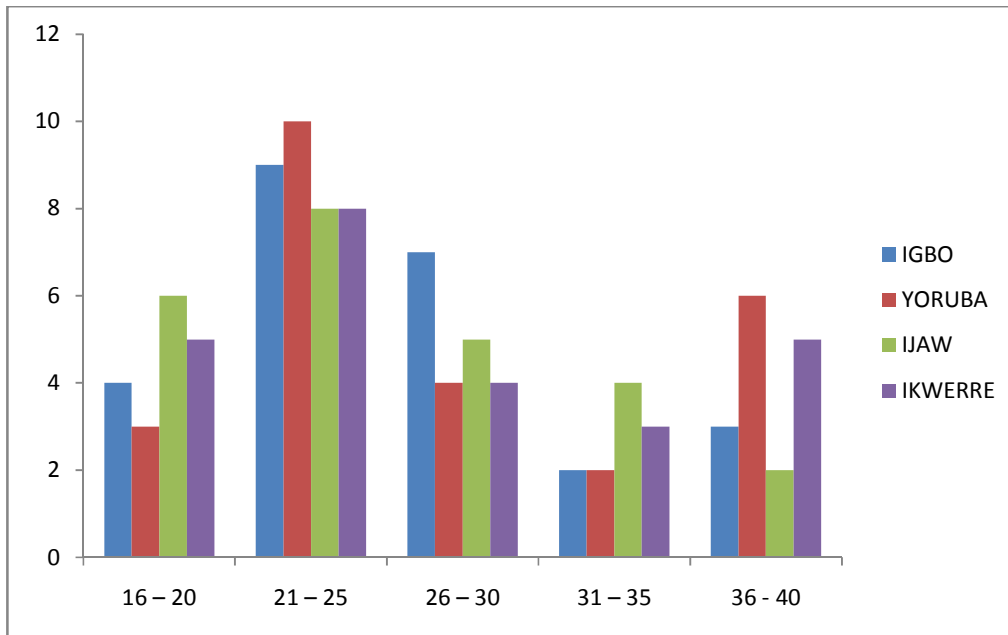


Fig. 3. Chart showing the frequency distribution of ages of subjects in the various tribes for all male

Table 3. Overall mean and standard deviation and Standard error of Nasal Indices of Yoruba, Igbo, Ijaw and Ikwerre ethnic groups

Groups	Yoruba	Igbo	Ijaw	Ikwerre
Overall mean	96.56	94.37	92.52	95.6
S.D	9.46	8.56	8.71	8.39
S.E	1.34	1.21	1.23	1.19
N	50	50	50	50

$P > 0.05$

Table 4. ANOVA between all Males and Females

	Sum of squares	Df	Mean square
Between groups	5755.021	61	94.345
Within groups	2444.666	38	64.333
Total	8199.687	99	

Table 5. Paired sample test and confidence interval

Male – Female	Paired difference				T	Df	Sig.	
	Mean	Std. Dev	Std. Err mean	95% Confidence Interval of the Diff				
				Lower				Upper
	2.02990	11.45522	1.14552	-0.24306	4.30286	1.722	99	0.079**

** Correlation is not significant at 0.05level (2-tailed)

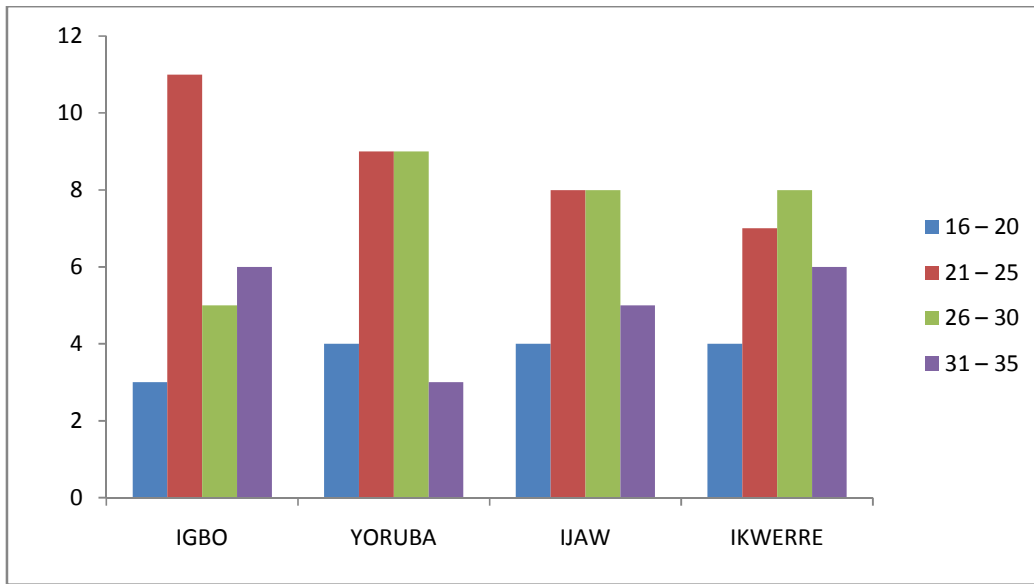


Fig. 4. Chart showing the frequency distribution of ages of subjects in the various tribes for all female

4. DISCUSSION

Facial anthropometry plays a major role in the diagnosis of several dysmorphic syndromes [9]. The nose is one of the best clues to racial origin [10]. The nasal index is very useful in anthropology as it is one of the clinical anthropometric parameter recognized in nasal surgical and medical management [9,11].

Nasal index is related to regional and climatic differences [12]. Thus racial difference has been reported by several authors [4,13,14]. Most Caucasians are leptorrhine having long and narrow nose with nasal index of 69.9 or less. The Bantu speaking Negroids and Australioids have nasal index of 85.0 and above (platyrrhine), while the Caucasoid of the early indo-Aryan were mesorrhine [15]. In a similar study, Oladipo et al. [16] reported that the mean values for Nigerian Igbos were 95.9 and 90.8 for males and females respectively. Thus, the Igbos has platyrrhine nose type and also shows sexual dimorphism. It has also shown that ethnicity, even within the same geographical, location affects nasal index.

Various studies have indicated racial and ethnic differences in nasal index amongst different populations, Risley [15] reported that the nasal index of Africans is basically platyrrhine; this agrees with our study. Morphometric parameters are dependent upon age, race and sex and so a Platyrrhine nose could be typical to the four

tribes, though this suggestion warrants further supportive studies. In Nigeria, Oladipo et al. [16] 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 index than females ($p < 0.05$), their findings did not agree with our findings on sexual dimorphism as females of Ijaw origin had a significantly higher nasal index ($p < 0.05$) than males. Although, our findings showed a Platyrrhine kind of nose among the four tribes, no sexual dimorphism was found between the male and female groups.

The Yoruba, Igbo, Ijaw and Ikwerre fall within the platyrrhine nose type. The 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. It is necessary to ascertain the satisfaction of subjects with their appearance especially with the increasing incidence of psychological problems of facial and body dysmorphic syndrome. We had 5% of our subjects expressing dissatisfaction with their nose form but they did not indicate interest in correction, and this may imply that despite the fact that such were not very satisfied, they were not psychosocially affected, however more studies in other populations to evaluate the psychological impact of nostril morphologies may

be necessary to determine and compare the preference of individuals.

5. CONCLUSION

Our study showed that there was sexual and ethnic differences but these were not significant. Also, the major highlight of our study reflects that few subjects were not very satisfied with the form of their nostril and would have preferred the long, narrower and elevated nostrils but they did not desire cosmetic surgery.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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