

Review of Dermatoglyphic Studies at Level 2 in Nigerian Indigenous Populations

Paul John Nwolim*, Amadi Michael Anozie, Ogbilikana Prince Sampson

Department of Anatomy, Faculty of Basic Medical Sciences, University of Port Harcourt, Choba, Port Harcourt, Rivers State, Nigeria

***Corresponding author**

Paul John Nwolim

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Abstract: Dermatoglyphics is the branch of science concerned with the study of prints on the fingers, palm, soles, and feet. This branch of science is an offshoot of anatomical sciences. Dermatoglyphics as an aspect of science has been studied widely by lots of ardent researchers and have been used to solve lots of problems relating to peoples' identity and ancestry. Although, dermatoglyphics can be studied at three levels (1, 2, and 3) only level 1 (arches, loops, and whorls) have been explored. 99.9% of the works on dermatoglyphics is at level 1 but no Nigerian indigenous works have been done at level 2 (bifurcations, trifurcations, bridges, ridge ending, enclosures, dots, opposed bifurcations, double bifurcations, island etc). This raises the question, what about level 2 and 3 study? There exist a large vacuum at level 2 dermatoglyphics which should be filled by researchers especially indigenous authors which will help create database for level 2 details in Nigerian population. This to large extent could be used to solve problems relating to ancestral origin which has become an issue in most African populations especially Nigeria. This review serves to help provide a step by step procedure to doing a study on dermatoglyphics at level 2 in Nigerian indigenous populations and Africa at large. The review of papers on this subject serves to expose the gap in this area as compared to the several works done at level 1 and to spore researchers to do more studies on this subject to raise an indigenous data bank for Nigerian populations

Keywords: Level 2, Bifurcations, Dot, Trifurcation, Bridge, Ridge Ending.

INTRODUCTION

Dermatoglyphics is the branch of science concerned with the study of prints on the fingers, palm, soles, and feet. This branch of science is an offshoot of anatomical sciences. The study of prints of the hand (fingerprint) has vastly been exploited and lots of knowledge gained ranging from crime detection, human identification, to having a database for a nation that serves as their security system.

Dermatoglyphics as an aspect of science has been studied widely by lots of ardent researchers and have been used to solve lots of problems relating to peoples' identity and ancestry. Although, dermatoglyphics can be studied at three levels (1, 2, and 3) only level 1 (arches, loops, and whorls) have been explored. 99.9% of the works on dermatoglyphics is at level 1. This raises the question, what about level 2 and 3 study? Are there works done at level 2 or 3? There are certain details that would not be seen at level 1 which can only be seen at level 2 and 3. A good

example is sexual dimorphism and gender variation which have been mentioned by several authors to be absent in populations at level 1 study, have been seen to exist at level 2. Certain digital patterns at level 2 have been known to be associated with some races vis-a-vis bifurcation (a level digital pattern) a common pattern widely distributed amongst the black race.

Some indigenous authors have done studies on dermatoglyphics at level 1 [1-12] to mention few but there are no indigenous works on level 2 yet. There exist a large vacuum at level 2 dermatoglyphics which should be filled by researchers especially indigenous authors which will help create database for level 2 details in Nigerian population. This to large extent could be used to solve problems relating to ancestral origin which has become an issue in most African populations especially Nigeria. This review serves to provide motivation for indigenous researchers to explore dermatoglyphics at level 2.

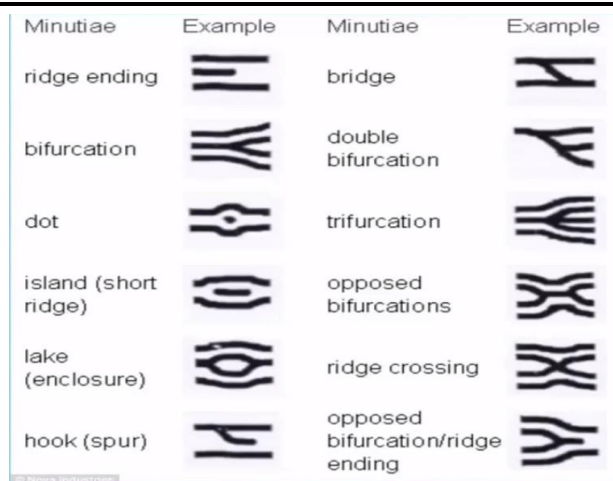


Fig-1: Digital Patterns at Level 2 Dermatoglyphics

Paul and Paul [13] did a study which was aimed at determining the level 2 details of the Kalabari people and to check for gender variations in the ethnic group. The study was non-experimental and analytical research. The sampling technique used was multi-stage sampling with simple random sampling and Cochran 1963 formula was used to determine the sample size. The data obtained was subjected to statistical analysis using chi-square and z-test. In the study it was stated that bifurcation was found to be the most distributed pattern on both hands and in both sexes. The least distributed pattern was opposed bifurcation for the males, for the females double bifurcation on the right, opposed bifurcation and bridge on the left. Comparison of the patterns showed there was statistical significance ($p < 0.05$) in the patterns between the males and females except Trifurcation and Dot. They added that there is a big difference in the pattern distribution; this could be a result of the difference in hormones present in both sexes. They mentioned that the study established gender difference in the distribution of patterns at level 2 details which could be a diagnostic tool in forensics and a database at level 2 for this specific population.

Paul and Paul [14] again worked on the Kalabari and Ikwerre people in an attempt to establish if there is ethnic difference in the patterns at level 2 dermatoglyphics. Comparisons of the patterns between both tribes showed a great deal of difference statistically. In the females, there were statistical significance ($p < 0.05$) in the distribution of bifurcation, Dot, Lake, Double Bifurcation, Ridge ending and Ridge crossing on the right while on the left there was also statistical significance ($p < 0.05$) except for Dot, Lake and Double Bifurcation ($P > 0.05$). They concluded that the result of the study showed marked difference in the distribution of the patterns between the two tribes which have been attributed to nutritional differences at the formative stage of the patterns in both tribes.

Paul and Paul [15] did a study to investigate the presence of gender variation in Ikwerre ethnic group of Rivers State, Nigeria. They stated the following results from the study. Males had the following distributions: Ridge ending 33.8%, Opposed bifurcation 2.6%, Bridge 3.1%, Lake (enclosure) 7.2% Bifurcation 43.9%, Double bifurcation 1.2%, Dot 2.5%, Trifurcation 2.2%, Island 1.4% Ridge crossing 2.1% while the females had the following: Ridge ending 10.6%, Opposed bifurcation 2.9%, Bridge 2.4%, Lake (enclosure) 9.9%, Bifurcation 51.8%, Double bifurcation 2.2%, Dot 5.9%, Trifurcation 8.2%, Island 2.9%, Ridge crossing 3.2%. The result of the study revealed the distribution/ prevalence of the level 2 details of the dermatoglyphic patterns seen in Ikwerre people and indicated there was sexual dimorphism in the distribution of these patterns. On comparison, there was a statistical significant difference ($p = .05$) between the distribution of patterns in the males and females.

The studies so far have indicated salient points such as gender variation and sexual dimorphism which were attributed to nutritional difference, hormonal and genetic differences in both categories which were not seen at level 1 study. However, these numbers of works are not enough to exhaustively study the subject of dermatoglyphics at level 2 on indigenous populations. It is therefore recommended that more works be done on the subject on the different ethnic groups in Nigeria.

CONCLUSION

The review of papers on this subject serves to expose the gap in this area as compared to the several works done at level 1 and to spore researchers to do more studies on this subject to raise an indigenous data bank for Nigerian populations.

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