

## Comparison of Paul's Index across the Ikwerre, Bini and Igbo Ethnic Groups of Southern Nigeria: An Ancestral Investigation

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### Abstract

### Original Research Article

**Background:** This study was aimed at comparing the Paul's Index across the Ikwerre, Bini and Igbo ethnic groups of Southern Nigeria. The study was an observational, analytical and cross-sectional design with volunteers' age ranging from 18-60 years. For the purpose of this study, an individual was considered to be a Nigerian of a particular ethnic group if the parents and four grandparents were of the same ethnic group. **Materials and Methods:** Cluster sampling method was used for the study. The selection and collection of required parameters relied on the informed consent of volunteer subjects. This was done by giving them a copy of the informed consent letter which was signed and dated. A total of 1,200 subjects (Bini 400, Ikwerre 400 and Ibos 400) subjects were recruited for the study. The fingerprints were obtained using print scanner (Hp G3110 Photo scanner). **Results and Discussion:** The value of PI in the males across the three ethnic groups showed that the Ikwerre people had an index value of 117 bilaterally; the Bini people had 121 on the left and 122 on the right hand; while the Ibos had 121 bilaterally. The value of PI in the females across the three ethnic groups showed that the Ikwerre people had an index value of 117 on the left and 116 on the right hand, the Bini people had 118 bilaterally; while the Ibos had 122 on the left hand and 121 on the right hand. The value of PI in the total population across the three ethnic groups showed that the Ikwerre people had an index value of 117 bilaterally; the Bini people had 120 bilaterally; while the Ibos had 122 on the left hand and 121 on the right hand. **Conclusion:** The result of this study concludes that the Ikwerre people are likely from the Bini stock as suggested by oral history as depicted by the proximity in the Paul's Index value (Ikwerre 117, Bini 120) between the Ikwerre and Bini people.

**Keywords:** Ikwerre, Bini, Ibo, Paul's Index, Nigeria.

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## INTRODUCTION

The Paul's Index (TPI or PI) indicates the proportion of bifurcations relative to the ridge endings present in individuals or populations under study. It is a very useful tool in dermatoglyphic comparisons at level 2 details. When the value of the index is high, it suggests that the individuals or populations under investigation/study have a high distribution of bifurcations relative to ridge endings and vice versa.

The role of dermatoglyphics in ancestral investigations has since been documented as far back as early 1920s. The term dermatoglyphics was "coined in 1926 by Dr. Harold Cummins from derma, skin + the Greek glyphe, carve". It is referred to as the branch of science which studies the patterns of the skin (dermal) ridges present on human fingers, toes and the soles [1-3].

In investigating ancestry, the individuals, groups, tribes, or nations with common ancestry or genetic proximity will have relatively close values that will not be statistically significant when compared with a distant group or tribe that do not share same proximity [4, 5].

The use of Paul's Index in investigating the ancestry of the Ikwerre people stems from the fact that dermatoglyphics can be used for ancestral study since it is based on the principles of genetics. Not limited to its use in ancestry, it can also aid in the diagnosis of genetic medical conditions.

The Ikwerre people have stated that they have their ancestral root from the Bini ethnic group with history that documented how the ancestor of the Ikwerre fled the old Bini and came down to the present location of the Ikwerre ethnic to settle. Again, the Ibo ethnic

group have laid claim to the Ikwerre people. This controversy has persisted for very long time without any thorough scientific investigation to back any of these claims [6-9].

The Ikwerre people who are referred to as “Iwhnuruohna” are said to be descendants of one of the sons of the “Akalaka” a general who fled the Benin Empire during the reign of Oba Awuarre in the 16<sup>th</sup> century [9].

The name Iwhnuruohna is said to have its origins from “Ighoroha” the third son of Akalaka which translates to “there is money in the bush” in Bini language. He is said to have settled on a virgin piece of land that is the modern day “Isiokpo”. Amongst the many children of Ighoroha was his son “Opia” whose name has been altered to read “Obio” who was the father of “Evo [22]”.

The name “Evo” has its origins from the Benin name “Evbo” meaning “people”. Due to the silence of the “b” in the pronunciation, it may have been misspelt by the British colonial masters and early Christian missionaries [22].

The Ibos in South-East Nigeria have historically claimed that the Ikwerre tribe of South-South Nigeria originates from the Ibo tribe. These claims may not be unrelated to the fact that the Ibo through trade relations with the Ikwerre people that predates the slave trade era have had a substantial influence on the culture and traditions of the Ikwerre [23].

The “Aro” who were the most dominant of the Igbo traders, were generally feared and respected because of their perceived supernatural powers. In the more recent colonial period, these Aro held influential positions such as warrant chiefs, members of the customary court of appeal and tax collectors in several Ikwerre communities furthermore exerting their influence on the norms and traditions of the Ikwerre people [23].

Based on this paucity of information and the lack of physical evidence on the subject of the Ikwerre ancestry, this study was undertaken to explore the possible anatomical evidence to either support or refute these claims.

There are some published works on dermatoglyphics and ancestry by other researchers [10-18].

### **Aim and Objective**

This study was aimed at comparing the Paul’s Index across the Ikwerre, Bini and Ibo ethnic groups of Southern Nigeria.

### **Scope of the Study**

This study was done specifically on the digital prints.

### **Significance of the Study**

This study will benefit the body of knowledge on ancestry of the Ikwerre people which will be significant to historians, sociologists, anthropologists, Rivers State people and in particular the Ikwerre ethnic nationality.

## **METHODS**

*Research Design:* The study was descriptive and cross-sectional. For the purpose of this study, an individual was considered to be a Nigerian of a particular ethnic group if the parents and four grandparents were of the same ethnic group. Volunteers with age ranging from 18-60 years from the Ikwerre, Bini and Ibo extractions were recruited for this study by random sampling. The study was conducted from January 6 - October 20, 2019.

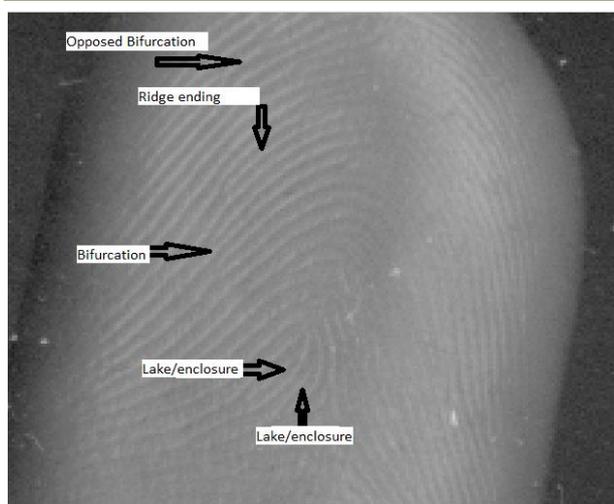
## **DATA COLLECTION**

The selection and collection of required parameters relied on informed consent of volunteer subjects after the procedure was explained to them. This was done by giving each volunteer a copy of the informed consent letter which was signed and dated. A brief questionnaire on the age, sex, ethnicity of the parents and grandparents was self-administered except for the subjects that could not read or write where the researcher administered the questionnaire himself. A total of 1,200 (Bini 400 subjects, Ikwerre 400 subjects and Ibos 400) subjects were recruited for the study. The fingerprints were obtained using print scanner (Hp G3110 Photo scanner) as used by Paul and Paul [18]. The Steps in calculating the Paul’s Index were thus:

- The frequency of the bifurcations in the entire population being investigated was summed up.
- The frequency of the ridge ending in the entire population being investigated was also summed up.
- The ratio of the bifurcations to ridge endings
- Multiplied by 100.

### **The index is calculated thus**

$$PI \frac{\text{Bifurcation}}{\text{Ridge ending}} \times 100$$



**Fig-1: Opposed bifurcation, Ridge ending, Bifurcation, Lake (enclosure) from the study**

## DATA ANALYSIS

Data obtained were inputted into Microsoft excel 2010 for data analysis using chi square test in SPSS version 23 to determine the distribution of level 2 patterns amongst the Ikwerre, Bini and Igbo ethnic groups.

### Criteria for Subject Selection

Subjects recruited were indigenes of the ethnic groups under investigation with no form of anatomical abnormality of the hands. Blurred prints were excluded as well as foreign nationals.

### Ethical Consideration

Ethical clearance was obtained from the Research Ethics Committee of the University of Port Harcourt with REC Number: UPH/CEREMAD/REC/MM59/036 before commencement of the study.

## RESULTS

In table 1, there was no distinct difference seen in the comparison between Ikwerre and Bini; Ikwerre and Ibo.

In table 2, the Ikwerre extraction was seen to have a closer value to the Bini extraction than the Igbos. This suggests a form of proximity.

In table 3, the total population across the three ethnic groups showed that the Ikwerre extraction also had a closer index value to the Bini extraction than the Ibos. This suggests a strong genetic or ancestral proximity.

**Table-1: The value of PI in the males across the three ethnic groups**

Ethnicity	Paul's Index	
	Left hand	Right hand
Ikwerre	117	117
Bini	121	122
Igbo	121	121

No distinct difference seen between Ikwerre and Bini; Ikwerre and Ibo.

**Table-2: The value of PI in the females across the three ethnic groups**

Ethnicity	Paul's Index	
	Left hand	Right hand
Ikwerre	117	116
Bini	118	118
Igbo	122	121

Ikwerre has closer value to the Bini extraction

**Table-3: The value of PI in the total population across the three ethnic groups.**

Ethnicity	Paul's Index	
	Left hand	Right hand
Ikwerre	117	117
Bini	120	120
Igbo	122	121

Ikwerre has closer value to the Bini extraction

## DISCUSSIONS

The comparison of index values in the males across the three ethnic groups did not indicate much difference between the Ikwerre and Bini; Ikwerre and Ibo extractions. Comparison in the females showed the Ikwerre extraction had a closer value to the Bini extraction than the Ibos; this may suggest a form of proximity.

In the total population across the three ethnic groups, it was shown that the Ikwerre extraction also had a closer index value to the Bini extraction than the Ibos. This suggests a strong genetic or ancestral proximity. The results of this study agree with the reports of other authors on ancestry and dermatoglyphics [18-21].

## CONCLUSION

The result of this study concludes that the Ikwerre people are likely from the Bini stock as suggested by oral history as depicted by the proximity in the Paul's Index value (Ikwerre 117, Bini 120) between the Ikwerre and Bini people.

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**Conflict of Interest**

We write to state that there is no conflict of interest.

**Author's Contribution**

We write to state that all authors have contributed significantly, and that all authors are in agreement with the contents of the manuscript. 'Author A' (John Nwolim Paul) designed the study and protocol, wrote the first draft of the manuscript; 'Author B' (Chizindu Akubudike Alikor and Chinyere O. Ndu-Akinla) 'reviewed the design, protocol; 'Author C' (Chikwuogwo W. Paul) examined the intellectual content of the manuscript. All authors read and approved the final manuscript.

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