

# Nasal Parameters Of Itsekiris And Urhobos Of Nigeria

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## Abstract

Variation is one of the most important phenomena occurring in humans, and is attributed to many factors such as mutation and natural selection. Many studies have emphasized the importance of anthropometric measurements as a means of studying variation in human populations as well as a veritable tool in forensic science for crime detection. This study investigates the nasal breadth, nasal length and nasal indices of individuals of Itsekiri and Urhobo ethnic extraction, as a baseline study which may be necessary for future reference in these regard. Nasal length and nasal breadth of 1000 living Itsekiri and Urhobo people, aged 25-45 years, were measured. From these data, nasal indices were calculated and results were compared with published standards for various world populations. The results showed that on the average, the Urhobos had a mean nasal index of 89.63 and the Itsekiri's had a mean nasal index of 90.74. Sexual dimorphism was also observed in the ethnic groups studied with males having significantly higher nasal index values than the females ( $p < 0.05$ ). Therefore, the two ethnic groups fall within the same nose type which is platyrrhine (short and broad nosed) expected of an African population. The findings of this study have confirmed anthropological differences amongst the two Nigerian ethnic groups examined.

## INTRODUCTION

The nose is the most prominent 3-dimensional structure located on the central area of the face. It is also the first part of the air channel to the lungs.<sup>1</sup> Its shape including the nasal bridge, slope of the tip, the septum and nares differ from race to race, tribe to tribe and from one environmental region of the world to the other.<sup>23</sup> The Urhobo and Itsekiri ethnic groups both inhabit Delta state, in the extreme Southern part of Nigeria. They both live in the westernmost part of the Niger Delta. This paper attempts to study the variations in nasal indices of these ethnic groups as a baseline study.

Anthropometry is a series of systematized measuring techniques that express quantitatively the dimensions of the human body and skeleton. Anthropometry, often viewed as a traditional and perhaps the basic tool of biological anthropology, has a long tradition of use in forensic sciences and it is finding increased use in medical sciences especially in the discipline of forensic medicine. It is highly objective and reliable in the hands of trained anthropometrist.<sup>4</sup> An anthropometric Index is a ratio between one related human measurement and another. Nasal index is a ratio of the greatest width of the nasal aperture to the height of the nasal skeleton multiplied by 100.<sup>5</sup> The nasal index measurement is the most common nasal measurements which may be related to regional and climatic differences<sup>67</sup> with variation in the

nasal index supporting prior studies of selection of longer, narrower noses in cold and dry climates and broader noses in warmer, moister ones.<sup>8</sup> It exhibits sexual differences,<sup>9</sup> (Oladipo et al, 2006). A study on the Nasal Height (NH) for adult Igbo males was found to be  $4.87 \text{ cm} \pm 0.84 \text{ cm}$  and  $4.40 \text{ cm} \pm 0.76$  for Adult Igbo Females<sup>10</sup>.

Besides, recent studies in India<sup>1112</sup> and South Africa<sup>13</sup> have used cephalo-facial measurements to determine stature.

Only a limited reference material for nasal measurements of African ethnic groups exists. Therefore the present study provides reference data for the Urhobo and Itsekiri ethnic groups of Nigeria, which could be of relevance in clinical practice, forensics, anthropological studies, treatment planning and other commercial applications.<sup>1415</sup>

## MATERIALS AND METHODS

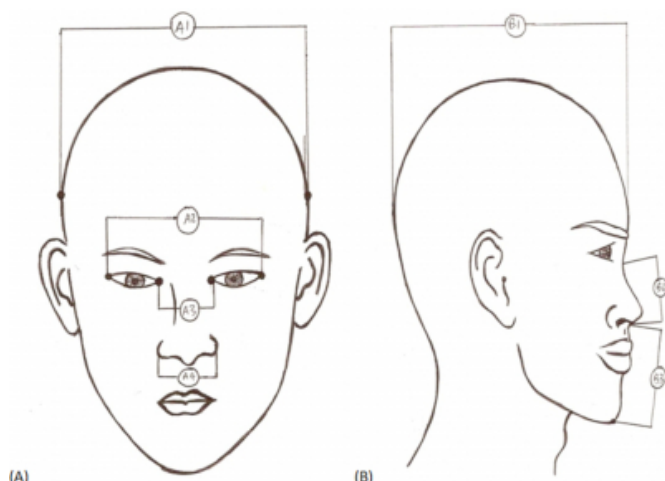
The study population consisted of 1000 subjects (250 Urhobo women, 250 Urhobo men, 250 Itsekiri women, 250 Itsekiri men, with ages ranging from 25-45 years). Participants were of non-mixed direct and grand parentage and they were selected at random from various communities in Delta State, Nigeria. Subjects who had trauma of the nose, prior plastic or reconstructive surgery of the face or cleft lips and other congenital facial malformations were excluded in the study.

The height of the nose (NH) was measured with the help of a sliding caliper with an accuracy of 0.01 from nasion to nasospinale. The nasal breadth (maximum breadth of the nose) was measured at right angles to the nasal height from ala to ala. All the measurements were taken with the subject sitting in a chair in a relaxed condition with the head in the anatomical position. The facial muscles were relaxed in order not to alter the size of the nose.

The nasal index was calculated as follows; Nasal Index = (Nasal breadth/Nasal height) × 100. The data was subjected to statistical analysis. Errors were avoided to a large extent while measurements were recorded.

**Figure 1**

Figure 1: Diagram of the Anterior and Lateral View of the Head Showing Measurable Distances. Note: A4 - Maximum Breadth of the Nose and B2- Nasion-Nasospinale Distance or Nasal Height.



**RESULTS**

Data obtained was analyzed using simplified statistical formula like: mean (x̄), standard deviation (S.D.), standard error (S.E.), and Z-test. These were aptly represented in tables 1-4.

There are significant differences (p < 0.05) between the mean nasal length of the Urhobo and Itsekiri males, Urhobo and Itsekiri females, Urhobo males and females, and Itsekiri males and females (Table 1).

It is also evident that there were significant differences (p < 0.05) between the mean nasal breadth of the Urhobo and Itsekiri females, Urhobo males and females, and Itsekiri males and females. However there was no significant difference (p > 0.05) between the mean nasal breadth of the Urhobo males and Itsekiri males (Table 2).

Significant differences also were observed in the nasal indices of the Urhobos and Itsekiris except between the Urhobo females and Itsekiri females where the difference was not significant (p > 0.05) (Table 3).

**Figure 2**

Table 1: Mean, standard deviation and standard error of nasal length of Urhobo and Itsekiri ethnic groups.

PARAMETERS	URHOBO MALES	ITSEKIRI MALES	URHOBO FEMALES	ITSEKIRI FEMALES
Mean (mm)	43.67	42.02	41.51	40.83
Standard deviation	1.23	3.10	3.52	3.29
Standard error	0.078	0.20	0.22	0.21
Sample size	250	250	250	250

**Figure 3**

Table 2: Mean, standard deviation and standard error of nasal breadth of Urhobo and Itsekiri ethnic groups.

PARAMETERS	URHOBO MALES	ITSEKIRI MALES	URHOBO FEMALES	ITSEKIRI FEMALES
Mean (mm)	39.15	38.60	36.83	36.28
Standard deviation	3.50	3.64	3.56	2.60
Standard error	0.22	0.23	0.23	0.16
Sample size	250	250	250	250

**Figure 4**

Table 3: Mean Standard deviation and error of nasal indices of Urhobo and Itsekiri tribes.

PARAMETERS	URHOBO MALES	ITSEKIRI MALES	URHOBO FEMALES	ITSEKIRI FEMALES
Mean (mm)	90.42	92.33	88.83	89.15
Standard deviation	4.66	9.69	4.87	3.78
Standard error	0.29	0.61	0.31	0.24
Sample size	250	250	250	250

Figure 5

Table 4: Z-test result for the comparison between the various groups among the Urhobo and Itsekiri ethnic groups.

PARAMETERS	COMPARISONS	Z-CALCULATED	Z-TABULATED	LEVELS OF SIGNIFICANT
Mean nasal length	Urhobo males Vs Itsekiri males	7.82	1.95	0.05
	Urhobo females Vs Itsekiri females	7.32	1.95	0.05
	Urhobo males Vs Urhobo females	9.16	1.95	0.05
	Itsekiri males Vs Itsekiri females	4.16	1.95	0.05
Mean nasal breadth	Urhobo males Vs Itsekiri males	1.72 (no significant difference)	1.95	0.05
	Urhobo females Vs Itsekiri females	2.01	1.95	0.05
	Urhobo males Vs Urhobo females	7.35	1.95	0.05
	Itsekiri males Vs Itsekiri females	8.22	1.95	0.05
Mean nasal index	Urhobo males Vs Itsekiri males	2.81	1.95	0.05
	Urhobo females Vs Itsekiri females	0.82 (no significant difference)	1.95	0.05
	Urhobo males Vs Urhobo females	3.75	1.95	0.05
	Itsekiri males Vs Itsekiri females	4.83	1.95	0.05

**DISCUSSION**

A number of studies have indicated racial and ethnic differences in nasal index amongst different populations<sup>16</sup>. Most western Europeans are leptorrhine, having long and narrow noses with a nasal index of 69.9 or less; the Bantus and Bushmen of Africa as well as indigenous Australians are platyrrhine, having broad noses with nasal index of 85.0 and above<sup>6,14</sup>. The Sudroid race has a nasal index similar to indigenous Africans South of the Sahara and Indigenous Australians with a nasal index of 85.0 and above i.e. Platyrrhine, while the German’s nasal index is similar to that of general Western European average of nasal index of 71.0 and below-leptorrhine<sup>6</sup>. Akpa et al<sup>7</sup> showed that the mean nasal length and width of Nigerian Igbo’s were 6.22 and 7.26 respectively.

All authors above agree with racial differences in nasal index. Our results conform with them and especially with that of Risley<sup>6</sup> on African population of nasal index of 90-100 (platyrrhine). The result shows that there were significant differences (p<0.05) between the mean nasal breadth of the Urhobo and Itsekiri female, Urhobo males and females and Itsekiri males and females. However, there was no significant difference (P> 0.05) between the nasal breadth of the Urhobo and Itsekiri males.

Also, the result shows that significant differences (P<0.05) were also observed in the mean nasal indices of the Urhobos and Itsekiri except between the Urhobo females and Itsekiri females where the difference was not significant (P>0.05).

With the result of this study; it can be said that the Urhobo and Itsekiri ethnic group have the nose type called Platyrrhine (broad nose), but the Itsekiri males have a significantly broader (P<0.05) nose compared to that of the females, and the Urhobo males have a significantly broader (P<0.05) nose compared with that of the females. However no such difference (P>0.05) was found among the Itsekiri females and Urhobo females.

**CONCLUSION**

On the basis of anthropometric measurements, it can be concluded that ethnic differences exist in the nasal length, breadth and Index of the Urhobo and Itsekiri ethnic groups. This data is an important anthropometric tool in differentiating these ethnic groups, and also has tremendous relevance in forensic investigations, clinical practice and plastic surgery.

**References**

- Hamilton WJ; Mossman JW; Boyd JD. Human Embryology. 4th edition. Churchill Livingstone. 1978. pp. 538-558.
- Last RJ. Anatomy Applied and Regional. 6th Edition. Churchill Livingstone, 1981. pp. 398-403.
- Madison Grant. The passing of the great race part 1. Language and Nationality. 2004. pp. 1-6, file//c:/Documents and settings/Administrator/Desktop/The Physical basis of race=chapter 2=
- Krishan K. Anthropometry in forensic medicine and forensic science-Forensic Anthropometry. The Internet Journal of Forensic Science, 2007; 2(1).
- Williams PL, Warwick R, Dyson M, Bannister LH. Grays Anatomy. 37th Edition, Churchill Livingstone London. 1995. pp. 609-612.
- Risley, HH. The people of India. 2nd Edition. Edited by Crooke W. 1915. pp. 395-399.
- Akpa AOC, Ugwu C, Maliiki SO. Morphometric study of the Nasal Parameters in Nigerian Igbo. J. Exp. Clin. Anat. 2003. 2(2):24-25.
- Hall RL, Hall DA. Geographic variation of native people along the Pacific Coast. Hum. Biol. 1995. 67(3):407-426.
- Oladipo GS, Gwunireama IU and , Asawo O. Anthropometric comparison of nasal indices between the Igbos and Yoruba in Nigeria. Global Journal of Medical Sciences. 2006. Vol. 5, No 1, pp. 37-40.
- O. Joy, E. Ahmed, O. Gabriel & E. Ezon-ebidor: Anthropometric Study Of The Facial And Nasal Length Of Adult Igbo Ethnic Group In Nigeria . The Internet Journal of Biological Anthropology. 2009 Volume 2 Number 2.
- Krishan K. Estimation of stature from cephalo-facial anthropometry in north Indian population. Forensic Science International 2008, 181 (1-3), pp. 52.e1-52.e6.
- Krishan K, Kumar R. Determination of stature from cephalo-facial dimensions in a North Indian population. Legal Medicine 2007; 9(3):128-133.
- I. Ryan, M.A. Bidmos. Skeletal height reconstruction from measurements of the skull in indigenous South Africans, Forensic Sci. Int. 167 (2007) 16–21.
- Becker Daniel. American, facial and Reconstructive Surgery. 2002. www.erlarger.org/craniofacial/book/nasal.
- Bermant Michael L. Nasal Reconstruction/Nasal

Sculpture. 2002. [www.erlarger.org/cranofacial/book/Nasal](http://www.erlarger.org/cranofacial/book/Nasal)  
16. Milford H. Wolpoff. Abstract on Climatic Influence on

the skeletal Nasal Aperture. American Journal of Physical  
Anthropology 1968 Vol. 29, Issue 3, pp. 405-423

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