Scholars Journal of Medical Case Reports (SJMCR) **ISSN 2347-6559 (Online)**
Abbreviated Key Title: Sch. J. Med. Case Rep. **ISSN 2347-9507 (Print)**

A United of Scholars Academic and Scientific Society, India

Comparison of Digital Patterns in Igbos and Okrika People of Southern Nigeria

Oladipo Gabriel Sunday[1], Alabi SA[2], Paul, John Nwolim[3]*, Alalibo Orikarama[4], Uzomba Godwin Chinedu[5], Robert Faith Owabhel[6]

[1-4]Department of Anatomy, Faculty of Basic Medical Sciences, College of Health Sciences, University of Port Harcourt, Choba, Port Harcourt, Rivers State, Nigeria

[2]Department of Anatomy, Faculty of Health Sciences, University of Ilorin, Ilorin, Nigeria

[5]Department of Anatomy, Faculty of Basic Medical Sciences, College of Health Sciences, Federal University Ndufu-Alike Ikwo, Ebonyi State, Nigeria

[6]Department of Anatomy, College of Health Sciences, Niger Delta University, Wilberforce Island Amasoma, Bayelsa State, Nigeria

***Corresponding author**
Paul, John Nwolim

Article History
Received: 26.06.2018
Accepted: 11.07.2018
Published:30.07.2018

DOI:
10.21276/sjmcr.2018.6.7.1

Abstract: This research was aimed at comparing the Digital Patterns of the Igbos' and Okirikas' in Southern Nigeria. The study was done between 2014 and 2015 in University of Port Harcourt. Non-experimental analytical study design; 200 subjects were used for the study. 100 subjects were Igbos and other 100 were Okrika with age between 18- 60yrs, all of which were normal subjects. These subjects were randomly selected through simple random sampling method from Igbo and Okrika Population. Chi square test analysis was carried out using Statistical Package for the Social Sciences (SPSS 20.0 version). Igbos' had the following results: Arch 9.1%, Ulnar Loop 57.4%, Radial Loop 3.3%, Whorl 30.2% whereas Okrikas' had Arch 10.3%, Ulnar Loop 58.0%, Radial Loop 4.4%, Whorl 27.3%. The test differences in patterns for digits of Igbo and Okrika subjects according to the result shown indicated that there is no form of relationship between the two tribes under study (P>0.05). The study established a characteristic digital pattern for both tribes. The result of the study also suggests that both tribes are distinct and unique in their genetic makeup as such are unrelated by any means in their ancestry.

Keywords: Digital Patterns, Arch, Radial Loop, Ulnar loop, Whorl.

INTRODUCTION

Dermatoglyphics is a term used to describe the epidermal ridge configuration found on the skin surfaces of the digits, palms and the soles of the feet of primates including man and some other mammals [3]. The traits of dermatoglyphics develop between the first trimester of gestation and thus principally reflecting events occurring during second trimester [3]. In anthropology studies of dermatoglyphics of a population, reveals distinct variation according to the types and subtypes of digital dermatoglyphics and this is used to determine the origin of ethnic groups.

There have been work one by different researchers in digital patterns ranging from gender wise diversity of digital dermatoglyphic traits, Genetic Inter correlation between finger and toe prints, schizophrenia, Dermatoglyphic Patterns of Acute Leukemia Patients, The genesis of dermatoglyphic disorders, Dermatoglyphic Patterns in Albinism; breast cancer, and birth defects [1,6,10,12-13,15-16,19,33-36,39].

The Igbo people, historically spelled Ibo, are an ethnic group of south eastern Nigeria. They speak Igbo, which includes various Igbo languages and dialect. Igbo people are one of the largest ethnic groups in Africa with a population of 22,000,000. In rural Nigeria, Igbo people are mostly craftsmen, farmers and traders. The Igbo in Nigeria are found in Abia, Anambra, Benue, Ebonyi, Edo, Enugu, Imo, Delta and Rivers State.

Okrika is a port town in Rivers State, Nigeria, capital of the Local Government Area of the same name. The town is situated on a small island just south of Port Harcourt, making it a suburb of the much larger city. Formerly a small fishing village of the Ijo (Ijaw) people in the mangrove swamps of the eastern Niger River delta, with a population of 410,000O who are predominantly farmers and fishermen whose local dialect is Kirike language part of the ljaw group.

There is paucity of information on the Digital Patterns of the Igbos' and Okrikas' in Southern Nigeria.

AIM AND OBJECTIVE

This research was aimed at comparing the Digital Patterns of the Igbos' and Okirikas' in Southern Nigeria.

SCOPE OF THE STUDY

This study was done specifically on the Digital Prints.

MATERIALS AND METHODS

Research Design: The study was non-experimental and analytical. A total of two hundred subjects were used for the study. 100 were Igbos (49 males; 51 females), 100 were Okrikas (49 males; 51 females), all of which were normal subjects. These subjects were randomly selected through simple random sampling method from Igbo and Okrika Population.

Data Collection: Digital patterns of the fingers (Arch, ulnar loop, radial loop, and whorl) were determined using a classical scanner type, Hp G3110 Scanjet Scanner (9000x4800 dpi resolution). Hands were cleaned from dirt before taking prints and a little pressure was put to press the palm on the scanner for adequate contact between the fingers and the scanner to have a clear image of the print and the prints were taken twice.

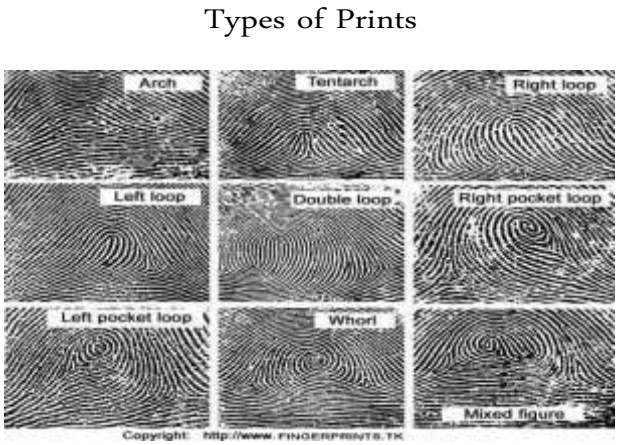

Fig-1: The different digital patterns (www. Fingerprint.tk 2013)

Fig-2: Image of laptop showing a scanned palm

Subjects included in this study were those without finger or hand deformities and subjects who were either Igbos or Okrikas by both parents and genealogies. Those who have finger or hand deformities or have had surgical procedure on their finger/hand were excluded.

The sample population was calculated using Fisher's formula for large population greater than 10,000.

Statistical Analysis

Chi square test analysis was carried out using Statistical Package for the Social Sciences (SPSS 20.0 version)

RESULTS

In table 1 the frequency distribution of digital patterns on the right and left hands of Igbo subjects showed that in the digital patterns, the ulnar loop was

the most occurring pattern, followed by whorl, arch and radial loop being the least in the Igbos.

Table-1: Frequency distribution of digital patterns of the left and right hands of Igbo subjects

	DIGITAL PATTERNS %							
	LEFT HAND DIGITS					RIGHT HAND DIGITS		
	Arch	U. Loop	R. Loop	Whorl		Arch	U. Loop	R. Loop	Whorl
Thumb	15	50	0	35		9	53	0	38
Index Finger	15	47	8	30		11	39	7	43
Middle Finger	9	60	4	27		8	67	2	23
Ring Finger	5	55	2	38		6	54	4	36
Little Finger	7	69	4	20		6	80	2	12

P> 0.05

In table 2 the frequency distribution of digital patterns on the right and left hands of Okrika subjects also revealed that in the digital patterns, the ulnar loop was the most occurring pattern, followed by whorl, arch and radial loop being the least in the Okrikas.

Table-2: Frequency distribution of digital patterns of the left and right hands of Okrika subjects

	DIGITAL PATTERNS %							
	LEFT HAND DIGITS					RIGHT HAND DIGITS		
	Arch	U. Loop	R. Loop	Whorl		Arch	U. Loop	R. Loop	Whorl
Thumb	11	58	0	31		17	46	0	37
Index Finger	9	45	16	30		14	39	14	33
Middle Finger	13	57	2	28		11	68	0	21
Ring Finger	11	50	8	31		6	59	3	32
Little Finger	6	79	0	15		5	79	1	15

P> 0.05

In table 3 the percentage frequency distribution of digital patterns of Igbo and Okrika subjects. The mean percentage of Igbo subjects were 9.1% for arch, 3.3% for radial loop, 57.4% for ulnar loop and 30.2% for whorl while for Okrika subjects they were 10.3% for arch, 4.4% for radial loop, 58.0% for ulnar loop and 27.3% for whorl. Igbo subjects had the lower percentage of arch, radial loop and ulnar loop and the higher percentage of whorl than the Okrika subjects. The differences were however not significant (P>0.05).

Table-3: Total percentage frequency distribution of digital patterns in Igbo and Okrika subjects

DIGITAL PATTERNS				
	Arch	Ulnar Loop	Radial Loop	Whorl
Igbos'	9.1%	57.4%	3.3%	30.2%
Okrikas'	10.3%	58.0%	4.4%	27.3%

P> 0.05

DISCUSSION

The test differences in patterns for digits of Igbo and Okrika subjects according to the result shown indicated that there is no form of relationship between the two tribes under study (P>0.05). Genetically, it has been stated and proven that closely related people do have a greater chance of having similar genetic code that controls the appearance and development of the volar pads which eventually affects the dermatoglyphic pattern which are often passed from ancestors to their offspring. The result got from the study portrays the fact that the Igbos' are very much distinct from the Okrika people and do not have any form of similarity in their ancestral origin since there appears to be no similarity in the dermatoglyphic pattern between the two tribes under study.

It suggests that both tribes are distinct and unique in their genetic makeup as such unrelated by any means in their ancestry. In addition, their food, geographic location and environment appear to be unique to both tribes as well, though a little similar in Southern Nigeria but not enough to contribute or induce similarity in the dermatoglyphic patterns expressed in both tribes.

The Igbo people lay claim on some tribes in Rivers State as a subset of the Igbos who migrated towards Rivers State and settled there. Considering the result this study, it suggests that the Okrika people are excluded from claim laid by the Igbos' on Rivers State.

In table 4 the test differences in patterns for digits of Igbo and Okrika subjects, right and left hands revealed no significant difference between the pattern in the right and left hand digits of Igbos and Okrikas (P>0.05).

Table-4: Test for differences in patterns for digits of the left and right hands of Igbo and okrika subjects

	Arch (%)	Ulna Loop (%)	Radial Loop (%)	Whorl (%)	Chi-square analysis			
Right Thumb (RT)					df	X^2	P-value	Inference
Igbo (%)	9 (34.6)	53(53.5)	0	38(50.7)				
Okrika (%)	17(65.4)	46(46.5)	0	37(49.3)	2	2.97	0.227	NS
Right Index Finger (RT)								
Igbo (%)	11(44.0)	39(50.0)	7(33.3)	43(56.6)	3	4.009	0.260	NS
Okrika (%)	14(56.0)	39(50.0)	14(66.7)	33(43.4)				
Right Middle Finger (RT)								
Igbo (%)	8(42.1)	67(49.6)	2(100.0)	23(52.3)	3	2.572	0.462	NS
Okrika (%)	11(57.9)	68(50.4)	0(0.0)	21(47.7)				
Right Ring Finger (RT)								
Igbo (%)	6(50.0)	54(47.8)	4(57.1)	36(52.9)	3	0.599	0.897	NS
Okrika (%)	6(50.0)	59(52.2)	3(42.9)	32(47.1)				
Right Little Finger (RT)								
Igbo (%)	6(54.5)	80(50.3)	2(66.7)	12(44.4)	3	0.764	0.858	NS
Okrika (%)	5(45.5)	79(49.7)	1(33.3)	15(55.6)				
Left Thumb (LT)								
Igbo (%)	15(57.7)	50(46.3)	0	35 (53.0)	2	1.450	0.484	NS
Okrika (%)	11(42.3)	58(53.7)	0	31 (47.0)				
Left Index Finger (LT)								
Igbo (%)	15(62.5)	47(51.1)	8(33.3)	30(50.0)	3	4.210	0.240	NS
Okrika (%)	9(37.5)	45(48.9)	16(66.7)	30(50.0)				
Left Middle Finger (LT)								
Igbo (%)	9(40.9)	60(51.3)	4(66.7)	27(49.1)	3	1.489	0.685	NS
Okrika (%)	13(59.1)	57(48.7)	2(33.3)	28(50.9)				
Left Ring Finger (LT)								
Igbo (%)	5(31.3)	55(52.4)	2(20.0)	38(55.1)	3	6.789	0.079	NS
Okrika (%)	11(68.8)	50(47.6)	8(80.0)	31(44.9)				
Left Little Finger (LT)								
Igbo (%)	7(53.8)	69(46.6)	4(100.0)	20(57.1)	3	5.467	0.141	NS
Okrika (%)	6(46.2)	79(53.4)	0(0.0)	15(42.9)				

P>0.05

In the total digital patterns, the ulnar loop was the most occurring pattern, followed by whorl, arch and radial loop being the least in the Igbos and Okrikas' which also confirms and reiterates the results of the following authors[16-33]. It further means that the trend in the results in this study and from previous works are universal and consistent regardless race, geographic location and the reason could be attributed to genetic coding in humans.

It has been noted by several authors [30-32] in their previous works that there is no gender difference in digital patterns on comparison. As such, no comparison was done on gender difference in this present study.

The study revealed that in the digital patterns for the Igbos, the ulnar loop were the most occurring pattern on both hands and in both tribes. The arch had its highest distribution on the thumb, loop on the little finger and whorl on the index finger which showed *a characteristic digital pattern with arch –thumb, loop-middle finger, and whorl – index finger*. It therefore suggests that for every Igbo person you meet, there is a very high likelihood of seeing this pattern: arch on the thumb, loop on the middle finger, and whorl on the index finger.

In the manner, the digital patterns for the Okrikas' showed that the ulnar loop were the most occurring pattern on both hands and in both tribes. The whorl had its highest distribution on the thumb, loop on the index finger and middle finger which showed *a characteristic digital pattern with whorl –thumb, loop-index finger and middle finger.* This also implies that for every Okrika person you meet, there is a very high tendency that the person would have this very pattern: whorl on the thumb, loop on the index finger and middle finger. This could serve as a means of identifying the Igbos and Okrikas' also useful where

there are controversies over ethnicity, electoral impersonation and forensic identification.

CONCLUSION

The study established *a characteristic digital pattern* for both tribes which also imply that for every Igbo or Okrika person you meet, there is a very high tendency that the person would have that very pattern**.** This could serve as a means of identifying the Igbos and Okrikas also useful where there are controversies over ethnicity, electoral impersonation and forensic identification. The result of the study also suggests that both tribes are distinct and unique in their genetic makeup as such are unrelated by any means in their ancestry.

ACKNOWLEDGEMENTS

We want to appreciate the members of staff of the Department of Anatomy, University of Port Harcourt, Nigeria.

AUTHORS' CONTRIBUTIONS

'Author A' (Oladipo Gabriel Sunday.) designed the study and wrote the protocol, 'Author B' (Alabi SA) review the design and protocol, 'Author C' (Paul John Nwolim) managed the analyses of the study, 'Author D' (Alalibo Orikarama) wrote the first draft of the manuscript and 'Author E' (Uzomba Godwin Chinedu and Robert Faith Owabhel) managed the literature searches. All authors read and approved the final manuscript.

CONFLICT INTEREST

The authors declare that there is no Conflict of interest.

REFERENCES

1. Abue AD, Didia BC. Loop Dermatoglyphics Patterns on the Plantar surface of the Sole in Hausa Ethnic Group of Nigeria. Journal of Scientific and Innovative Research. 2013;2(3):525-8.
2. Anibor E, Eboh DE, Okumagba MT, Etetafia MO. Palmar and digital dermatoglyphic patterns of the Ijaws in Delta State of Nigeria. Arch Appl Sci Res. 2011;3(6):301-6.
3. Aronson J. When I use a word…: Fingerprints. BMJ. 1997 Oct 11;315(7113).
4. Babler WJ. Prenatal development of dermatoglyphic patterns: Association with epidermal ridge, volar pad and bone morphology. *Cell Antropol*. 1989; 11:297-304.
5. Babler WJ. Embryologic development of epidermal ridges and their configurations. Birth Defects Orig Artic Ser. 1991;27(2):95-112.
6. Bali RS. Genetic Intercorrelation Between Finger and Toe Patterns. Zeitschrift für Morphologie und Anthropologie. 1968 Jan 1(H. 3):244-72.
7. Boroffice RA. Digital dermatoglyphic patterns in a sample of the Nigerian population. American journal of physical anthropology. 1978 Aug;49(2):167-9.
8. Bonnevie K. Studies on papillary patterns of human fingers. Journal of Genetics. 1924 Nov 1;15(1):1-11.
9. Campbell ED. The Encyclopedia of Palmistry. A Perigee Book, Berkley Publishing Group, New York. 1998. 98-124.
10. Cannon M, Byrne M, Cotter D, Sham P, Larkin C, O'Callaghan E. Further evidence for anomalies in the hand-prints of patients with schizophrenia: A study of secondary creases. Schizophr Res. 1994; 13(2):179-84.
11. Cochran WG. Sampling Techniques, 2nd Edition. New York: John Wiley and Sons, Inc. 1963: 2-5.
12. Midlo CH. Palmar and plantar epidermal ridge configurations in Europeon. American J. Phy. Anthropology. 1926;9:471-502.
13. Cummins H, Midlo C. Finger prints, palms and soles: an introduction to dermatoglyphics. New York: Dover Publications; 1961.
14. Ekanem EP, Eluwa M, Udoaffah G, Ekanem T, Akpantah A. Digital dermatoglyphic patterns of Annang ethnic group in Akwa Ibom State of Nigeria. The Internet Journal of Biological Anthropology. 2009;3(1).
15. Harich N, Esteban E, Chafik A, Moral P. Dermatoglyphic characterization of Berbers from Morocco: qualitative and quantitative digital and palm data. Annals of human biology. 2002 Jan 1;29(4):442-56.
16. Hirsch W. Dermatoglyphics and creases in their relationship to clinical syndromes: a diagnostic criterion. Dermatoglyphics, An International Perspective. Paris: Moulton Publishers. 1978:263-82.
17. Hirsch W, SCHWEIGHEL J. Morphological evidence concerning the problem of skin ridge formation. Journal of Intellectual Disability Research. 1973 Mar;17(1):58-72.
18. Holt SB. Dermatoglyphrenic Pattern Human Variability and Natural Selection. Symposia of the Society for study of Human Biology. 1975; 13:159-178.
19. Humphrey T. Reflexes and the Development of the Nervous System. Growth and Maturation of the Brain. 1964;4:93.
20. Igbigbi PS, Msamati BC. Plantar and digital dermatoglyphic characteristics of Zimbabwean subjects. East African medical journal. 2001;78(10):536-9.
21. Igbigbi PS, Msamati BC. Palmar and digital dermatoglyphic traits of Kenyan and Tanzanian subjects. West African journal of medicine. 2005;24(1):26-30.
22. Igbigbi PS, Msamati BC. Palmar and digital dermatoglyphics of indigenous black Zimbabweans. Medical Science Monitor. 2002 Nov 21;8(11):CR757-61.

23. Igbigbi PS, Msamati BC. Palmar and digital dermatoglyphic patterns in Malawian subjects. East African medical journal. 1999;76(12):668-71.
24. Jaja BN, Igbigbi PS. Digital and palmar dermatoglyphics of the Ijaw of Southern Nigeria. African journal of medicine and medical sciences. 2008 Mar;37(1):1-5.
25. Oguranti JO, Sorgia S. Dermatoglyphics study of Southern Nigerian population of Ogoni people of River State. *J Exp Clin Anat*. 1984; 12-16.
26. Oladipo GS, Afolabi EO, Esomonu C. Dermatoglyphic Patterns of Obese versus Normal-Weight Nigerian Individuals. Biomedicine International. 2010 Oct 9;1(2).
27. Oladipo GS, Akanigha BE. Dermatoglyphic patterns in androgenetic alopecia in a south eastern Nigerian population. Journal of experimental and clinical Anatomy. 2005;4(2):44-7.
28. Eberechi DU, Gabriel OS, Peter OD. A comparative study of the digital pattern, position of triradii, bc and ad palmar distances of diabetic subjects and essential hypertensive individuals in River State. Int J Adv Biotechnol Res. 2012;3(2):615-20.
29. Oladipo GS, Ogunnowo MB. Dermatoglyphic patterns in diabetes mellitus in a south eastern Nigerian population. African Journal of Applied Zoology and Environmental Biology. 2004;6(1).
30. Oladipo GS, Okoh PD, Oghenemavwe LE, Yorkum LK. Dermatoglyphic patterns of autistic children in Nigeria. Journal of Biology, Agriculture and Healthcare. 2013;3(7):80-3.
31. Oladipo GS, Olotu EJ. Dermatoglyphics in idiopathic (primary) dilated cardiomyopathy in South Southern Nigeria. Scientific Research and Essays. 2007 Oct 31;2(10):416-20.
32. Osunwoke EA, Ordu KS, Hart J, Esomonu C, Tamunokuro FB. A study on the dermatoglyphic patterns of Okrika and Ikwerre ethnic groups of Nigeria. Scientia Africana. 2008;7(2).
33. Penrose LS. Memorandum on dermatoglyphic nomenclature. Jinrui idengaku zasshi. The Japanese journal of human genetics. 1969 Jun;14(1):57.
34. Rathee R, Kamal N, Kumar A, Vashist M, Yadav R. Dermatoglyphic Patterns of Acute Leukemia Patients. Int Res J Biological Sci. 2014;3:90-3.
35. Abbasi S, Einollahi N, Dashti N, Vaez-Zadeh F. Study of dermatoglyphic patterns of hands in women with breast cancer. Pakistan Journal of Medical Sciences. 2006 Jan;22(1):18.
36. Alter M, Schaumann B. Hereditary amyotrophic lateral sclerosis. European neurology. 1976;14(4):250-65.
37. Sharma PR, Gautam AK, Tiwari PK. Dermatoglyphic variations in five ethno-geographical cohorts of Indian populations: A Pilot Study. The Internet Journal of Biological Anthropology. 2008;2(1):57-66.
38. Udoaka AI, Udoaka EG. Digital dermatoglyphics in Ijaw students of university of Port Harcourt, Nigeria. Continental Journal of Biomedical Sciences. 2009;3:1-5.
39. Ghodsi Z, Mahdavi SHahri N, Ahmadi SK. Quantitative and qualitative study of dermatoglyphic patterns in albinism. Current Research Journal of Biological Sciences. 2012 Jun 12;4.