

# A study of the nasal index of Berom students in Plateau State Polytechnic, Jos

**Ekwere O. Ekwere,  
Usman M. Yohanna,  
Ibrahim S. Lawal**

Department of Human Anatomy,  
University of Jos, Jos, Plateau State,  
Nigeria

**Address for correspondence:**

Dr. Ekwere O. Ekwere,  
Department of Human Anatomy,  
Faculty of Medical Sciences,  
University of Jos, PMB 2084, Jos,  
Plateau State, Nigeria.  
E-mail: [ekweree@yahoo.com](mailto:ekweree@yahoo.com)

## ABSTRACT

**Introduction:** The nasal index is a very important anthropometric assessment parameter for forensic anthropology and facial surgeries. This study was, therefore, aimed at determining the mean nasal index and its sexual dimorphism among the Berom ethnic group of Plateau State, Nigeria. **Materials and Methods:** For this study, 500 subjects comprising 250 males and 250 females with ages from 18 years to 45 years were recruited. Informed consent was obtained. Nasal height was measured with a sliding Vernier caliper while the nasal width was measured with a transparent graded meter rule. The nasal index was then calculated as the ratio of nasal width and nasal height multiplied by 100. The data was subjected to statistical analysis using the software package Statistical Package for Social Sciences (SPSS) Version 17.0. **Results:** The mean nasal index was found to be  $93.09 \pm 4.92$  and the study also revealed statistically significant ( $P < 0.05$ ) higher nasal index in males than in females of  $93.66 \pm 4.40$  and  $92.52 \pm 5.34$ , respectively. **Conclusion:** The Berom ethnic group falls under the platyrrhine (broad nose) type that is the typical African nose type and have significant difference in male and female nasal index.

**Key words:** Berom ethnic group, nasal height, nasal index, nasal width

## INTRODUCTION

Craniofacial anthropometry is an integral part of craniofacial surgery and syndromology, and though valuable, it is currently an underused tool for guiding public health policy and clinical decision.<sup>[1]</sup> The nasal index is the ratio of nasal width to the nasal height multiplied by 100. It is an ethnicity, gender, and age-sensitive anthropometric index like many other anthropometric indices and parameters.<sup>[2-4]</sup>

The nasal index is useful in forensic anthropology, classification of fossil remains and reconstructive facial surgeries.<sup>[5,6]</sup> The leptorrhine (fine nose) has a nasal index of 69.90 or less while the mesorrhine (medium nose) has nasal index of between 70 and 84.90 and platyrrhine (broad nose) has a nasal index of 85 and above.<sup>[7,8]</sup>

Mean nasal index of  $>85.0$  were observed in the three Nigerian ethnic groups studied by Oladipo *et al.*<sup>[9]</sup> The Ijaws had the highest nasal index (96.4) followed by Igbos (94.1) while the lowest value was observed in Yorubas (89.2). The males had a higher nasal index than the females in all the ethnic groups. The differences observed were statistically significant ( $P < 0.05$ ).<sup>[9]</sup>

The Sudroid race and Aborigines have been reported to have a nasal index similar to indigenous Africans, south of the Sahara, 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).<sup>[10]</sup>

The Isoko males have significantly higher ( $P < 0.05$ ) values in nasal height, nasal width, and nasal index than females. The

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percentage with leptorrhine in the male and female population was found to be 0%. For mesorrhine, the percentage for males was 18.1% and that for females was 27.5%. For platyrrhine, the percentage of males was 81.9% while that for females was 72.5%. The Isoko females have a larger percentage of mesorrhine than the males. The Isoko ethnic group still falls under the platyrrhine with a mean nasal index of 91.0.<sup>[11]</sup>

Oluwayinka *et al.*<sup>[12]</sup> studied the nasal index of the Igala, Ebira, and Okun ethnic groups and placed them under the platyrrhine nose type. The males had significantly higher nasal height, nasal width, and nasal index compared to their female counterparts ( $P < 0.05$ ) indicating sexual dimorphism.<sup>[12]</sup>

It has been reported that the South Indian males have mesorrhine type of nose and South Indian females have leptorrhine type of nose. This shows that even within the same geographical location different nasal indices are seen. This study was found in agreement with the previous researches on nasal parameters.<sup>[13]</sup>

The aim of this study is to determine the mean nasal index and its variations in both sexes among the Berom ethnic group of Plateau State, Nigeria.

### MATERIALS AND METHODS

This study was carried out in the Plateau State Polytechnic, Jos, Plateau State, Nigeria among the Berom students. A number of 500 subjects, comprising 250 males and 250 females with ages from 18 years to 45 years, were recruited.

The subjects were made to sit comfortably on a chair with their heads at the same level with the researcher's head after informed consent was obtained. Nasal height was measured with a sliding Vernier caliper by placing its upper fixed divider arm on the nasion of the nose superiorly and its lower movable arm on the subnasale [Figure 1]. The nasal width was measured with the transparent-graded meter rule as the distance between the external surface of one ala and the other [Figure 2]. The nasal index was then calculated as the ratio of nasal width and nasal height multiplied by 100.

The data was subjected to statistical analysis using the software package Statistical Package for Social Sciences (SPSS) Version 17.0 [SPSS Inc., an International Business Machines Corporation (IBM) Company Copyright 2010, Sun Microsystems Inc, USA].

### RESULTS

The results of this study are presented in Tables 1 and 2 and in the text as mean values  $\pm$  standard deviation. As seen in

Table 1, the mean nasal index of the studied population was calculated to be  $93.09 \pm 4.92$ , while Table 2 revealed statistically significant ( $P < 0.05$ ) higher nasal index in males than in females of  $93.66 \pm 4.40$  and  $92.52 \pm 5.34$ , respectively.

### DISCUSSION

The racial and ethnic features of the nose are dependent on the underlying bony and cartilaginous skeletal frameworks together with the skin and the soft-tissue envelopes. These features have a genetic basis but are influenced by environmental factors as well, such as trauma, ageing, nutrition, and surgery. Environmental and climatic conditions are believed to influence the shape of the nose, with narrower noses being favored in cold and dry climates and broader noses in tropical environment.<sup>[10]</sup>

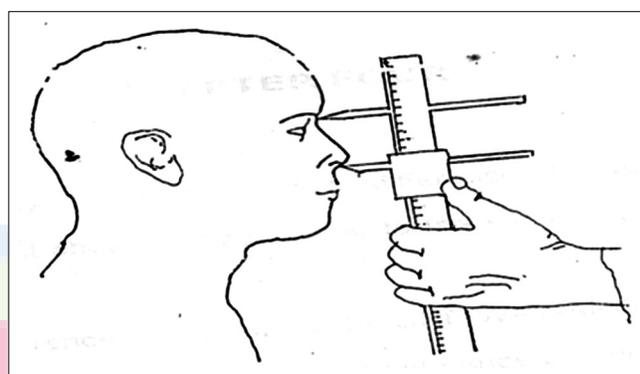


Figure 1: Measuring nasal height

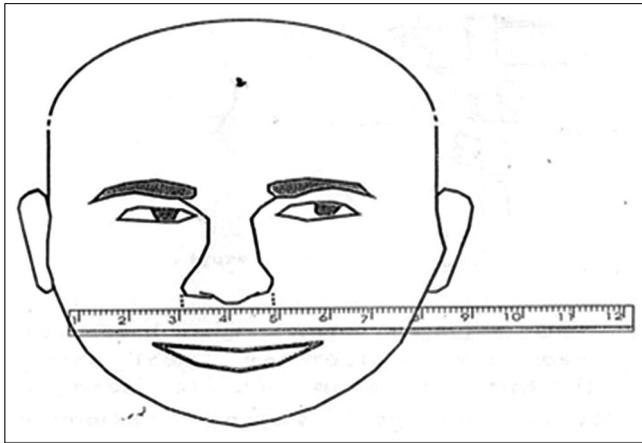
Table 1: Mean nasal index

	Nasal index
Mean	93.09
N	500
Std. deviation	4.92
% of total	100
Std. error of mean	0.220

Table 2: Variation of nasal index with sex

Sex	Nasal index
Male	
Mean	93.66
N	250
Std. deviation	4.40
% of total N	50
Std. error of mean	0.278
Female	
Mean	92.52
N	250
Std. deviation	5.34
% of total N	50
Std. error of mean	0.338

Std. = Standard; N = Number of subjects



**Figure 2:** Measuring nasal width

The mean nasal index obtained in this study of  $93.09 \pm 4.92$  [Table 1] is that of a platyrrhine nose that is similar to that reported by Oladipo *et al.*<sup>[9]</sup> of the Igbo, Ijaw, and Yoruba ethnic groups in Southern Nigeria and also with the Ekpeye and Ikwerre ethnic groups in Nigeria.<sup>[14]</sup>

Males had a higher nasal index than females [Table 2] in this study that was statistically significant ( $P < 0.05$ ). This is similar to values reported by Oladipo *et al.*,<sup>[9]</sup> in which they found significantly higher values of nasal index among the Igbos, Yorubas, and Ijaws.<sup>[9]</sup> The Ikwerre females, however, had a significantly higher nasal index ( $P < 0.05$ ) than males. Thus, for the first time a Nigerian ethnic group (Ikwerres) showed higher nasal index in females than in males.<sup>[14]</sup> Additionally, it has shown that ethnicity, even within the same geographical location affects nasal index.<sup>[14]</sup>

The study among Bini adolescents in Edo State, Nigeria indicated that the predominant nose shape is platyrrhine (broad nose), based on the mean nasal indices of 99.13 and 99.27 for males and females, respectively. In the literature, it has been shown that the platyrrhine type of nose is typically African and is associated with a hot moist climate. This study is a confirmation of the literature, as Binis have mainly platyrrhine type of nose. Literatures point out as well that not all Africans are platyrrhine. The present study corroborates this as well, as 16% of the population studied have mesorrhine type of nose.<sup>[15]</sup>

## CONCLUSION

In conclusion, this study has shown that the Berom ethnic group falls under the platyrrhine (broad nose) type that is

the typical African nose type and a significant difference in male and female nasal index.

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## Conflicts of interest

There are no conflicts of interest.

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