ANALYSES OF DIGITO – PALMAR DERMATOGLYPHICS IN UBANG CLAN OF CROSS RIVER STATE, NIGERIA

BY

ANDREW DONATUS ABUE

DEPARTMENT OF HUMAN ANATOMY

AHMADU BELLO UNIVERSITY, ZARIA NIGERIA.

SEPTEMBER, 2015.

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DEPARTMENT OF HUMAN ANATOMY,

AHMADU BELLO UNIVERSITY, ZARIA, NIGERIA

SEPTEMBER, 2015.

DECLARATION

I declare that the work in this Thesis entitled "Analyses of Digito – Palmar Dermatoglyphics in Ubang Clan of Cross River State, Nigeria" has been carried out by me in the Department of Human Anatomy, Faculty of Human Medicine, under the supervision of Prof. S. S. Adebisi, Dr. B. Danborno and Dr. G. Teke. The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this was previously presented for another degree or diploma at this or any other Institution.

_____	_____	_____
ANDREW DONATUS ABUE	**Signature**	**Date**

CERTIFICATION

This thesis entitled "Analyses of Digito – Palmar Dermatoglyphics in Ubang Clan of Cross River State, Nigeria" Thesis by Andrew Donatus ABUE. meets the regulations governing the award of the degree of Doctor of Philosophy in Human Anatomy of Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

I dedicate this research work to Nigerians who died, especially those in the military, in the course of the Boko Haram insurgency in Nigeria. May their souls rest in Peace. Also to my late mother (Priscilla Abue), Dominic Abue (younger brother), Lucy Abue (younger sister) and paternal Grandmother (Lucy Abue), may their souls rest in peace.

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ABSTRACT

The analysis of Digito Palmar Dermatoglyphics Pattern in Ubang clan of Cross River State, Nigeria, aimed at determining the true dermatoglyphics patterns of the Ubangs and establish if there is a language variation amongst the gender in the community. Seven research objectives were spelt-out and three research questions asked which serve as a guide in the conduct of the research work. Eight hundred (800) samples were collected from Ubang community (400 males and 380 females). Twenty samples were discarded because of poor visibility of prints. Samples were collected via a cross-sectional simple random sampling technique, to select the clusters used in the research, this was used also to select the control from one of the cardinal points (south) of the community (Ntamante in Boki LGA). The Ink procedure was adopted (Cummis et al., 1961) was adopted in the collection of samples because of the cheap technique and the ease of collection of prints from the subjects. Ethical approval was gotten from Ahmadu Bello University Teaching Hospital (ABUTH), Shika –Zaria for the research work and verbal consent was gotten from the community and the subjects used for the research. Some of the materials used included duplicating papers, stamp pads, endorsing ink, protractors, hand-lens etc. The ink procedure involves the placing of the duplicating papers on a hard smooth surface and the subjects hands washed with water and dried, with some moisture left. The hands rubbed with ink from the stamp pad starting with the right hand is placed on the coded duplicating paper for research identification, this is repeated on the left hand. The prints were analyzed with the aid of a hand lens, pointed needle, protractor, ruler, pencil, etc. for the dermatoglyphics data to be collected. The inclusion criteria for the research were subjects whose great grandparents were from Ubang clan, this was verified via identification of the graves of their great grandparents by the oldest man in the community, the age bracket was pegged at 18-68years. Descriptive statistics was used for continuous and categorical

variables SPSS an SAS were used to analysed the data. The qualitative variables (Arches, loops and whorls) showed significant differences between the gender in both hands when T-test was conducted with ($p<0.05$). The male Ulnar loop had the highest distribution (51.7 ± 39.2) while the male radial loop (0.7 ± 0.8) had the lowest distribution as what is obtain in other parts of Nigeria, Africa and Asia were the men and women speak same language. The females ulnar loop was 58.2 ± 4.9 while the radial loop was (0.6 ± 1.9) this was higher in females than the males. The correlation coefficient (r) for males was 1 as compared to that of the females (0.7) in their AB ridge count. The correlation coefficient for males (0.9) on the ATD angles was greater than in the females (0.8) for the Ubangs. The C-line termination for the Ubangs was greatest in the Ulnar loop termination (69.5%) males and (55%) for females in Ubang community. The T-test was significant for both males and females ($p<0.05$), the C-line termination was least on the radial loop termination (0%) males and (4%) females, this is same with what was obtained in other ethnic groups whose men and women speaks the same language. The Furuhata's index is more in the females of Ubang community (28.2%) than in the males (25.4%). One hundred percent of the respondents agreed that they speak Ubang language because of what others in the community may say about them. This clearly shows that the language is spoken because of the influence of the norms and practices in the community that are put in place by the men and taught by the women to their children and not genetic. A list of thirty-one words were generated via a language consultant in the community in their singular and plural forms, and it clearly affirm that truly the men and women speak different languages of (Ofre) and (Arasere) respectively. In conclusion, the dermatoglyphics patterns in Ubang community are the same with other communities where men and women speak the same language. The language variation in Ubang

amongst the men and women is due to power play and male dominance, not genetic as claimed by the myth and belief of the Ubang people.

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LIST OF ABBREVIATIONS

A	Plain Arch
AB Ridge Count	Counting of Ridges at the A and B Regions of the Palm
ABU	Ahmadu Bello University
ABUTH	Ahmadu Bello University Teaching Hospital
AER	Apical Ectodermal Ridge
AFRC	Absolute Finger Ridge Count
ATD	Axial Triradius Around the D Area of the Palm
C-Line	Termination Line around the C Area of the Palm
CRIGA	Cross River State Geographical Information Agency
DNA	Deoxyribonucleic Acid
Etc.	And so forth (Etceteras)
i.e.	That is
JWL	Japan Women Language
LGA	Local Government Area
PII	Pattern Intensity Index
t	Normal triradius
t’	High Triradius
t’’	Very High Triradius
TA	Tented Arch
SAS	Statistical Analysis System
SPSS	Statistical Package for the Social Sciences
TFRC	Total Finger Ridge Count
W.H.O	World Health Organization.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Study

1.1.1 Digital/Fingerprints Dermatoglyphics

Dermatoglyphics is defined as an engravement on the skin of the palms and fingers, and on the feet and toes with the exclusion of the flexor creases found on the palmer surface of the hands and plantar surface of the feet (Adebisi, 2008; Abue et al, 2013; Ujadugghe et al 2015); Purkinje first classified systematically the variety of pattern of fingers (Adebisi 2009; Bank 2009; Bozhchenko.2009). Faulds is credited with first publication of the possibility of early use of finger prints for personal identification (Kumbnani, 2007; Maltoni et al 2009),while Herschel got the credit of actually practicing this method, (Kumbnani, 2007). Galton pioneered the finger prints studies concerned with morphology, classification, inheritance and racial variation, (El-Domiaty et al., 2010). Poll investigated first the racial differences, geographic variations within races, constitution and symmetry in relation to dermatoglyphics, Poll, (1939). Basically there are three types of dermatoglyphics patterns these include; Arches, Loops and Whorls (Galton,1891; Danborno et al., 2008). They are three types of fingerprints, these includes;

- Plastic impression:- Made in soft material like butter, soap, etc.
- Visible Prints:- Prints made when fingers have been covered by blood, dirt, oil, paint, etc, (Burute et al., 2013).
- Latent Prints:- Prints not visible to human eyes, hidden, unseen until treated.

- The study of dermatoglyphics is important in that it aid in investigating the implications, applications and the utility of this valuable knowledge in forensic science, ethnography, diagnosis, etc, (Kumbnani, 2007; Kamakar, 2012).

1.1.2 Brief History of Ubang Clan of Obudu Local Government Area (L.G.A) in Cross River State

i. The Ubang community/clan holds two existing myths/beliefs;

   The creation of the world started in Ubang and because of this God gave men and women their own separate languages, that as you move away from the community a language is given to smaller communities, and as you move further a language is given to larger communities.

   There is the presence of God's footprint in their community.

ii. The community is about 18 kilometer's off – Obudu road in northern Cross River and is bounded on the north by Bete speaking people of Obudu LGA,on the South by the Irruan speaking people of Boki LGA, on the East the Obanliku speaking people of Obanliku LGA, and on the west by the Mbube and Bekwarra speaking people of Bekwarra and Ogoja LGA all in Cross river State, Cross-River State geographic Information Agency (CRIGA, 2014).

   The Ubang community has a total four thousand six hundred (4600) people (2006 census). The Ubang people have a deity called the Ikweng which is highly reverence by both Christians and traditionalist alike. It is a cult which admits the male folks only; could this be the reason for the marked Language variations between the males and females? In Ubang males speak OFRE while the female folks speak Arasere. It is a faux pax for any of them to Cross borders.

The study aims at establishing the true *dermatoglyphics* patterns of the Ubangs..The research work attempts to answer the central question for this research, 'How does language and gender affect dermatoglyphic patterns?'. The researcher will attempt to state various literatures on digito-palmar dermatoglyphics patterns from other ethnic groups and evaluate the available data from Ubang clan with other ethnic groups and between both gender and hands.

1.1.3. Languages

A language is a system of symbolic communication using sounds and/or gestures that are put together according to rules resulting in meanings that are based on agreement by a society and intelligible to all who share that language,(Conrad, 2004). In Ubang Clan the men speak "Ofre" which is men's language while the women speak "Arasere" which is the women's language.

The scientific study of a spoken language (descriptive linguistics) involves several interrelated areas of analysis: phonology, morphology, lexicon, and syntax. **Phonology**, the study of speech sounds, considers which sounds are present and significant in a given language. **Morphology** studies the forms in which sounds combine to form morphemes words and their meaningful parts. Thus, the word cats would be analyzed as containing two morphemes: cat, the name for a kind of animal, and –s, a **morpheme** indicating plurality. A language's **lexicon** is a dictionary containing all its morphemes and their meanings. **Syntax** refers to the arrangement and order of words in phrase and sentences. Syntactic questions include whether nouns usually come before or after verbs, or whether adjectives normally precede or follow the nouns they modify. A **phoneme** is a sound contrast that makes a difference that differentiates meaning.

Phonetics is the study of speech sounds in general, what people actually say in various languages, like the differences in vowel pronunciation described in "Interesting Issues". Phonetics studies only the significant sound contrasts (phonemes) of a given language,(Conrad, 2004).

1.1.4 Gender and Sex

Sex: a biological condition, i.e. defined as a set of physical characteristics.

Gender: a social construct (within the fields of cultural studies, and the social sciences). "Today a return to separate single-sex schools may hasten the revival of separate gender roles" (Kaminer, 1998).

General usage of the term gender began in the late 1960s and 1970s, increasingly appearing in the professional literature of the social sciences. The term helps in distinguishing those aspects of life that were more easily attributed or understood to be social rather than biological origin (Unger et al., 1992).

The chronological order of biological and social development in the human life cycle, the earlier stages are more biological and the latter are more dominantly social. These includes:

- Chromosomes
- Gonads
- Hormones
- Primary Sexual Characteristics
- Secondary Sexual Characteristics

- Gender Identity
- Gender Role
- Erotic Preferences

Marria Lugones states that, among the Yoruba people, there was no concept of gender and no gender system at all before colonialism. She argues that colonial powers used a gender system as a tool for domination and fundamentally changing social relations among the indigenes. (Verbal Discussion with G. Teke)

Feminist scholars have taken two different paths to redressing problems with the sex/gender distinction. One path, often followed by physical anthropologists and biologists, is to offer a more nuanced picture of the biological, and how it interacts with the social (Sperling 1991; Worth man 1995).

1.5. Statement of the Problem

Dermatoglyphics patterns of the various ethnic groups in Asia, America, Africa and other parts of Nigeria with no linguistics sexual dimorphism have been studied (Kumbnani, 2007). In Ubang clan there is a linguistic sexual dimorphism, thus, there is need to study the dermatoglyphics patterns in this community to know their true dermatoglyphics patterns and compare with other ethnic groups stated in previous literatures to fill in the gap and relate language with gender.

1.6. Justification/ Significance for the Study

The significance of this research work is to provide baseline data in the dermatoglyphics patterns of the Ubang clan and Ntamante in both Gender. The significance of this research work is that, the spoken languages in Ubang Clan i.e. “Ofre”

and “Arasere” are written down for future generations to recall should there be language change due to acculturation and to determine the main reason for the different Language in both sexes in Ubang.

The Ubang clan is a community where power and male dominance exist. This research work will attempt to show that the Language variations between the genders is not genetic but as a result of social identity. The dermatoglyphics findings will be compared amongst the gender and patterns from other parts of Nigeria, Africa and other parts of the WORLD, the true dermatoglyphics patterns of the Ubangs will be determined, this will open doors for further research in this area and the community.

1.7. Study Hypotheses

i. There will be no differences in the percentage frequencies and distribution of the true dermatoglyphics patterns of the Ubangs among the gender.

ii. There is no language variation amongst the genders in Ubang clan.

1.8. Research Questions

i. How does language and Gender influence dermatoglyphics patterns in Ubang Clan?

ii. How does gender influence our perception of categories in Ubang Clan?

iii. How do gender and sex differences affect the way people engage in conversation in Ubang Clan?

1.9 Aims and Objectives of the Study

The aim of this research work is to determine the true dermatoglyphics patterns of the Ubang clan and find out any association in dermatoglyphics patterns amongst the gender that speak the different languages in the clan.

1.10 Objective of Study

The research objectives includes;

i. Investigate the qualitative dermatoglyphics features (Arch, Loop and whorl patterns) in both hands and gender in Ubang clan.
ii. Investigate the qualitative dermatoglyphics features (Arch, Loop and whorl patterns) in both hands and gender in Ntamante.
iii. Investigate the quantitative dermatoglyphics features (ATD Angles, AB ridge count and C-line terminations) in Ubang clan in both hands and gender.
iv. Investigate the C-line terminations in Ntamante in both hands and gender.
v. Investigate language variation amongst the gender in Ubang clan.
vi. Investigate the Dankmeijer, Furuhata's and Pattern intensity indices in Ubang clan in both hands amongst the gender.
vii. Investigate the Dankmeijer, Furuhata's and Pattern intensity indices in Ntamante in both hands amongst the gender.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Brief History of Dermatoglyphics

The term dermatoglyphics was coined by Cummins et al. (1926) and was derived from Greek word ‘derma’ means skin ‘glyphics’ means carvings (Penrose, 1963). Dermatoglyphics is the scientific study of epidermal ridges and their configuration on the palmer surface of the hand and fingers, and the plantar surface of the foot and toes (Adebisi, 2008, 2009).

The study of dermatoglyphics is important in that it aid in investigating the implications, applications and the utility of this valuable knowledge. Many of the investigators have concentrate their energies in comparing the frequencies of various patterns among different communities and population to establish their relative ethnic position in the fabric of the society. All the physical features of the human body including the dermatoglyphics are inherited as stated by the Mendels first and second laws of inheritance.

Population studies have continued to build the necessary descriptive snd comparative bases for better understanding of the full range of human variations. Nearly all region of the world have been well represented in recent work. India and Europe leading with the most published work, followed by Asian sub-sharan africans, south American Indians, middle Eastern populations, pacific Islands and Australians. (Jantz et al., 1980; leguebe et al., 1983; Pons, 1982; Jant et al., 1983; Arricta, 1987).

Galton (1889), a British anthropologist, began his observations of fingerprints as a means of identification. His attention had first been drawn to the ridges in 1888 when he

was studying the problem of person's identification. His primary interest in fingerprints was an aid in determining heredity and racial background. Fingerprint do not change during the course of an individual's life time and that no two fingerprint are exactly the same.

The ridge patterns depend upon the cornified layer of the epidermis and dermal papillae. The typical patterns of epidermal ridges are determined since their formation in the foetus. There is proliferation of cells in the lower zone of epidermis which projects into the dermis as a regularly spaced thickenings and the dermis subsequently projects upwards in the epidermal hollows. This is followed by the appearance of elevations form by them on the skin surface which gives rise to epidermal ridges (Cummins et al., 1926).

The history of dermatoglyphics can be traced to the year 1864 when a physician name Nehemiah described the "innumerable ridges of equal bigness". Racial digital pattern study can be traced back to Galton (1892), when he tried to compare the finger prints of five races viz – Jews, English, Welsh, Negroes and Basques. Digital pattern are classified into Arches, loops and whorls (Galton 1892) based on the number of tri-radii present. The digits are number starting from the thumb and ending on the fifth finger. Thus the entire ten digits can be represented starting from left to right as follows:5,4,3,2,1,1,2,3,4,5 When the hands are placed in an anatomical position. The triradius is a point where the three dermal ridges radiate from in different direction forming an angle of approximately 120 degrees with one another, arch has no tri radius, and loop has one tri radius (Holt, 1946). The tri radii are mostly found on the digits with loops and whorls patterns, the bases of the four medial fingers and close to the distal wrist crease. The tri radius found close to the distal wrist crease is called axial tri radius, and it is very important in ethnographic studies as well as diagnosis of most genetic abnormalities. Depending on its position it is designated as t, t' and t'' to denote normal,

high and very high axial tri radius respectively. In some chromosomal abnormalities like Down's syndrome the axial tri radii could be high as t'' . The tri radii found at the bases of the 4 medial finger are designated as tri radii 'a' (for index finger) 'b' (for middle finger) 'c' (for ring finger) and 'd' (for little finger). Other patterns observed in dermatoglyphics studies include, ATD angle, ridge count, thenar area, and hypothenar area.

Finger Patterns Configuration

The ridge patterns on the distal phalanges of the fingers tips are grouped into Whorls, Loops and Arches. This was based on the presence or absence of tri-radii, the number of triradii and the side to which a pattern opens. A tri-radius is a triangular generation forms when three separate ridge system meet.

a)Whorls: They possess two tri radii. One tri radius in the radial and the other in the ulnar side of the pattern. The patterns are so constructed that the characteristics ridge course follows circuit around the core. The ridges in a whorl are arranged as a succession of concentric rings and the ridges spirals around the core in either a clockwise or anti-clockwise direction.

b) Loop: In this configuration, series of ridges enters the pattern areas on one side to the digit, recurves abruptly and leaves the pattern area on the same side. If the ridge opens on the ulnar side, the resulting loop is termed an ulnar loop (L^u). Ulnar loops slant towards the little finger. When the ridge open towards the radial margins. It is called a radial loop (L^r). A loop has a single tri radius. The tri radius is usually located literally on the fingertip and always on the side where the loop is closed. Loops may vary in shape and size greatly. They may be vertically oriented or horizontally. They may be small or large.

c) Arch: This is the simplest pattern found on the finger tips. It is formed by a succession of more or less parallel ridges, which transverse the pattern area and form a curve that is concave proximally. It is divided into two types viz;

i. Simple or plain Arch (A)

ii. Tented Arch (TA)

i. Simple Arch – Is composed of ridges that cross the finger tips from one side to the other without recurring.

ii. Tented Arch – The ridges converge and give a tent pattern outline.

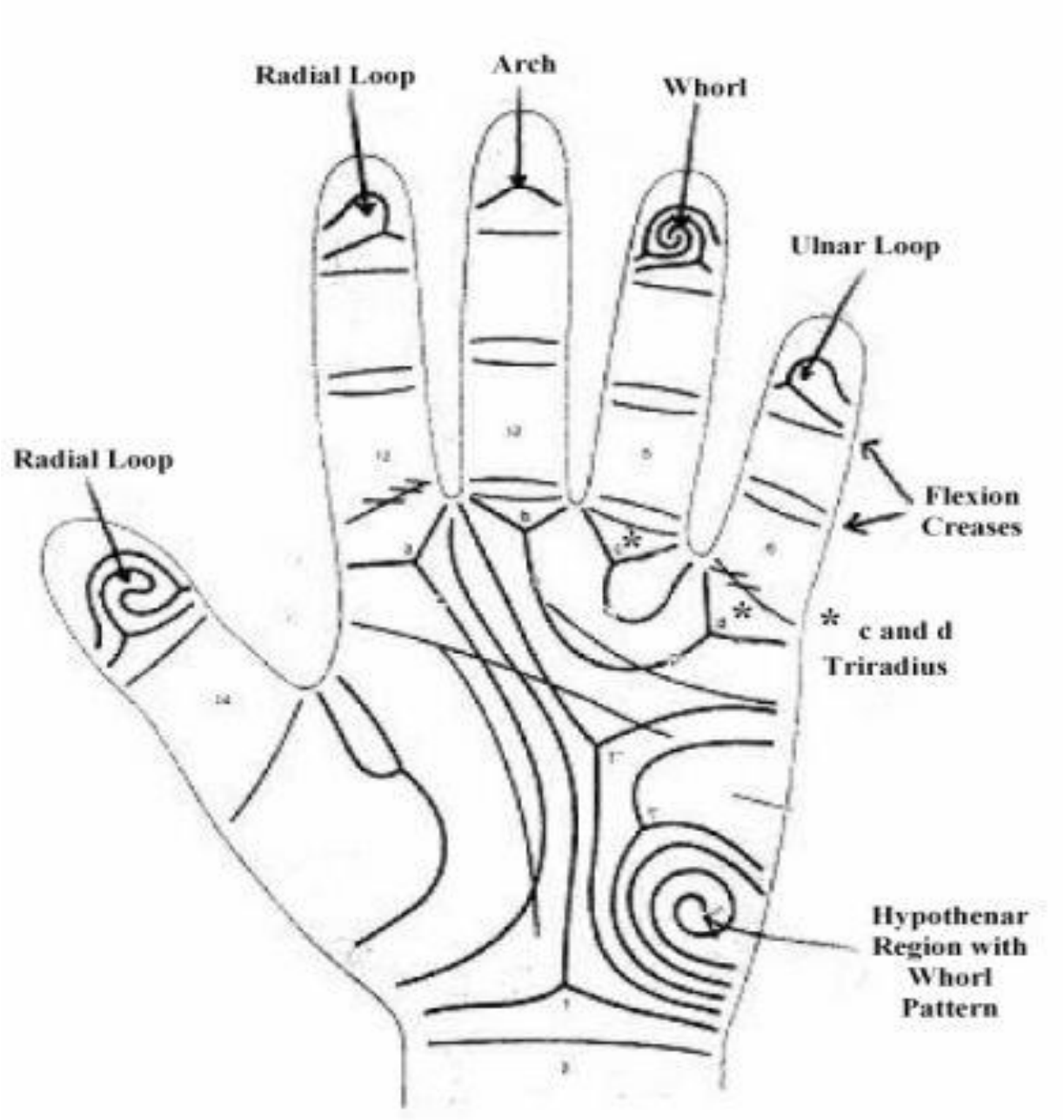


Figure 2.1: Dermatoglyphic configuration of the palm (Dr. Albert Chudley, Dermatoglyphics and Kabuki syndrome).

The great majority of dermatoglyphic studies globally have been on digital pattern it is generally believed that the frequency of a given pattern varies from race to race. It is generally believed that the frequency of occurrence is thus ulnar loop>whorl>Arch>radial loop, these have been conclusively shown even in patients normal persons, (Galton, 1892; Anomah et al., 1985).

Purkinje (1823) published his thesis describing seven fingerprint patterns. 1. Plain arch (Transverse curve), 2. Tented arch (Central long strip), 3.Loop Ulnar or Radial (Oblique strip), 4.Oblique loop (Ulnar or Radial), 5.Whorl (Almond), 6.Spiral whorl, 7.Elliptical whorl.

Herschel (1858) reported that the Chief Magistrate of Hooghly district in Bengal, India was the first to use finger print identification against impersonation. He started the practice of recording fingerprints to prevent the impersonation of signatures. He first used fingerprints on native contract. He made a habit of requiring palm prints and later index and middle fingers on every contract made with the locals.

Faulds (1880) used fingerprints for identification of criminals. He published an article in the scientific journal ‘Nature’ discussing fingerprints as a means of personal identification and use of printers ink as a method of obtaining such fingerprints. He made first fingerprint identification of a greasery fingerprint left on the alcohol bottle.

Vucetich (1892), an Argentine police official made the first criminal fingerprint identification. He identified a woman named Rojas, who murdered her two sons but her bloody print was left on a door post, proving her as murderer.

2.2 Comparative Anatomy

There is a close resemblance in the dermatoglyphic pattern in man and other primates (like monkeys and apes), this is shown at their plantar and palmar surfaces which are thrown into whorls, loops and arches,(Goy et al., 1979; Gould, 1990; Eaton et al., 1999; Bentley-Condit, 2003; Conrad, 2004; Graham et al., 2010). Also, there is a close resemblance in the way at which the skin of the palm and plantar are thrown into ridges. The difference in their palmar and plantar configuration lies on the fact that, in the primates there is no palmar and plantar creases, and if at all present, it is not prominent as a result of no brachiating (Hagger et al., 1991; Hare et al., 2001; Hassett et al., 2007; Wallen, 2008).

Also, there is no hypothemar and thenar elevation in these primates. The primates also have flatter palmar and plantar surfaces relative to man. The digital patterns and true dermotoglyphics are less pronounced, (Eaton et al., 1986; Maestripieri et al., 2004; Scott, 2005; Nunn, 2011).

Primatology is the study of nonhuman primates-fossil and living apes, monkeys, and prosimians-including their behavior and social life. Primatology is fascinating in itself, but it also helps anthropologists make inferences about the early social organization of hominids (members of the zoological family that includes fossil and living humans) and untangle issues of human nature and the origins of culture, such as early tool making-its nature and value, (Watt, 2004) .

Similarities between humans and apes are evident in anatomy, brain structure, genetics, and biochemistry. The physical similarities between humans and apes are recognized in zoological taxonomy – the assignment of organisms to categories (taxa, singular, taxon) according to their relationship and resemblance, (Coplan et al., 2001;

Conrad, 2004). Many similarities between organisms reflect their common phylogeny – their genetic relatedness based on common ancestry. In other words, organisms share features they have inherited from the same ancestor. Humans and apes belong to the same taxonomic superfamily, Hominnoidea (hominoids). Monkeys are placed in two others (Ceboidea and Cercopithecoidea). This means that humans and apes are more closely related to each other than either is to monkeys, (Coplan et al., 2001; Conrad et al., 2004).

2.3 The Place of Humans (Homo Sapiens) in Zoological Taxonomy

Homo sapiens is an Animal, Chordate, Vertebrate, Mammal, Primate, Anthropoid, Catarrhine, Hominoid and Hominid;

Table 2.1 Shows the Taxonomic Placement of the other Primates

Taxon	Scientific (Latin) Name	Common (English) Name
Kingdom	Animalia	Animals
Phylum	Chordata	Chordates
Subphylum	Vertebrata	Vertebrates
Class	Mammalia	Mammals
Infraclass	Eutheria	Eutherians
Order	Primates	Primates
Suborder	Anthropoidea	Anthropoids
Infraorder	Catarrhini	Catarrhines
Superfamily	Hominoidea	Hominoids
Family	Hominidea	Hominids
Genus	Homo	Humans
Species	Homo sapiens	Recent humans
Subspecies	Homo sapiens sapiens	Anatomically modern humans

Source: Conrad, (2004).

We see the highest (most inclusive) taxonomic level is the kingdom. At that level, animals are distinguished from plants. The lowest-level taxa are species and subspecies. A species is a group of organisms that can mate and give birth to viable (capable of living) and fertile (capable of reproducing) offspring whose own offspring are viable and fertile. Specitation (the formation of a new species) occurs when groups that once belonged to the same species can no longer interbred. After a sufficiently long period of reproductive isolation, two closely related species assigned to the same genus will have evolved out of one.

It is estimated that humans, chimpanzees, and gorillas have more than 98 percent of their DNA in common.

Primates are varied because they have adapted to diverse ecological niches. Some primates are active during the day; others, at night. Some eat insects; others, fruits; others, shoots, leaves, and bulk vegetation; and others, seeds or roots. Some primates live on the ground, others live in trees, and there are intermediate adaptations. However, because the earliest primates were tree dwellers, modern primates share homologies reflecting their common arboreal heritage.

Many trends in primate evolution are best exemplified by the anthropoids: monkeys, apes, and humans, which constitute the suborder Anthropoidea. The other primates suborder, Prosimii, includes lemurs, lorises, and tarsiers. These prosimians are more distant relatives of humans than are monkeys and apes. The primates trends – most developed in the anthropoids-can be summarized briefly. Together they constitute an anthropoids heritage that humans share with monkeys and apes.

Table 2.2: Shows Primate Taxonomy

Suborder	Infraorder	Superfamily	Family	Subfamily
Prosimii (Prosimians)	Lemuriformes	Lemuroidea	Daubentoniidea (Aye-aye)	
			Indridae (Indril)	
			Lemuridea (Lemurs)	
	Lorisformes	Lorisoidea	Lorisidea	Galaginae (Bushbabies)
				Lorisinae (Lorises)
	Tarsiiformes	Tarisoidea	Tarsiidae (Tarsiers)	
Anthropoidea (Anthropoids)	Platyrrhini	Ceboidea	Callitrichidea (Tamarins and marmosets)	
			Cebidae	Ateline (Spider Monkeys and woolly monkeys)
	Catarrhini	Cercopithecoidea	Cercopithecidea	Cercopithecinae (Macaques, guenons, and baboons)
				Colobinae (Colobines)
		Hominoidea	Hylobatidae (Gibbons and siamangs)	
			Pongidae (Orangutans)	
			Hominidae (Gorillas, chimpanzees and humans)	

Conrad (2004).

The subdivisions of the two primate suborders: Prosimii (Prosimians) and Anthropoidea (Anthropoids). Humans are anthropoids who belong to the superfamily Hominoidea (the hominoids), along with the apes.

2.4. Embryology of Upper Limb

The development of upper and lower limbs begins in fourth week of intrauterine life (Singh, 2005; Kiran et al., 2010) A pair of paddle-shaped projection appears on ventrolateral aspect of the embryo, opposite the lower cervical segments. These are the upper limb buds. Each of these limb buds consists of central core of mesoderm covered by ectoderm. The mesoderm is derived from somatic layer of lateral plate mesoderm. At the trip of the upper limb bud, the ectoderm thickens to form apical ectodermal ridge (AER), (Williams et al., 1990; Singh, 2005). AER has an inductive effect on underlying mesoderm, which proliferate and limb bud starts growing.

The limbs buds enlarge grow in size under the inductive influence of apical ectodermal ridge. Upper limb bud is soon divided into arm, forearm and the terminal flattered part called as hand plate.

The hand plate and foot plate shows linear condensations of mesoderm, there are called as digitals rays. Under the influence of AER at the tip of each digital ray, the condensed mesoderm develops into phalanges. The thin mesoderm between the two digital rays breaks down to form the notches between the digitals rays. As these notches deepen the individual digits are separated from each other.

The digital rays of upper limb bud developed into five fingers including the thumb while the digital rays of lower limb bud develop into five toes.

During development the upper limb is abducted and comes to lie by the side of the trunk. The upper limb now has lateral and medial borders. The preaxial or cranial border becomes lateral border and caudal or postaxial border becomes medial border. The thumb and radius lie on lateral side while little finger and ulna lie on medial side. The flexors are on anterior aspect and extensors are on posterior aspect.

The lower limb buds appear about 3-4 days later than upper limb buds, from ventrolateral aspect of embryo at the level of lumbar and upper sacral segments. The developmental process of upper limb and lower limb buds is more or less similar.

2.5. Importance of Dermoglyphics Study

a. Personal identification for criminal identifications and forensic science, (Fujimoto, 2003; Bozhchenko, 2009; Gutiérrez-Redomero, 2014).

b. Population diversity/ethnographic and racial studies, (Erickson et al., 2003; Carneiro, 2003; Crawford et al., 2014).

c. Medio-legal disputes of paternity

d. Diagnosis of Monozygotic and dizygotic twins

e. Diagnosis of chromosomal disease entities like; (Matsuyama, 2006; Issrani et al., 2013).

    i. Trisomy G (where there is typical ulnar loop)

    ii. Cri-du-chat syndrome (high frequencies of arches)

    iii. Trisomy X (high finger ridge count)

iv. Naggely syndrome Dermatopathia pigmentosa (Absence of finger and palm prints)

f. Carcinomas of breasts and ovaries are associated with increased whorl patterns. Oladipo, et al., 2006*;* Chintamani, 2007).

g. Athletes with certain dermatoglyphic patterns are good in various sports.

h. The A, B, and O blood groups have high frequency loops with moderate whorls and low arches.

i. Rhesus negatives have high whorls while Rhesus positives have high loops.

2.6 Embryology and Dermatoglyphics

Foetal volar pads are mound shaped elevations of mesenchymal tissue situated above the proximal end of the most distal metacarpal bone on each finger, in each interdigital area, in thenar and hyposthenia areas of the palms. Secondary foetal pads may be found on the central palm or as pairs on the proximal phalanges. The formation of these pads is first visible on the fingertips in the sixth to seventh week of embryonic development, (Moore et al., 2006). During the twelfth and thirteenth weeks, while the pads begin to regress in relative size, the ridges begin to develop at the dermal-epidermal junction while the surface remains smooth. These primary dermal ridge subdivide to form more parallel ridges through the seventeenth week. During the twentieth week, the underlying patterns become reflected by identical configurations on the skin surface. (Mulvhill et al., 1969). Babler (1978)reported that ridge formation in the foetus begins at about three months of intrauterine life when the volar pads are at or near their peak development, and completed by sixth month of intrauterine life, when then sweat gland formation and gelatinization have began. Schaumann et al. (1976) pointed out that besides

nerve and blood vessels, there are so many factors such as inadequate supply of oxygen to the tissue, deviations in the formation and distribution of sweat glands, disturbances in the proliferation of the epithelial basal layer and disturbances in gelatinization of epithelium as other factors that may influence epidermal ridge pattern. They also stated that environmental factors such as external pressure on the foetal pads and embryonic foetal finger movement could influence ridge formation.

Bonnevie (1929) Stated that patterns depends on the underlying arrangement of peripheral nerves. Cummins (1936) reported that the dermal ridge configurations were the result of physical and topographical growth forces. The tension and pressure on the skin during early embryogenesis determines the directions of epidermal ridges. Penrose (1969) the ridges followed the lines of greatest convexity in the embryonic epidermis. Schaumann and Alter (1976) stated that beside nerve and blood vessels, there are so many factors such as inadequate supply of oxygen to the tissue deviation in the formation and distribution of sweat glands disturbance in the proliferation of the epithelial basal layer and disturbances in keratinization of epithelium as other factors that may influence epidermal ridge pattern. They also stated that environmental factors such as external pressure on the foetal pads and embryonic foetal finger movement could influence ridge formation, (Schaumann , 1976).

2.7 Dermatoglyphics and Genetics

Galton (1892) and Wilder (1902) were the first to study the hereditary basis of dermal patterns, suggesting that these ridge patterns are under genetic influence.

Rife (1954) reported that Europeans, Brown Caucasians and Indians showed highest frequency of patterns in hypothenar area. Africans and Mongolians showed highest frequency in the 4^{th} inter digital pattern. Lowest frequency of patterns in the hypothenar

area was seen in Africans, thenar and 1st inter digital patterns in American Indians, 2nd inter digital patterns in Negroes and 3rd inter digital patterns in Europeans.

Dermatoglyphics has been useful in differentiation between monozygotic and dizygotic twins. It has been used in the diagnosis of Down syndrome. They are first to demonstrate distinctive dermal ridge patterns in Trisomy as low TFRC, (Uchida et al., 1983; Leinsdorf et al., 2005; Kahn et al., 2009; Seema et al., 2012; Kumari et al., 2014).

Basu (1976) studied digital pattern and digital ridge count in endogamous castes in Mysore. He observed high frequency of loops, moderate whorls and low arches. In pattern types, differences between sexes are highly significant. Total ridge count differences between sexes are not significant. The frequencies of the patterns of the whorls, loops and arches are calculates for each fingers of both right and left hands and of both sexes and finally totalled.

2.8 Language and Gender

Language and gender compliment each other, they are greatly influence by dermatoglyphic patterns in that they are mostly genetically derived and plays prominent rules in cultural settings and settlement (Romaine et al., 1984; Romaine et al., 1996; Robben et al., 2007)

The “women’s languages” and “men’s languages” of various non-European culture as rigidly dichotomized and mutually exclusive, The most popular of these deviants is the effeminate man, the cross-talker whose non-conformity to sex-exclusive language model makes him not just a linguistic anomaly, but a social weirdo, an outcast. The fact that he is labeled as “effeminate” or “womanly” by the rest of society for using women’s language is then held up as an evidence and forms the extreme and unforgiving nature of the model,

(Bauman et al., 1990; Brouwer et al., 1992; Barrett, 1994; Briggs et al., 1998; Bucholtz et al., 1999).

The resulting portrait of women's and men's language use is rigidly dichotomous, so much so that a speaker's use of the "other" variety changes his sex altogether in the public perception. Of Europe, but which is not at all uncommon among primitive people" (1944). In fact, Furfey compares the gender stratification evident in these so-named "primitive" cultures with the class stratification of European cultures, arguing that their use of women's and men's language parallels the use of standard and non-standard dialects in English. Whereas language in English is used "as an aid to upper-class control," says Furfey, language in these more primitive groups "serves as a tool of sex dominance." Furfey's review, then by avoiding any in-depth discussion of gender in non-European languages, works to exoticize the oppressive nature of gender in non-European cultures. And the most exotic proof of this oppression is the linguistic effeminate, whose use of women's speech situates him on the social hierarchy as squarely female. Since it is through men's language that masculine superiority is asserted, a man who uses women's language is necessarily emasculated to a position of powerlessness. Romaine (1996).

Feminist scholars have taken two different paths to redressing problems with the sex/gender distinction. One path, often followed by physical anthropologists and biologists, is to offer a more nuanced picture of the biological, and how it interacts with the social (Sperling, 1991; Worthman, 1995). This approach challenges the notion of biology as more fixed and less amenable to change than culture is. For instance;

Worthman (1995) considers the ways that gender as a principle for social organization affects biological development in terms of risk factors for breast cancer. Much recent work in sociolinguistics adopts a second approach, one which in effect

subsumes what was traditionally placed under the domain of sex into the domain of gender. Scholars with this view look at the social construction of "sex."

In addition to recognizing cultural differences in understanding the body, proponents of this view may argue that we need to look at how certain definitions of sex/gender become hegemonic and are contested within a given society. (Nicholson, 1994; Wallen, 2005; Van de Beek, 2009; Tehako, 2011).

The ways that 'yan daudu (Nigerian men who talk like women, and often have men as sexual partners) transgress norms of gender and sexuality. He also suggested how even in a patriarchal Islamic society that in principle accords all men potential access to masculine power, this access is not equally distributed, nor unconditional. (Wider, 1925; Worthman et al., 1995; Gaudio, 1996, 1997; Umana et al., 2013; Wijerathne et al., 2013).

Camerons (1997) a study of college men watching basketball game, and gossiping about other men whom they label "gay," show some men continually construct themselves as heterosexual by denigrating other men, labeling them as "gay" in the absence of any information or Studying discourse from or about sexual minorities is not, however, the only strategy for highlighting how gender is learned and performed.

Sedgwick (1990) Indeed, to study gender in this way may suggest or assume that there is a closer relationship between sexuality and gender than between either of these and any other aspect of social identity, a question which itself deserves empirical investigation.

Hawkeworth (1997), It may also suggest that the construction of hegemonic gender norms is most closely linked to recreational needs. The ways in which gender is imbricate in other axes of identity, the ways in which certain notions of gender can reinforce or

challenge certain notions about class and ethnicity, is part of what we must begin to investigate more closely.

Barrett's (1994) study of the linguistic strategies used by African American drag queens shows how they appropriate stereotypes of White women's speech in order to parody and critique certain White stereotypes about Black men (including the myth of the Black male rapist).

Inoue's (forthcoming) genealogical approach to Japanese women's language (JWL) highlights the co-construction of gender, class, and national identity. Though some linguists have described JWL as a speech variety spoken by all Japanese women, traceable back to feudal Japan, Inoue shows how JWL was actively constructed during the late nineteenth century as part of the construction and consolidation of a modern nation-state meant to withstand the Western colonial inroads visible elsewhere in Asia (Fishman, 1983; Eatonet al., 1986; Eaton et al., 1990; Ehrlich, 1990; Freed, 1992).

Sociolinguistic study of the speech of New York (and subsequent ones modeled after it) abandoned the idea that any one person could be representative of a complex urban area; it relied on speech samples collected from a random sample of 103 men and women representative of different social class backgrounds, ethnicities, and age groups. The method used in New York City to study the linguistic features was to select easily quantifiable items, especially phonological variables such as postvocalic /r/ in words such as cart, barn, etc., which was either present or absent, (Gouzoules et al., 1989; Gapps et al., 1995; Gameron, 1997; Ghannell, 1997). Most of the variables studied in detail have tended to be phonological, and to a lesser extent grammatical, although in principle any instance of variation amenable to quantitative study can be analyzed in similar fashion. By counting variants of different kinds in tape-recorded interviews and comparing their

incidence across different groups of speakers, the replication of a number of sociolinguistic patterns across many communities permits some generalizations about the relationship between linguistic variables and society. Analysis of certain key variable speech forms showed that when variation in the speech of and between individuals was viewed against the background of the community as a whole, it was not random, but rather conditioned by social factors such as social class, age, sex, and style in predict table ways, (Bull, 1991; Cheshire et al., 1998; Bucholtz et al., 1999; Bucholtz, 2001).Thus, while idiolects (or the speech of individuals) considered in isolation might seem randomly variable, the speech community as a whole behaved regularly. Using these methods, one could predict, for example, that a person of a particular social class, age, sex, etc. would pronounce postvocalic /r/ a certain percentage of the time in certain situations, (Fagot, 1985; Fagot et al., 1991; Romaine, 1998; Fausto-Sterling et al., 2012).

Some of the same linguistic features figure in patterns of both regional and social dialect differentiation, with working-class varieties being more localized, and they also display correlations with other social factors. The intersection of social and stylistic continua is one of the most important findings of quantitative sociolinguistics: namely, if a feature occurs more frequently in working-class speech, then it will occur more frequently in the informal speech of all speakers Romaine (1998).

Eckert et al., (1992) and El-Domiaty, (2010) remind us that "the correlations of sex with linguistic variables are only a reflection of the effects on linguistic behavior of gender the complex social construction of sex and it is in this construction that one must seek explanations for such correlations." Faced with seemingly contradictory findings and much ad hoc speculation about the relation of women to prestige varieties and the role of women in language change, investigators have moved on from simplistic correlations between language use and sex to focus on the symbolic and ideological dimensions of

language. While most of this traditional sociolinguistic literature has expressed the symbolic value of dominant languages and prestige varieties in terms of their supposed economic value in a linguistic marketplace, more recent work has paid attention to ideologies of femininity and masculinity (Romaine, 1998). The way in which gender gets mapped onto language choice is not straightforward but mediated through other identities and ideologies. This is simply to admit that as variables both gender and language comprise rather complex social practices and performances Romaine (1998).

Similarly, (1994) study of White women in Japan who resist using certain Japanese linguistic strategies deemed appropriate for women because they perceive them as overly hesitator humble suggests both how certain kinds of Japanese femininity are constructed with language use and what gendered norms prevail for these White Westerners.

McElhinny, (1994, 1995, 1996), finally, my work on women working in a traditionally masculine, working-class workplace highlights some prevailing notions of what it means to be a woman, what it means to be a man, and what it means to be a police officer, as it examines how those notions are critiqued and changed by female police officers. By looking at men and women's crossover into spheres and spaces often predominantly associated with the other, we begin to get a sense of how the boundaries between those spheres are actively maintained, how gender is policed, how people resist these boundaries, and perhaps what transformation requires. Connell (1987) Gender differences are created, for instance, in the division of labor into paid and unpaid work, in the sexual segregation of workplaces and the creation of "men's" and "women's" work, in differences in wages, and in discrimination in job training and promotion.

Gender differences are created in bureaucratic interactions in legal, medical, psychiatric, and welfare settings (McElhinny, 1997).

Scott, (1986), gender thus should be understood as a principle for allocating access to resources, and a defense for systematic inequalities. It is, like class and radicalized ethnicity, an axis for the organization of inequality, though the way each of these axes work may have their own distinctive features. Though an institutional definition of gender has been influential in history (Scott, 1986), sociology (Connell, 1987), and socio-cultural anthropology (Ortner, 1996; Silverblatt, 1991), its implications have yet to be fully explored in sociolinguistics and linguistic anthropology. The two frameworks considered here, the ethnography of communication and interactional sociolinguistics, offer compatible and complementary perspectives on the relationship between language and culture. Both take from their roots in anthropology a concerted focus on cultural specificity and variability. And both view culture and discourse as intimately interconnected. Within language and gender scholarship, these approaches have therefore provided the impetus for research that expands the field's early focus on the European American middle class to include a broad range of languages and cultures. Yet each approach has made very different kinds of contributions to language and gender research, based on the different ways in which it has used the concept of culture to frame the study of gender, Scot, (1986).

The earliest modern theory about "women's language," most often associated with Robin, (1973), is commonly referred to as the deficit theory. It described women's language as ineffective in comparison to men's and explained women's manner of speaking as being a reflection of women's insecurity and powerless place in society. By contrast, the dominance theory of language and gender, presented first by Barrie et al., Nancy, (1975) focused on issues of patriarchy - that is, male power and dominance. Researchers characterized the social and political arrangement between the sexes as one in which women were viewed and treated as unequal to men because the norms of society

had literally been established by men. The division of labor between women and men was seen to include a division of language practices, one belonging to the powerful and the other belonging to women. Language differences were identified as part of a structure of unequal access and influence. Finally, the difference theory, represented by the writings of Daniel et al., (1982) and Deborah, (1990, 1994), hypothesized that women and men used specific and distinct verbal strategies and communicative styles which were developed in same-sex childhood peer groups. Researchers who adhered to this framework believed that by focusing on language difference instead of power difference (or male dominance), the antagonistic comparison between women and men could be avoided and the positive values of each language style could be celebrated. Feminist linguists who objected to the difference framework (Troemel-Ploetz, 1991; Freed, 1992; Uchida, 1992) argued that the particular sets of verbal strategies associated with women and men emerged not in a vacuum but were an integral part of the power arrangements between men and women in societies around the world.

2.9 Ethnography of Communication

The ethnography of communication (earlier termed the ethnography of speaking) was established by Dell, (1962, 1974) as a way of bringing language use more centrally into the anthropological enterprise. The framework seeks to apply ethnographic methods to the study of language use: that is, it aims to understand discourse from the perspective of members of the culture being studied, and not primarily or pre-emptively from the perspective of the anthropologist. To this end, ethnographers of communication often focus on “ways of speaking" - discourse genres through which competent cultural members display their cultural knowledge - by considering speakers' own systems of discursive classification rather than importing their own academically based analytic categories. They also examine, from native speakers' point of view, how specific kinds of

language use (speech events) are put to use in particular contexts (speech situations). In keeping with its anthropological origins, research in the ethnography of communication framework has concentrated primarily on language use beyond that of White middle-class speakers in industrialized societies. Perhaps for the same reason, the emphasis is on spoken language, as Indicated by much of the terminology of the approach. The ethnography of communication also focuses mainly on discourse internal to a single culture rather than on how the same discursive form may be understood by members of different cultural backgrounds. A complementary approach to discourse within anthropology, interactional sociolinguistics, takes interaction and cultural contact as central to the cultural investigation of language use. This approach results in a very different view of gender and discourse. (Bucholtz, 2001; Pasterski et al., 2005; Ozyurt et al., 2010; Over et al., 2012; Pathan et al., 2013).

Ethnographies of communication are frequently carried out in small, non-Western, non-industrialized societies, or in culturally distinctive smaller groupings within Western societies. By contrast, interactional sociolinguistics primarily examines language use in heterogeneous, multicultural societies that are often highly industrialized, concentrating especially on how language issued across linguistic and cultural groups within a single society. As developed in the work of John Gumperz and his associates the approach emphasizes how implied meanings can be derived from details of interaction that signal the appropriate cultural frame of reference for interpretation. These contextualization cues are culturally specific, and hence may give rise to miscommunication when used between speakers with different cultural systems of conversational inference. The main arena for the investigation of such communicative breakdowns is in inter-ethnic interaction of various kinds, usually between members of the dominant social group who often occupy more powerful roles in the interaction (such as employer, lawyer, teacher, or interviewer)

and members of subordinated ethnic groups who often have less powerful positions (such as employee, witness, student, or interviewee), (Gumperz, 1982).

Finally, although both interactional sociolinguistics and the ethnography of communication would certainly view culture and discourse as mutually constitutive,the two approaches focus on different aspects of this relationship.Within the ethnography of communication, the analytic emphasis is on discourse as the substance of culture, the means by which shared cultural practice and identity are forged and displayed. Within interactional sociolinguistics, on the other hand, researchers highlight the ways in which culture underlies discourse, shaping how language is used and what it can mean. For scholarsof language and gender, this difference in emphasis has led to markedly different theories of gender. Ethnographers of communication concentrateon how women, as discourse producers, are makers of culture. The focus on women as cultural agents also calls attention to the diversity of women's discursive practices in different cultures. Interactional sociolinguists, by contrast,emphasize not how women's discourse produces culture but how it is produced by culture. And in equating gender with culture, interactional sociolinguists view the primary point of comparison as between women and men. While the interactional sociolinguistic framework allows for differences in discourse style between women of different cultures, there is a tendency in much of the research in the field to downplay intragender variation and to highlight inter gender variation in discourse patterns. Despite such significant differences in their views of gender and of discourse, these anthropological approaches have in common an analytic focus on cultural variability that sets them apart from many other forms of discourse analysis as organized through everyday interaction. Garfinkel consequently advocated applying close analytic attention to the ordinary activities from which social order emerges, (Roe, 1985; Buchokltz, 2001).

Gender played an important role in the development of ethnomethodological ideas, in part due to Garfinkel's study of Agnes, a biological male who identified as female. Agnes's successful display of herself as a woman was accomplished through the management of routine activities related to gender. The insight that social identities such as gender are achievements or accomplishments, that gender is something that people "do" rather than simply have (Kessler et al., 1978; West et al., 1975), is one that has had a powerful impact on language and gender research, as well as on gender studies more generally.

2.10 Women and Men as Language Users and Regulators

The popular portrayal of women and men as language users has stressed their fundamental differences. A quick perusal of some writings about male and female speakers across languages, (Baron, 1986) leaves no doubt that men are perceived not only as powerful speakers but especially as authoritative language users. Women, on the other hand, are often seen as garrulous, frivolous, and illiterate language users. These popular stereotypes gained in stature when they were endorsed by or validated in the "academic" and "scientific" literature of the day(kramarae, 1981; Baron, 19886). This "scientific" validation in turn led to the desire for the codification and regulation of women's speech, and of women as speakers. Cameron, (1995) as well as other scholars of language and gender have documented the many rules, codes, and guides that were developed to codify and control women's language behavior over the past centuries. Essentially this action cemented men's status as norm-makers, language regulators, and language planners. Men signaled their authority in language through their roles in the dictionary- making process, in the writing of normative grammars, in the establishment of language academies and other normative language institutions, and through their involvement in language planning activities. The history of women as language regulators is very different. As

stated above, women were subjected to linguistic regulation much more than men. However, women were given some authority in language regulation as norm enforcers: both as mothers and as school teachers (especially in elementary education) women were to ensure that children learned to use language according to the prescribed norms, Baron, (1986).This is observed greatly in Ubang Clan which is the location of this research work as stated below**:** The men speak Ofre while the women speak Arasere.

2.11 The Present Dermatoglyphic Study

Among Mongoloid populations from East Asia, the frequency of whorls is high about 46 percent, varies from 40 per cent among Japanese to 52 per cent in Chinese than among Southeast Asians about 36 per cent. Among Tibetans and Bhutanese the frequencies are quite high (about 55 per cent). The frequency of arches is quite low among Mongoloid populations (varies from 1 to 4 per cent). From Central Asia, the frequency of whorls is little lower than 50 per cent. The highest frequency of whorls is observed among Australian aborigines (78 per cent) and Eskimo (72 per cent) after Fleisch hacker (1951) and Plato(1983). The distribution of the frequencies of different finger patterns (in percentage) may be generalized among major population groups as follows: Whorls : Mongoloids (47)>American Indians(43) > Europeans (36) > Africans (27) Loops: Africans (64) > Europeans (60) > American Indians (52) > Mongoloids (51) >Arches : Africans (9) > American Indians (5) > Europeans (4) > Mongoloids (2), (Dankmeijer et al., 1962; Penrose et al., 1963; Sardool, 2005; Maheswari, 2005; Banik, 2009; Saraswith, 2009; Saraswith, 2009; Shirobokov, 2010; Pratibha, 2011; Qudsia et al., 2011; Seema, 2012; Tamgire et al., 2013; Sudagar et al., 2014)

In general, among Indian populations, the frequency of whorls is low (43.62 per cent, varies from 22.50 to 66.70) as compared to loops (53.30 per cent, ranges from 33.00

to 75.30), whereas the frequency of arches is 3.08 per cent (from complete absence to 8.10 per cent). For radial loops, the range is large (absence to 12.10 percent) with average frequency of 2.41 per cent. The highest frequency of whorls is observed from Islands natural region (50.40 per cent) from where three studies are available among Nicobarese (who have Mongoloid affinities) among whom the frequency is quite high (51.85, varies from 41.30 to 53.90 per cent) as compared to Onges of Andaman with quite low frequency (35.70 percent). In the Himalayan mountain complex region from where most of the populations are having Mongoloid affinities the frequency of whorls is high (46.54 per cent) and it starts decreasing gradually towards south. The frequency of arches is low in the Himalayan mountain complex and starts increasing towards south. The frequency of various patterns in the Himalayan region is similar to that observed among populations with Mongoloid affinities from East, (Veena, 2006; Zhang ., 2010;)

Zhang ., (2010) studied the dermatoglyphic patterns of 56 ethnic groups in China Zhang team has collected more than 150 samples by surveying more than 68,000 Chinese from all 56 ethnic groups making it the world's first research of dermatoglyphic variables involving all ethnic groups of the country.

The frequencies of different pattern on the fingers among European population are 36% for whorls, 60% for loops and 4% for arches as compares to Africans in which the frequency of whorls is the lowest (27%) and that of loops the highest (64%), the frequency of arches is also high (9%) Zhang, (2010).

Igbigbi ., (2005) observed that the ulnar loop were most prevalent, while the arches were least prevalent while comparing the digital patterns of the Tanzanians and Kenyans. They also observed a significant difference in the patterns among the sexes ($p<0.05$). They also observed that males had significantly TFRC than females in the Kenyans. The

Tanzanians showed no sex difference (P<0.5). They also observed that the females had greater PII than males in Kenyan but the reverse among the Tanzanians. In both groups, males showed greater mean a-b ridge counts than women (P>0.001, Kenyans, P<0.01 Tanzanians), women showed greater mean ATD angle than men (P>0.5). The TFRC, ATD angle and a-b ridge count were significantly different between Kenyans and Tanzanians (P>0.001) Igbigbi, (2005).

Igbigbi and Msamati (1999), while working on the digital patterns of the Malawians observed the following; Arches were the most dominant pattern in both sexes, followed by radial loops in males, whorls in females. No significant sex difference in the patterns. Females had higher TFRC than males (P<0.001). Males showed higher mean PII values than females had higher ATD angle than males. Males had significant higher a-b ridge count than females (P>0.001). Conclusively they observed that the TFRC, ATD angle and a-b ridge count were significantly higher in Nigerians than in Malawians. The mean PII was also higher in Nigerians than the Malawian.

Ekanem, (2009) studied the Digital Dermatoglyphic Patterns of Annang Ethnic group in Akwa Ibom state of Nigeria and observed that the ulnar loops were the most predominant digital pattern in females (50.1 percent) than in males (39.6 percent), followed by whorls (42.9 percent) in males, then arches (31.1 percent) in females and radial loop (2.1 percent) in males. The sex differences between these patterns were statiscally significant (chi2 equal to 154.569; d.f. equal to 4; 0.001 greater than P). the index of pattern intensity (P11) showed a higher value in males (15.13) than the females (11.88). Sexual dimorphism was also evident with the males showing a higher value in males (15.13) than the females ridge count (TFRC) than the females (p<0.001).

Ujaddughe (2015) studied the dermatoglyphic patterns and sex distribution in Esan ethnic group of Edo state, Nigeria and observed that the loop pattern had the highest frequency (61.7%) followed by whorl (24.9%), arch (12.8%) and double whorl (0.6%).

Imene, (2011) studied the dermatoglyphic trait variations: an intra-Tunisian population analysis observed that the percentage of arches varied from 1.5% to 14.15% for men and from 3.6% to 20.45% for women. The chi-square test revealed high significant differences between the sexes (x^2 = 10.520; P = 0.001) for the frequencies of arches for the little left (the fifth) finger. The percentage of loops varied from 51.3% to 79.8% for men and from 49.05% to 79.55% for women. The chi-square test revealed significant differences between the sexes for the frequencies of loops for the fourth left fingers (x^2 = 3.908; P = 0.048) and for the first left finger (x^2 = 4.395; P = 0.036). The percentage of whorls varied from 17.2% to 44.45% for men and from 15.45% to 45.9% for women. The difference of the distribution of whorl type between the sexes was statiscally significant (x^2 = 4.221; P = 0.04) for the fourth left finger. Results of descriptive statistics comparing quantitative digito-palmar dermatoglyphic traits for men and women are presented. The highest number of ridges in both sexes is always on the first finger. The total finger ridge count in men on the left hand (TFRCL) is 69.897 (SD = 23.105) and is 71.931) (SD = 22.859) on the right hand. In women, this ridge count is 67.364 (SD = 25.717) on the left hand and is 68.436 (SD = 22.329) on the right hand. The results of the t-test have not shown significant differences between sexes in finger ridge counts.

Udoaka (2009) studied the digital prints of 450 samples of Ijaw ethnic group in Nigerian, 250 males and 200 females , their result showed highest frequency of ulnar loop (45.2%) on all the fingers in both sexes, closely followed by the whorl patterns (32.6%) then the Arch pattern (14.28%) the least was the radial loop which was 7.4%. There was

no significant difference between the sexes (P>0.05), the ijaw males also showed greater difference in print pattern between the two(2) hands than in the females.

Jaja ., (2008) worked on the digital patterns of the Ijaws of south-south Nigerian observed increased frequency of Ulnar loop >Whorls>Arches>radial loops. They also observed that the females had a greater ATD angles than males (P<0.05) while the males had a greater pattern intensity index (PII) than females. They did not observe any significant gender disparity in the patterns.

CHAPTER THREE

3.0 MATERIALS AND METHOD

3.1 Introduction

This present study is to establish the true dermatoglyphic pattern of the Ubang clan which has not been studied before, and relate language and gender to digito-palmar dermatoglyphics in Ubang Clan of Obudu LGA of Cross River State.

3.2. Materials

3.2.1. Study Location and Population

The study was conducted among the Ubang clan and the Ntamante (control). The Ubang clan is in Obudu LGA, of Cross River State Nigeria. The Ubang people have traditionally three hamlets or villages which are Okweriseng, Ofambe and Okiron. A new community had emerged called the New Jerusalem based on religious reasons. It has the highest concentration of churches i.e. Assemblies of God and Catholicism and a few pentecostal churches. New Jerusalem was created as a result of a revolution against paganism and traditional religion which had been practiced for years as seen in other African communities, this was the main religion of the clan. The Ubang clan is Agrarian especially food crops like yam, Cassava etc. They also grow economic crops like Cocoa, Ogbono etc. The community is surrounded by the popular Obudu hills. Most of the farmers are peasants(Verbal Communication with Chief Friday Adie).

The Ubang clan is in Obudu LGA of Cross State on Latitude 9 degrees East, and longitude 6 .3 degree North. (Cross River State Geographical Information Agency (CRIGA) 2014). The Ubang people are a gender sensitive linguistic clan. The community is about 18 kilometers off Bekwarra- Obudu road in northern Cross-Rivers and is bounded o in the

North by the BETE speaking people of Obudu LGA, in the South by the Irruan speaking community of Boki LGA of Cross River State, in the East by Obanliku LGA of Cross River State, and in the West by Ogoja and Bekwarra LGAs.

The Ubang community has a total population of about four thousand, six hundred (4600) people. They are four autonomous communities viz Okweriseng, New Jerusalem, Ofambe and Okiron. Their dominant religion is traditional religion and Christianity. They are mostly peasant farmers, located at the foot of the Obudu hills in Obudu LGA of Cross River State, Nigeria.

The Ntamante people of Boki LGA of Cross River state are about 50 kilometres radius in the South of Ubang clan.

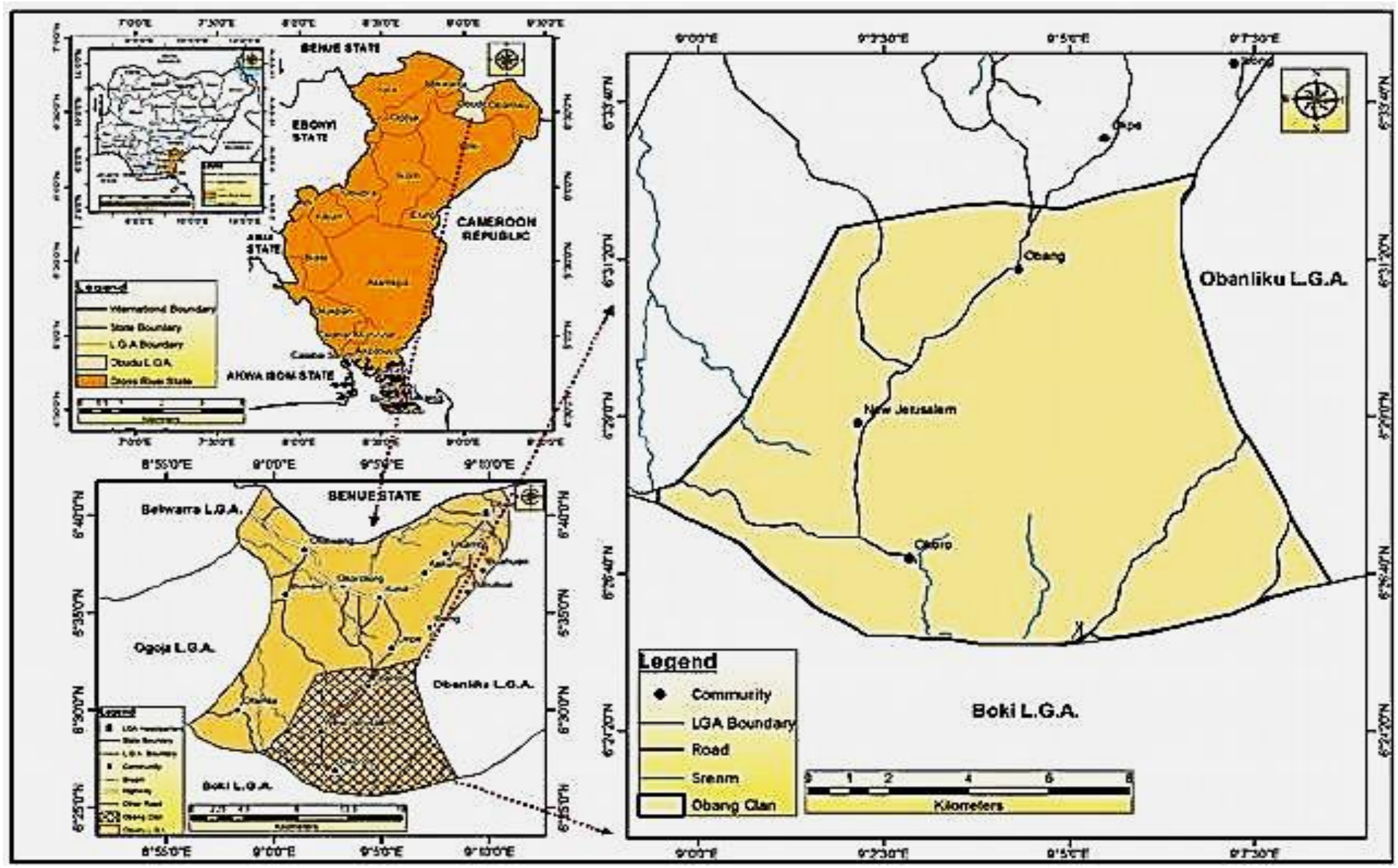


Figure 3.1: Map of Ubang clan in Obudu LGA of Cross River State (from Cross River State Geographic Information Agency CRIGA, Calabar. 2014)

3.2.2. Sample Size

The aim of this study is to determine the dermatoglyphics patterns in men and women of Ubang clan. The three clusters were chosen using the lottery method. In each cluster 300 samples were collected. The four autonomous communities are governed by a clan Head (Chief Friday Adie) who controls the four communities via their respective village heads who are traditional chiefs.

Cross sectional simple random sampling method was adopted in selecting the clusters.

The Three clusters chosen include;

i. Okweriseng-300,
ii. Ofambe-300 and
iii. Okiron-200.

A total of eight hundred samples were collected from the three clusters. While 200 persons were collected in Ntamante.(control).

The sample size for this study was obtained using the formula;

$[n=z^2pq/d^2]$ (Naing , 2006)

Where:

n = the desired sample size

z= the standard normal deviation, usually set at 1.96 (=2.0)

p=the proportion in the target population having the particular trait (when no estimate 50% is used ; i.e. 0.05)

q= 1.0-p

d=degree of accuracy desired, usually set at 0.04

Therefore, n= $(1.96)^2(0.5)/(0.04)^2$=800. For the purpose of this study a total of 800 subjects were used for the Ubangs and 200 for the Ntamantes because of the size of the population in the clusters chosen.

3.2.3 Materials

i. Questionnaires and oral interviews used to establish the Language status of the Ubangs (Table 3)

ii. Carmel quick drying duplicating ink to collect the prints

iii. Inking slab

iv. Stamp pads for absorbing the ink

v. Cotton wool for easy spread of the endorsing ink

vi. Duplicating papers (A4) for collection of the prints

vii. Water and soap for washing of hands

viii. Hand lens for magnifying and reading the ridges and patterns

ix. Protractor for measuring the ATD angles

x. Pencil for recording and drawing

xi. Pen for recording and drawing

xii. Ruler for marking the outlines

xiii. Calculator

xiv. Needle with a sharp point for counting the ridges.

xv. Camera and voice recorder

xvi. Research Assistants

3.2.4 Procedure for Analysis of Finger Prints

The interpretation of prints was done according to Cummins et al., (1961) and by Penrose (1963) and includes identification of patterns, ridge counts , measurement of distances and angles on the palm.

Finger prints identification have the following basic principles which are biological viz;

i. The configurations and details of individual ridges are permanent and unchanging
ii. The configuration type are individually variable, but they are within limits which make systemic classification possible.
iii. Individual epidermal ridges are so highly variable that their characteristics even in a small area of a finger, palm or sole, are not duplicated either in another region or in a different individual.

The prints obtained were studied qualitatively and quantitatively. Qualitative study applies descriptive method without the use of numerical data. Qualitative studies were carried out by studying the pattern-configuration on finger tips and inter digital areas.

Quantitative study consist of the study which data concerned can be analyzed in terms of numbers.

Quantitative analysis was done by counting ridge angle measurement etc. a different analysis for the right and left hands and for males and females respectively. The following parameters were analyzed for the present study.

Qualitative Features

Finger patterns

Inter digital patterns

Axial tri radius

Finger patterns

a. Whorls

b. Radial loop

c. Whorl loop

d. Arch

ii. Inter digital patterns

a. Large loop

b. Small loop

c. Whorl

iii. Axial tri radius and types;

a. Position at t

b. . Position at t’

c. Position at t”

3.3 Interdigital Patterns

The palm is divided into several anatomically defined areas. The area approximate the sites of embryonic volar pads and include the thenar area, four inter digital areas and the hypothenar area.

The thenar and first inter digital area are closely related anatomically. They are often considered as one area labelled thenar/first inter digital (th/I)

The second third and fourth interdigital area I_2, I_3, and I_4 are found in the distal palm in the region of the heads of the metacarpals bones. Each interdigital area is bordered laterally by digital tri – radii. The digital tri – radii are usually located proximal to the base of digital II to V. digital tri – radii are labelled a, b, c and d, starting from the tri – radii located at the base of digit II and moving towards the tri – radius associated with digit V. The 2^{nd} inter digital area (I_2) lies between tri radii a and b, the third inter digital area (I_3) between tri radii b and c and 4th inter digital area (L_4) between tri radii c and d configurations encountered in the inter digital areas are loops, whorls . Loops are the most common pattern found on the distal palm.

3.4 Axial Tri-Radius (ATD Angle)

It is widely used in dermatoglyphics studies. The axial tri radius is mostly present in the proximal part of the palm in alignment to the 4^{th} metacarpal bone, the 'ATD' angle is formed by lines drawn from the digital tri radius 'a' to the axial tri radius t and from the tri radius to the digital tri radius 'd'. The more distal the position of t, the larger the 'ATD' angle. Some palms, especially those with a pattern on the hypothenar area, may have more than one axial tri radius. They are depicted as t', t'', t''', etc. the axial tri radius separate the hypothenar area from the thenar area. The 'ATD' angle is even more sensitive to environmental effects than the a-b ridge count.

3.5 C- Line Termination

This is of great value in ethnology because of their polymorphic features. Study of C – line terminations reveal the preponderance of ulnar type over the other types in many communities.

C – line termination is classified into Ulnar, radial, proximal and absent is done according to plato (197).

3.6 Quantitative Features

These include

i. Total finger ridge count (TFRC)
   a. Left count
   b. Right count
   c. Total count

ii. AFRC
   a. Left count
   b. Right count
   c. Total count

iii. P II
   a. Left count
   b. Right count
   c. Total count

iv. Atd
   a. Left count
   b. Right count
   c. Total count

v. a – b ridge count
   a. Left count

b. Right count

c. Total count

Quantitative Analysis

Finger ridge – Ridge count is done by counting ridges along a straight line connecting the tri radial point and the point of the core. Ridges on the point are excluded during counting. The largest count is used in whorls and double loops. The a-b ridge count of arch and tented arch is zero. Total finger ridge count (TFRC) is the sum of ridge count in 10 fingers, here also, in pattern with two tri- radii, the larger count is taken.

Absolute finger ridge count (AFRC) is the sum of ridge counts of all fingers from all the separate tri – radii on the finger. Both counts are taken if pattern with two tri – radii is having all loops than the TFRC and AFRC will be the same.

TFRC expressed the size of pattern. AFRC represents pattern size and pattern intensity

Pattern intensity –This is expressed by counting the number of tri-radii present. The pattern intensity will be zero if the pattern is an arch, because arch lack a tri-radius. The loops have a pattern intensity of one. Pattern intensity index is the total number of tri radii in all 10 fingers

a – b ridge count

The ridge count most frequently obtained between tri – radii ‘a’ and ‘b’ and is referred to as a-b ridge count counting is carried out along a straight line connecting both tri-radial points.

3.7 The Ink Procedure

`The digital and palmar prints of the subjects were taken using the duplicating paper through the ink procedure of Cummins et al., (1961) this method was selected because of the following advantages.

i. Simple technique

ii. Low cost

iii. Clarity of prints

iv. Less time consume

Steps in Obtaining the Prints

The subjects were asked to clean their hands with soap and water. There were also asked to dry their hands but to leave some moisture.

i. Requisite amount of ink was rubbed on the stamp pad and was uniformly spread.

ii. The left hand of the subject was placed on the stamp pad which is placed on a hard surface.

iii. The left palm was examine for uniformity of the ink on the palmer surface of the hand.

iv. The right hand of the subjects were placed on the sheet of paper kept over the firm board from proximal to distal end. The palm is gently pressed between inter-metacarpal grooves at the root of the fingers and on the dorsal side corresponding to the thenar and hypothenar eminence. The palm was then lifted from the paper in the reverse order from the distal to the proximal end. The fingers printed below the palmar print. The tip of the fingers were rolled from the radial to ulnar side to include all the patterns.

v. The same procedure were repeated for the left hand on a separate paper.

vi. The print sheet were coded with research ID, age, sex and for group compared (Ntamante).

vii. The prints were then subjected to detail dermatoglyphics analysis with the help of magnifying hand lens and the ridge counting were done with help of a sharp needle. The detail were noted on the same paper with pencil and pen.

viii. The ink removed from the subject hands with the aid of about 1% HCL which will neutralize the ink.

ix. Hand lens were used to magnify the ridges. A protractor, ruler, pen and pencil to measure the ATD angles.

3.8 INCLUSION AND EXCLUSION CRITERIA

INCLUSION CRITERIA

i. This research work include persons whose grandparents and parents are of the Ubang clan paternally.
ii. Age range is 18-68years.
iii. Clear prints.

EXCLUSION CRITERIA

i. This includes persons whose grandparents and parents are not from Ubang clan paternally.
ii. Age range below 18years and above 68years.
iii. Blurred prints.

3.9 STATISTICAL ANALYSES

Data was analyzed using SPSS for windows version 21 (IBM Corporation WY, USA) and Statistical Analysis System, SAS JMP10, user guide statistics, version 10 edition, SAS Institute Inc. Cary, North Carolina, USA.

Descriptive statistics was generated for continuous and categorical variables, comparative analysis was done using analysis of variance, correlation analysis was done to measure the degree of association in the AB ridge count and ATD angles in Ubang between the left hand and right hand and for both males and females. T-test was done to compare the means of two variables. Analysis of variance was done to compare the means of more than two variables.

3.10 Ethical Approval

Ethical approval was obtained from the Faculty of Medicine's Committee on Ethics at the ABU Teaching Hospital Shika, Zaria, and Kaduna State ABUTH/HREC/K69/2014. (see Appendix vi). Permission to conduct the study was obtained from the community and the subjects involved in the research via verbal consultations and Approval.

CHAPTER FOUR

4.0 RESULTS

4.1 Introduction

The chapter contains results obtained where research instruments of Questionnaires and print patterns obtained from subjects using the ink procedure were analyzed from members of Ubang Clan who were of the selected clusters (villages), and those of Ntamante in Boki LGA.

The fingers were numbered from left thumb through all the digits to the right thumb in the anatomical position. The thumb and the little fingers are usually designated five and one respectively.

The Sample size is 800 for males and females in Ubang Clan and 200 for the control (Ntamante).20 prints were discarded because of poor visibility for Analyses.

The Sample size for the males was 400 while that of females is 380. The sample size from Ntamante for comparison was 200 (81 males, 119 females).

4.2 Normal Distribution and Percentage Frequencies of the Male Dermatoglyphics Qualitative Features in Ubang Clan and Ntamante (Control)

Table 4.1 shows the true dermatoglyphics pattern of the males in Ubang clan of Cross River State, a linguistic gender sensitive community. The Ulnar loop were most prominent (51.1). The concentration was most on the left little fingers(109). The mean frequency was highest on the Ulnar Loop (51.1), followed by the Arch (16.9), Whorl (13.3), and radial loop (0.7).

Table 4.2 Shows the true patterns of the control which is Ntamante Community in Boki LGA of Cross River State. The Ulnar loop were most prominent (23). The concentration was most on the left little fingers (19). The mean frequency was highest on the Ulnar Loop (10.2), followed by the Arch (3.8) ,Whorl (3.8), and radial loop (0.1).

Table 4.3 Shows percentage frequency of male patterns in Ubang clan. The Ulnar loop were most prominent (14.3%). The least mean frequency was the radial loop (0.28).

Table 4.4 Shows the percentage frequencies of male patterns in Ntamante of Boki LGA in Cross River State. The highest distribution of ulnar loop was on the right little finger (28.4). The least was on the left index finger and thumb (1.2) respectively.

Table 4.1 Normal male distribution in Ubang clan (n=400)

	Left					Right					
	I	II	III	IV	V	I	II	II	IV	V	Mean±SD
ULNAR LOOP	109	73	78	11	3	97	54	67	13	12	51.7±39.2
RADIAL LOOP	0	0	1	2	0	0	0	1	2	1	0.7±0.8
WHORL	0	13	11	17	20	4	14	10	13	31	13.3±8.5
ARCH	5	4	5	6	6.8	2.5	7	1.2	4	3.3	4.5±1.9

$P < 0.05$

Table 4.2: Normal males distribution in Ntamante (Control) Males(n = 81)

	Left					Right					
	I	**II**	**III**	**IV**	**V**	**I**	**II**	**III**	**IV**	**V**	Mean±SD
Ulnar Loop	13	19	8	1	1	23	11	15	7	4	10.2±7.4
Radial Loop	0	0	0	0	1	0	0	0	0	0	0.1±0.3
Whorls	1	2	1	8	4	3	5	2	0	1	2.7±2.4
Arch	2	5	3	3	9	6	3	3	3	1	3.8±2.3

$P < 0.05$

Table 4.3: Percentage frequency of male patterns in Ubang clan (n=400)

	Left					Right					
	I	**II**	**III**	**IV**	**V**	**I**	**II**	**III**	**IV**	**V**	Mean±SD
Ulnar Loop	27.3	18.3	19.5	2.75	0.75	24.3	13.5	16.8	3.3	3	13±9.8
Radial Loop	0	0	0.5	0.5	0	0	0.5	0.5	0.5	0.3	0.3±0.2
Whorls	0	3.3	2.8	4.3	5	1	3.5	2.5	2.5	3.3	2.8±1.5
Arch	1.3	1	1.3	1.5	17	6.3	1.8	3	1	8.3	4.3±5.1

$P < 0.05$

Table 4.4: Percentage frequencies of male patterns in Ntamante (Control) Males (n = 81)

	Left					Right					
	I	**II**	**III**	**IV**	**V**	**I**	**II**	**III**	**IV**	**V**	Mean±SD
Ulnar Loop	16.0	23.5	9.9	1.2	1.2	28.4	13.6	18.5	8.6	4.9	12.6±9.2
Radial Loop	0	0	0	0	1.2	0	0	0	0	0	0.1±0.4
Whorl	1.2	2.5	1.2	9.9	4.9	3.7	6.2	2.5	0	1.2	3.3±3
Arch	2.5	6.2	3.7	3.7	11.1	7.4	3.7	3.7	3.7	1.2	4.7±2.8

$P < 0.05$

4.3 Normal Distribution of and Percentage Frequencies of the Male Dermatoglyphics Qualitative Features in Ubang Clan and Ntamante (Control)

Table 4.5 shows the normal female dermatoglyphic patterns in Ubang Clan. The Ulnar loop had the highest mean frequency(58.2), followed by the whorls patterns (16.6), Arch (16.4) and radial loop (0.6). There were significant ($p = 0.04$) in the frequency of female patterns in Ubang clan with a X^2 value of 16.78

Table 4.6 shows normal females distribution in Ntamante (control). The mean frequency was least in the radial loop (1.3) and highest on the Ulnar loop (10.8). highly significant ($p = 0.001$) differences were observed with a X^2 value of 23.41 within the variables.

Table 4.7 shows normal females frequency of female patterns in Ubang clan. The mean frequency was highest on the Ulnar loop (15.3) followed by the whorls (4.78), the Arch (4.3) and the radial loop (0.16). significant differences ($p = 0.04$) was observed among the variables with a X^2 value of 20.61.

Table 4.8 shows percentage frequency distribution of females in Ntamante (control). The mean frequency was least in the radial loop (1) followed by the Arch (4.9), the Whorl (6.4) and highest on the Ulnar loop (9.1). Variables measured differed significantly ($p = 0.05$) with a Chi-square (X^2) value of 17.41.

Table 4.5: Normal distribution of female dermatoglyphics patterns in Ubang clan.

	Left					Right					
	I	**II**	**III**	**IV**	**V**	**I**	**II**	**III**	**IV**	**V**	Mean±SD
Ulnar Loop	113	98	42	8	24	117	92	39	22	27	58.2±41.9
Radial Loop	0	0	0	6	0	0	0	0	0	0	0.6±1.9
Whorls	16	16	14	14	13	15	24	25	19	10	16.6±4.8
Arch	13	10	16	16	26	10	12	16	13	29	16.4±7.0

$P < 0.05$ $X^2 = 23.41$ Pr > Chisq = 0.04^x

Table 4.6: Normal females distribution in Ntamante (Control) Females (n=119)

	Left					Right					
	I	**II**	**III**	**IV**	**V**	**I**	**II**	**III**	**IV**	**V**	Mean±SD
Ulnar Loop	16	31	1	3	3	12	33	3	3	3	10.8±12.2
Radial Loop	3	0	0	0	1	6	0	0	0	2	1.2±2
Whorl	2	2	4	17	12	8	2	4	12	13	7.6±5.5
Arch	5	1	6	2	15	3	3	11	1	9	5.6±4.7

$P < 0.05$, $X^2 = 23.41$ Pr > chisq = 0.001^{xx}

Table 4.7: Percentage frequency of female patterns in Ubang clan (n=380)

	Left					Right							
	I	**II**	**III**	**IV**	**V**	**I**	**II**	**III**	**IV**	**V**	Mean±SD	Median	T-Test
Ulnar Loop	29.7	25.8	11.1	2.1	6.3	30.8	24.2	10.3	5.8	7.1	15.3±10.5	11.1	0.0007
Radial Loop	0	0	0	10.0	0	0	0	0	0	0	0.9±3.0	0	0.3329
Whorls	4.2	4.2	3.7	3.7	3.4	3.9	6.3	6.6	5	2.6	4.4±1.2	4.2	0.0001
Arch	3.4	2.6	4.2	4.2	7.6	2.6	3.1	4.2	3.4	7.6	4.3±1.8	4.2	0.0001

$P < 0.05$, $X^2 = 20.61$, Pr > Chisq = 0.04^x

Table 4.8: Percentage Frequency in Ntamante (Control) Females = (n=119)

	Left					Right					
	I	**II**	**III**	**IV**	**V**	**I**	**II**	**III**	**IV**	**V**	Mean±SD
Ulnar Loop	13.4	26.0	0.8	2.5	2.5	10.1	27.7	2.5	2.5	2.5	9.1±9.7
Radial Loop	2.5	0	0	0	0.8	5	0	0	0	1.7	1±1.6
Whorl	1.7	14.3	3.4	1.7	10.1	6.7	1.7	3.4	10.1	10.9	6.4±4.4
Arch	4.2	0.8	6.7	1.7	12.6	2.5	2.5	9.2	0.8	7.6	4.9±3.8

$P > 0.05$, $X^2 = 17.41$, $Pr > Chisq = 0.053$

4.4 AB Ridge Count Distribution and Percentage Frequencies for Males and Females in Ubang Clan

Table 4.9 shows the AB Ridge Count Distribution For Males and Females in Ubang Clan, the values were homogeneous and varied in both sexes and hands.

Table 4.11 shows AB Ridge Count Percentage Distribution which were homogeneous and varied in distribution in both sexes and hands. Female had higher values (7.05) compared to the male (5.44). highly significant ($p = 0.01$) differences was observed between the sex. It was observed that sexual dimorphism was observed in AB ridge count.

Table 4.9: AB ridge count distribution for males and females in Ubang clan

	MALES			FEMALES		
Ridge count	**L**	**R**	**Mean**±SD	**L**	**R**	**Mean**±SD
22	10	0	5±7.07	0	0	0±0
25	20	30	25±7.07	0	10	5±7.07
27	0	0	0	0	20	10±14.14
28	0	10	5±7.07	0	10	5±7.07
29	0	0	0	10	0	5±7.07
30	110	90	100±14.14	130	60	95±49.50
31	0	0	0	0	10	5±7.07
32	0	10	5±7.07	40	40	40±0
33	20	20	20±0	0	10	5±7.07
34	10	0	5±7.07	0	0	0±0
35	100	80	90±14.14	70	120	95±35.36
37	0	10	5±7.07	10	10	10±0
38	20	20	20±0	20	0	10±14.14
39	10	0	5±7.07	0	0	0±0
40	70	30	50±28.28	60	20	40±28.28
Average $\overline{X}$ =			22.33±32.39			21.67±32.33

$X^2 = 12.04, Pr > chisq = 0.0005^{xx}$; R=0.7

Table 4.10: Percentage frequency of AB ridge count for males and females In Ubang clan

	DISTRIBUTION					
	MALES			FEMALES		
RIDGE COUNT	L	R	Mean±SD	L	R	Mean±SD
22	2.44	0	1.22±1.73	0	0	0±0
25	4.88	7.31	6.1±1.72	0	2.7	1.35±1.91
27	0	0	0±0	0	5.41	2.71±1.91
28	0	2.44	1.22±1.73	0	2.7	1.35±0.95
29	0	0	0	2.7	0	1.35±1.91
30	26.85	21.95	24.39±3.46	35.14	16.21	25.68±13.39
31	0	0	0	0	2.7	1.35±1.91
32	0	2.44	1.22±1.73	10.81	10.81	10.81±0
33	4.88	4.88	4.88±0	0	2.7	1.35±1.91
34	2.44	0	1.22±1.73	0	0	0±0
35	24.39	19.51	21.95±3.45	18.92	32.43	25.68±9.55
37	0	2.44	1.22±1.73	2.7	2.7	2.7±0
38	4.88	4.88	4.88±0	5.41	0	2.71±3.83
39	2.44	0	1.22±1.73	0	0	0±0
40	17.07	7.31	12.19±6.90	16.21	5.41	10.81±7.64
$\overline{X}$ =			5.44±7.90			7.05±9.70

Chisquare P value =16.30, Prob>chisq = 0.0122^{x}, R = 0.57

4.5 The Normal ATD Angles Distribution and Percentage Frequencies for both Males and Females in Ubang Clan and in Both Hands

Table 4.11 shows the normal ATD Angles Distribution for both males and females in Ubang Clan and in both hands. The values were homogenous. The ATD angle for males was highest (130) angles 41-45 and least at angles 56 – 60. Sexual dimorphism (p=0.0007) existed for atd angles with chisquare value of 21.50 and correlation matrix of 0.78. female had higher value (62.50) compared to the male (61.67) ounterparts.

Table 4.12 shows percentage distribution of ATD angles of Males and Females in Ubang clan. The mean distribution is more in the females at angle 41 – 45.

Table 4.11: Normal distributions of ATD angles in Ubang clan for both males and females.

	MALES			FEMALES		
ATD ANGLE	**L**	**R**	**Mean**±SD	**L**	**R**	**Mean**±SD
30 – 35	10	0	5±7.07	10	40	25±21.21
36 – 40	20	40	30±14.14	90	120	105±21.21
41 – 45	150	110	130±28.28	120	130	125±7.07
46 – 50	150	120	125±21.21	130	70	100±42.43
51 – 55	50	80	65±21.21	10	30	20±14.14
56 – 60	20	10	15±7.07	0	0	0±0
$\overline{X}$ =			61.67±54.92			62.50±53.36

Chisquare value (21.50). Prob>chisq=0.0007[x,] R=0.78

Table 4.12: Percentage distribution of ATD angles in Ubang clan

	MALE			FEMALE		
ATD ANGLE	L	R	Mean±SD	L	R	Mean±SD
30 – 35	2.44	0	1.22±1.73	2.7	10.81	6.76±5.73
36 – 40	4.88	9.76	7.32±3.45	24.32	32.43	28.38±5.73
41 – 45	36.59	26.88	31.71±6.87	32.43	35.14	33.79±1.92
46 – 50	36.59	29.27	32.93±5.18	35.14	18.92	27.03±11.47
51 – 55	12.2	19.51	15.86±5.17	2.7	8.11	5.41±3.83
56 – 60	4.88	2.44	3.66±1.73	0	0	0±0
X=			15.44±13.98			16.90±14.42

Chisquare = 21.50, Prob>chisq = 0.0007^{x}, R = 0.78,

4.6 The C-Line Termination Distribution and Percentage Frequencies for Males and Females in Ubang Clan

Table 4.13 shows C-line Termination for males and females in Ubang Clan. The Ulnar termination has the highest distribution in both males (278) and females (209). The least was the Radial Termination which was absent in the males and (17) in the females.

Table 4.14 shows C – line terminations for Males and Females of Ntamante the females have a higher distributions (63) compare to the males (41) of ulnar termination.

Table 4.15 shows the C-line termination percentage frequencies for males and females in Ubang clan. For the males, the distributions were as follows: Ulnar termination = 69.5, Proximal Termination = 16.3, Absent Termination = 14 while there was no Radial Termination. In the females: Ulnar Loop termination = 55, Radial Termination = 4, Absent Termination = 10, while Proximal termination = 30.3

Table 4.16 shows the C-line termination percentage frequencies for males and females in Ubang clan. For the males, the distributions were as follows: Ulnar termination = 50.6, Proximal Termination = 19.8, Absent Termination = 16.0 while Radial Termination = 11.1 In the females: Ulnar Loop termination = 52.9, Radial Termination = 3.4, Absent Termination = 14.3, while Proximal termination = 29.

Table 4.13: C – line termination distributions for males and female in Ubang clan

	ULNAR	Mean±SD	T-Test	RADIAL	Mean±SD	T-Test	ABSENT	Mean±SD	T-Test	PROXIMAL	Mean±SD	T-Test
Males (400)	278	277.5±0.7		-	0.0±0.0		56	55.8±0.3		65	64.7±0.4	
			0.0001			0.0083			0.0029			0.0001
Females (380)	209	208.5±0.7		17	16.8±0.3		39	38.6±0.6		115	114.8±0.3	

$P < 0.05$

Table 4.14: C – line terminations for males and females of Ntamante (Control)

	ULNAR	Mean±SD	T-Test	RADIAL	Mean±SD	T-Test	ABSENT	Mean±SD	T-Test	PROXIMAL	Mean±SD	T-Test
Males (400)		40.8±0.3			8.8±0.3			12.9±0.1			16±0.1	
			0.0009			0.0079			0.0111			0.0041
Females (380)		62.9±0.1			3.9±0.1			16.8±0.8			34.8±0.3	

$P < 0.05$

Table 4.15: C-line termination percentage frequencies for males and females in Ubang clan

	ULNAR	T-Test	RADIAL	T-Test	ABSENT	T-Test	PROXIMAL	T-Test
Males (400)	69.5±21.22		-		14		16.3	
		0.0002		0.0015		0.0028		0.0003
Females (380)	55±17.45		4		10		30.3	

P < 0.05

Table 4.16: C-line termination percentage frequencies for males and females in Ntamante (Control)

	ULNAR	Mean±SD	T-Test	RADIAL	Mean±SD	T-Test	ABSENT	Mean±SD	T-Test	PROXIMAL	Mean±SD	T-Test
Males (400)	50.6	50.5±0.14		11.1	11.1±0.1		16.0	15.9±0.1		19.8	19.8±0.1	
			0.1306			0.0001			0.0161			0.0001
Females (380)	52.9	52.5±0.6		3.4	3.4±0.1		14.3	14.1±0.2		29.4	29.4±0.1	

$P < 0.05$

4.7 Distribution of those who Speak Ubang or other Languages with Accent

Table 4.17 shows distribution of respondents that speak other languages outside Ubang, 99% speak other languages while only 1% do not speak other languages.

Table 4.18 shows distribution of discrimination against while speaking Ubang, 100% of respondents said they have never been discriminated against.

Table 4.19 shows distribution of respondents with accents, 14.2% have accent while 85.8 have no accent.

Table 4.20 shows the distribution of uncomfortable people while speaking in front of people, 84.8% are comfortable speaking in front of people.

Table 4.17: Distribution of respondents that speak other languages outside Ubang clan

Other Language	Frequency	Percent	Cumulative Percent
No	8	1.0	1.0
Yes	782	99.0	100.0
Total	**780**	**100.0**	

Table 4.18: Distribution of discrimination against while speaking Ubang

Discrimination Against	Frequency	Percent	Cumulative Percent
No	447	56.6	56.6
Yes	343	43.4	100.0
Total	**780**	**100.0**	

Table 4.19: Distribution of respondents with accent

Accent	Frequency	Percent	Cumulative Percent
No	678	85.8	85.8
Yes	112	14.2	100.0
Total	**780**	**100.0**	

Table 4.20: Distribution of uncomfortable people while speaking in front of people

Uncomfortable	Frequency	Percent	Cumulative Percent
No	670	84.8	84.8
Yes	120	15.2	100.0
Total	**780**	**100.0**	

4.8 Distribution of People Speaking the Respective Male (Ofre) and Female (Arasere) Languages because of what other Members of the Community May Say

Table 4.21 shows 100% of the respondents agreed that they speak their respective male and female languages because they don't want to be seen as abnormal persons in the community.

Table 4.21: Distribution of people speaking the respective Male (Ofre) and Female (Arasere) languages because of what other members of the community may say

Speaking because of people	Frequency	Percent	Cumulative Percent
Yes	780	100.0	100.0

4.9 Effect of Language on Dermatoglyphic Patterns

Table 4.22: shows the effect of language on dermatoglyphics a highly significant difference exist in the ATD angles, C-line termination and qualitative features in Ubang clan when analysis of variance was conducted amongst the groups. (p=0.00), this implies that the variables were heterogeneous.

Table 4.22: Anova effect of language on dermatoglyphics

Anova	Sum of Squares	df	Mean Square	F	Sig.	
Quanlifp	Between Groups	5.479	1	5.479	9.583	
	Within Groups	444.842	778	.572		.002
	Total	450.322	779			
Quantifp	Between Groups	.398	1	.398	2.692	
	Within Groups	115.113	778	.148		.101
	Total	115.512	779			
Palmarpp	Between Groups	.354	1	.354	2.507	
	Within Groups	109.967	778	.141		.114
	Total	110.322	779			
ATD	Between Groups	45.373	1	45.373	28.252	
	Within Groups	1249.499	778	1.606		.000
	Total	1294.872	779			
Cline	Between Groups	52.637	1	52.637	34.483	
	Within Groups	1187.592	778	1.526		.000
	Total	1240.229	779			

$P < 0.05$

4.10 Gender Distribution in Ubang Clan

Table 4.23 shows frequency and percentage for conversation, 54.4% of persons speak Ubang language comfortable 10.9% feel they are discriminated against. 7.3% said they are uncomfortable speaking Ubang language 7.8% speak Ubang language to satisfy people.

Table 4.23 Frequency distribution for conversation in Ubang clan

Conversation	Frequency	Percent	Valid Percent	Cumulative Percent
Comfortable	424	54.4	54.4	54.4
Discrimination	85	10.9	10.9	65.3
Uncomfortable	57	7.3	7.3	72.6
speaking to satisfy people	61	7.8	7.8	80.4
other language	137	17.6	17.6	97.9
	16	2.1	2.1	100.0
Total	780	100.0	100.0	

Table 4.24: Unique Finger Frequency Distribution Indeces in Ubang Clan And Ntamante

SUBJECT	GENDER	Dankmeijer's Index $\frac{\%\ \textbf{Arches}}{\%\ \textbf{\textit{Loops}}}$ **X 100**	Furuhata's Index $\frac{\%\ \textbf{Arches}}{\%\ \textbf{\textit{Loops}}}$ **X 100**	Pattern Intensity Index (PII) $\frac{\textbf{2 x \% whorls + \% loops}}{\textbf{10}}$
	Male	36.7	25.4	131.4
UBANG CLAN	Female	59.8	28.2	150.8
	Total	96.5	53.6	282.2
	Male	71.1	26.2	26.0
NTAMANTE	Female	73.6	63.3	39.2
	Total	144.7	89.5	65.2

$P < 0.05$

TABLE 4.25: Word differences in Ubang clan between the men and women

		OFRE		ARASERE	
S/N	**WORDS**	**SINGULAR**	**PLURAL**	**SINGULAR**	**PLURAL**
1.	Dance	Anor	Anor	Ayeh	Ayeh
2.	Sun	Ishue	-	Isueh	-
3.	Pot	Achai	Bechai	Achi	Achi
4.	Soap	Nso	Beso	Ofa	Ita
5.	Rubber	Ndam	Bendam	Oroba	Iroba
6.	Shirt	Nti	Benti	Ariga	Beriga
7.	Road	Okue	Bekwe	Obu	Bebue
8.	Chair	Ina	Ina	Kekpekpa	-
9.	Book	Oshah	Ashah	Osha	Asha
10.	Stand	Besah	Besah	Berah	Berah
11.	Come	Behi	Behi	Beh	Beh
12.	Run	Soteh	Soteh	Wase	Wase
13.	Spoon	Nton	Nton	Omun Ntie	Omun Ntie
14.	Yam	Betong	Betong	Eri	Beri
15.	Root	Odonkichi	Edonkichi	Oru	Eru
16.	Grass	Bebian	Bebian	Kodia	Abia
17.	Mushroom	Owua	Iwua	Ojua	Ejua
18.	Mud	Betitua	Betitua	Retua	Atua
19.	Sand	Osankiah	Isankiah	Konya	Konya
20.	Smoke	Arere	Arere	Arure	Arure
21.	Rain	Amuah	Bomuah	Amubanuo	Amubanuo
22.	Rainy Season	Ifung	Ifung	Nifung	Nifung
23.	Harmatan	Rikwe	Rikwe	Owube	Owube
24.	Year	Ridia	Adea	Rede	Adeh
25.	Day	Rita	Ata	Orinya ne	Orinya ne
26.	Night	Uchui	Bechui	Retu	Retu
27.	Large River	Amuebakani	Bemuebakani	Amuebazen	Amuebazen
28.	Stream	Oran	Iran	Buran	Buran
29.	Forest	Resua	Asua	Abiyanzen	Abiyanzen
30.	Cup	Nkop	Nkop	Kop	Kop
31.	Rice	Ateleza	Ateleza	Eraci	Eraci

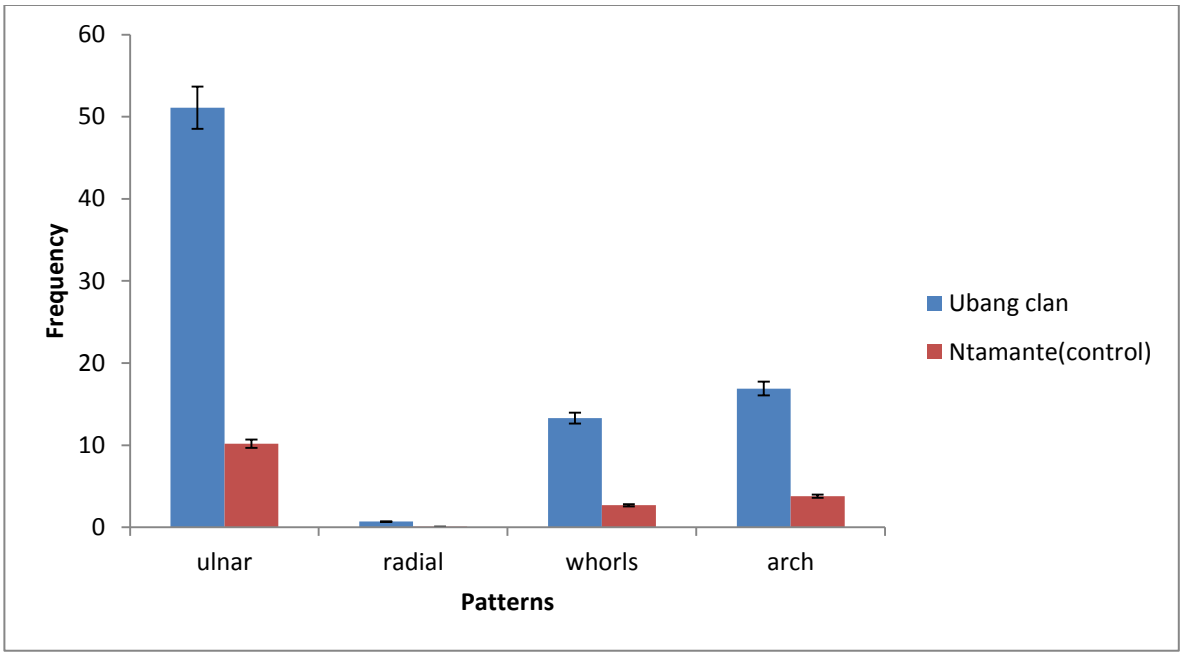


Figure 4.1 Descriptive statistics of the normal distribution frequency of Males in Ubang And Ntamante (Control) for dermatoglyphics

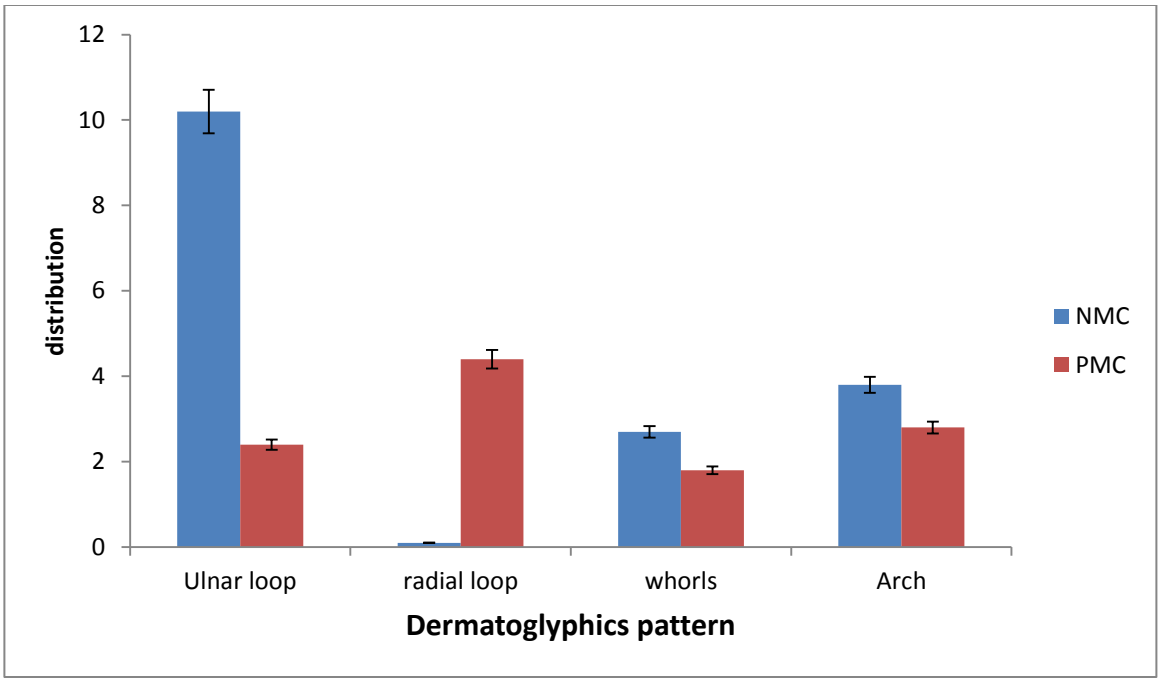


Figure 4.2: Descriptive Statistics of the Normal And Percentage Male Distribution In Ntamante(Control)

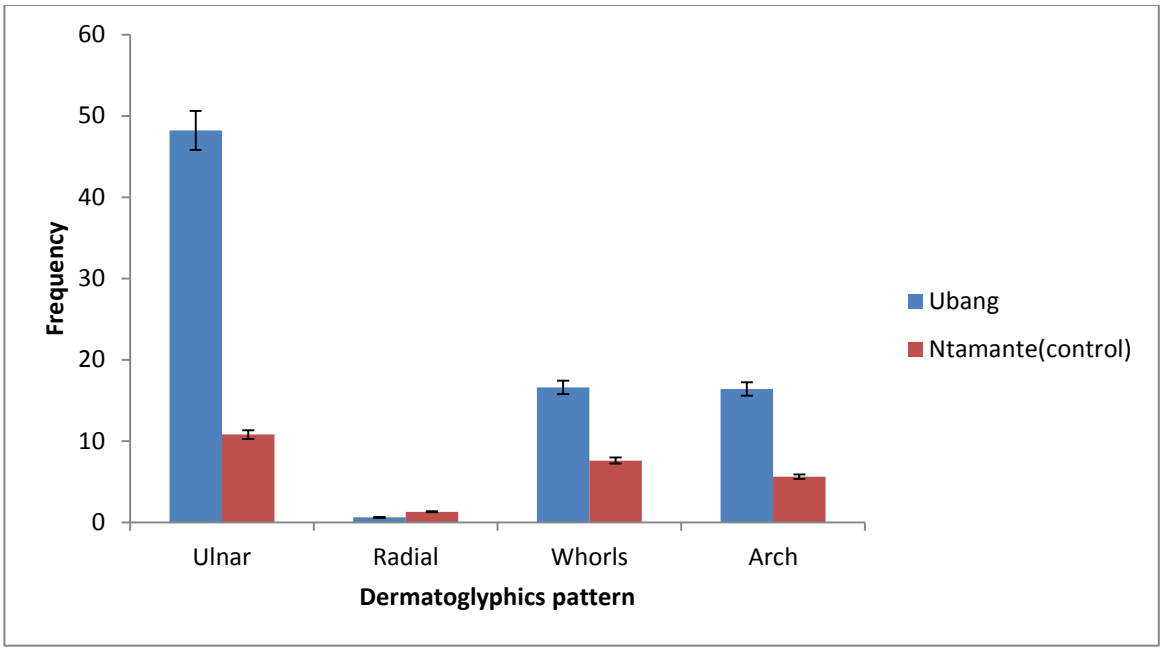


figure 4.3: Descriptive statistics of the frequency distribution of females dermatoglyphic pattern in Ubang and Ntamante (control)

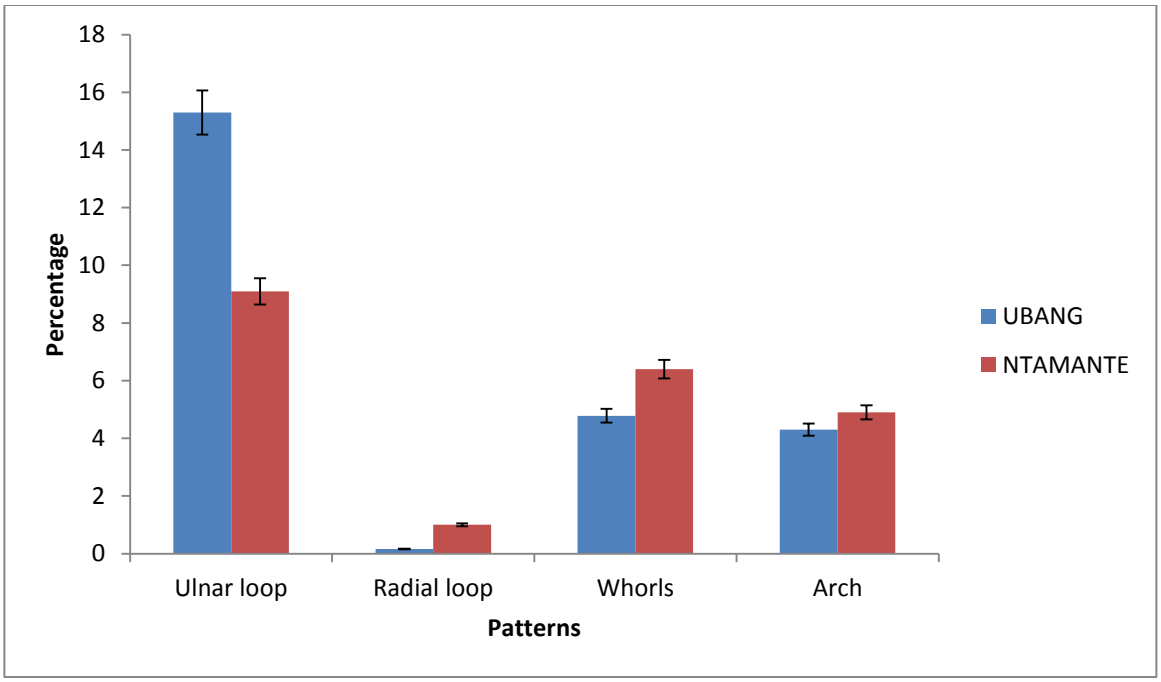


Figure 4.4: Descriptive statistics of the percentage frequency of female in Ubang and Ntamante (control) for dermatoglyphics (P = 0.2178) no significant differences in the values of dermatoglyphics patterns

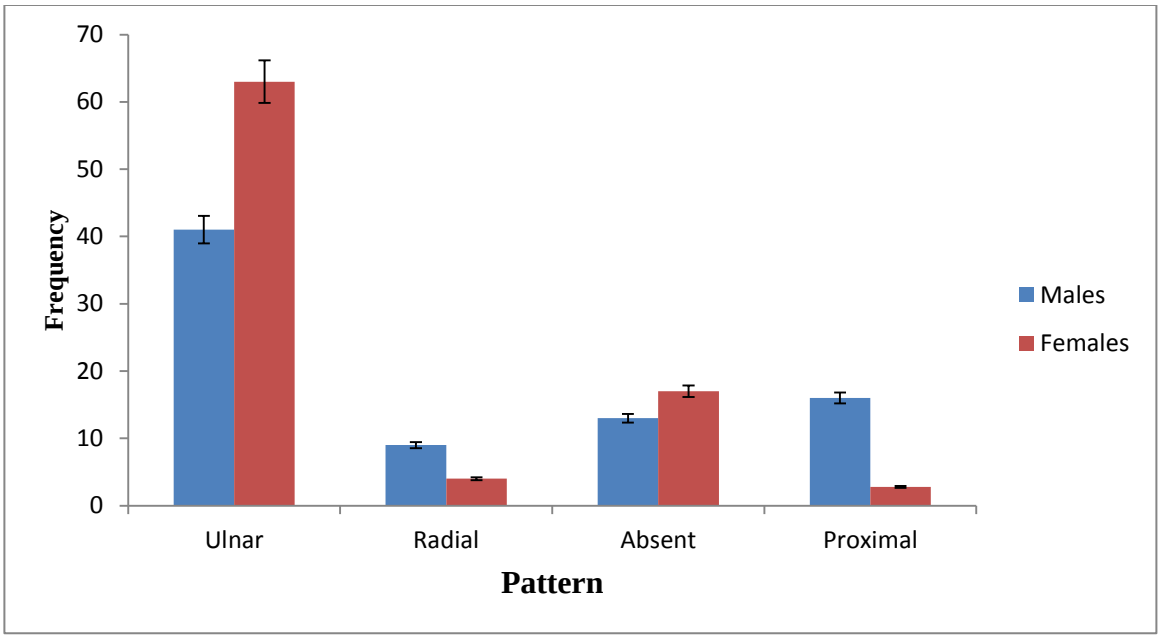


Figure 4.5: Descriptive statistics of the C-line terminations of males and females of Ntamante (Control)

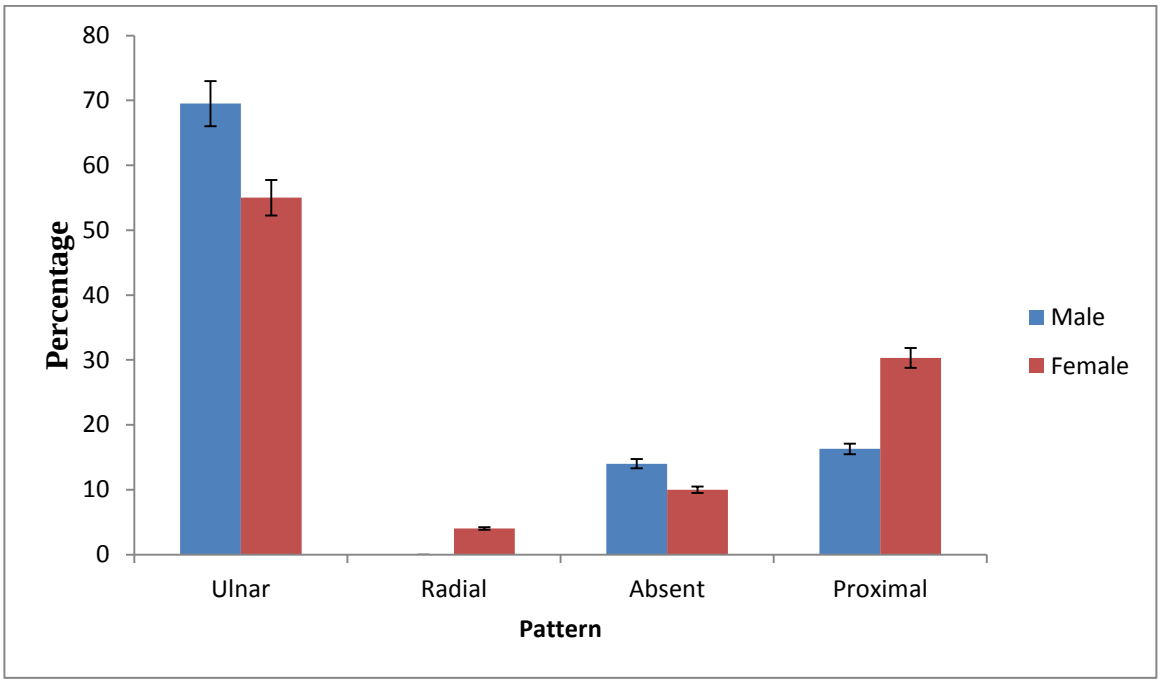


Figure 4.6: Descriptive statistics of the C-line termination percentage frequencies for males and females in Ubang clan

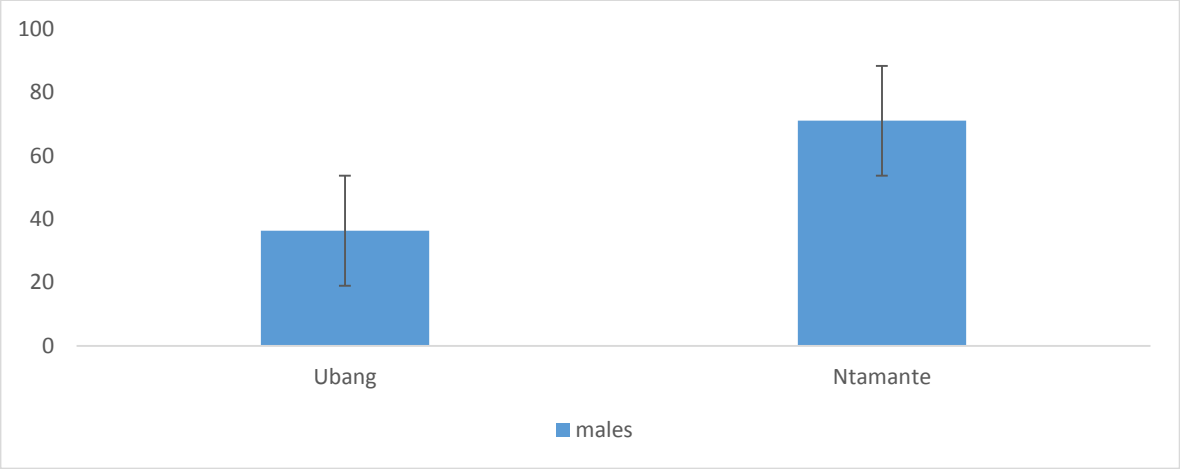


Figure 4.7: Descriptive statistics of the Dankmeijer index in Ubang clan and Ntamante

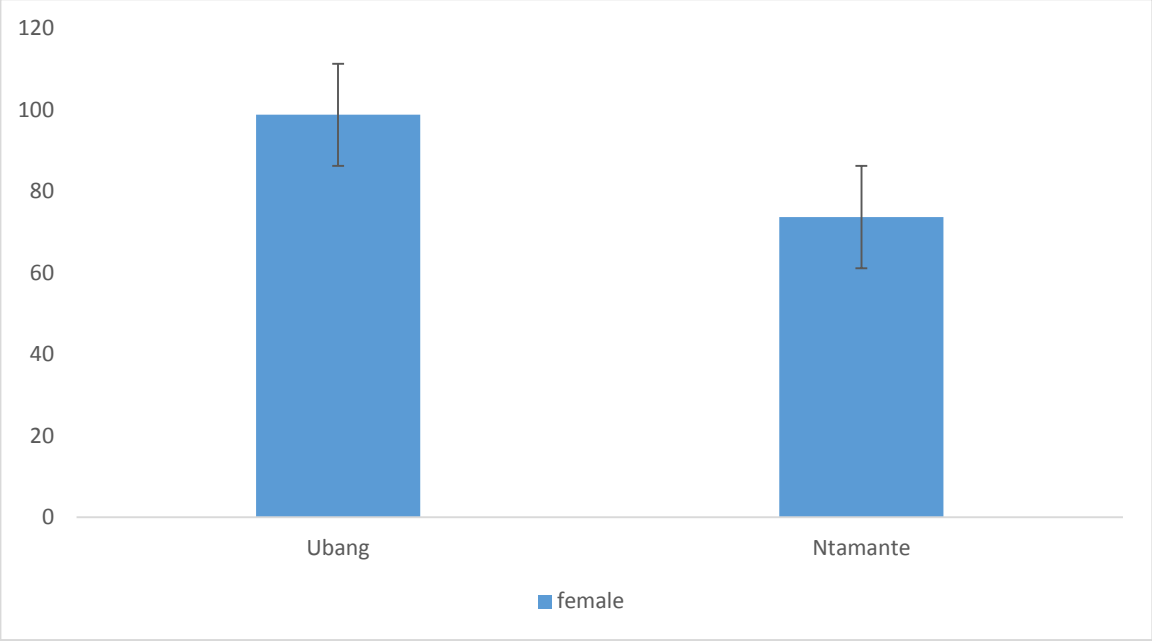


Figure 4.8: Descriptive statistics of the Dankmeijer index in Ubang clan and Ntamante

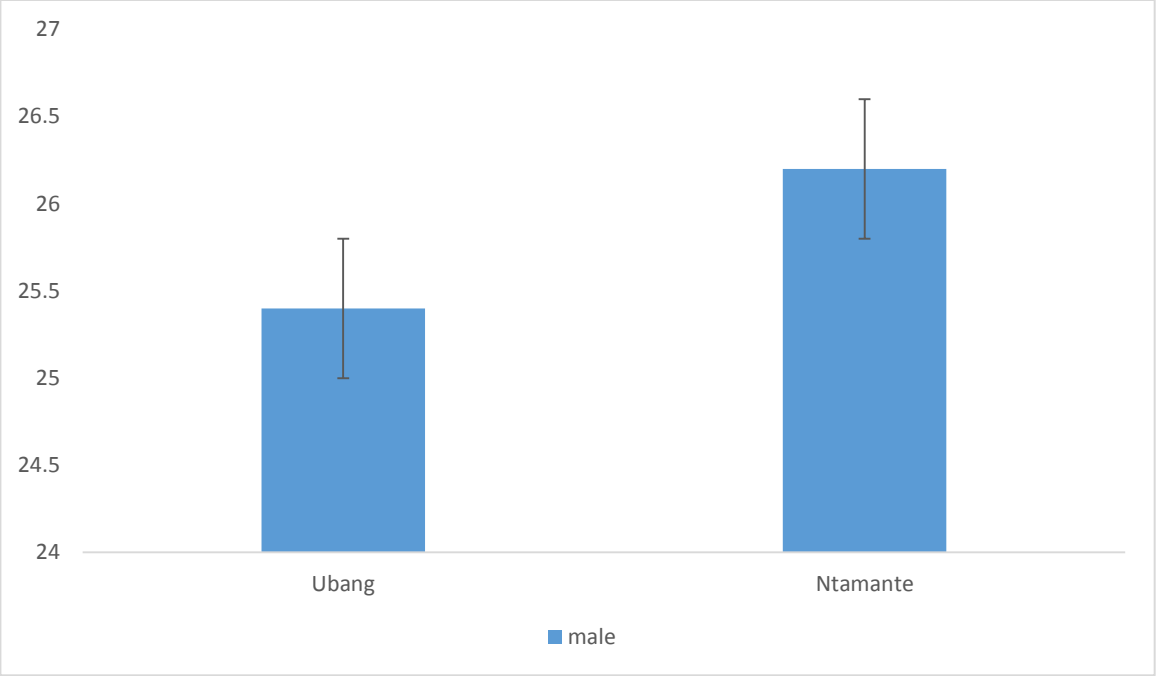


Figure 4.9: Descriptive statistics of the Furuhata's index for Ubang clan and Ntamante

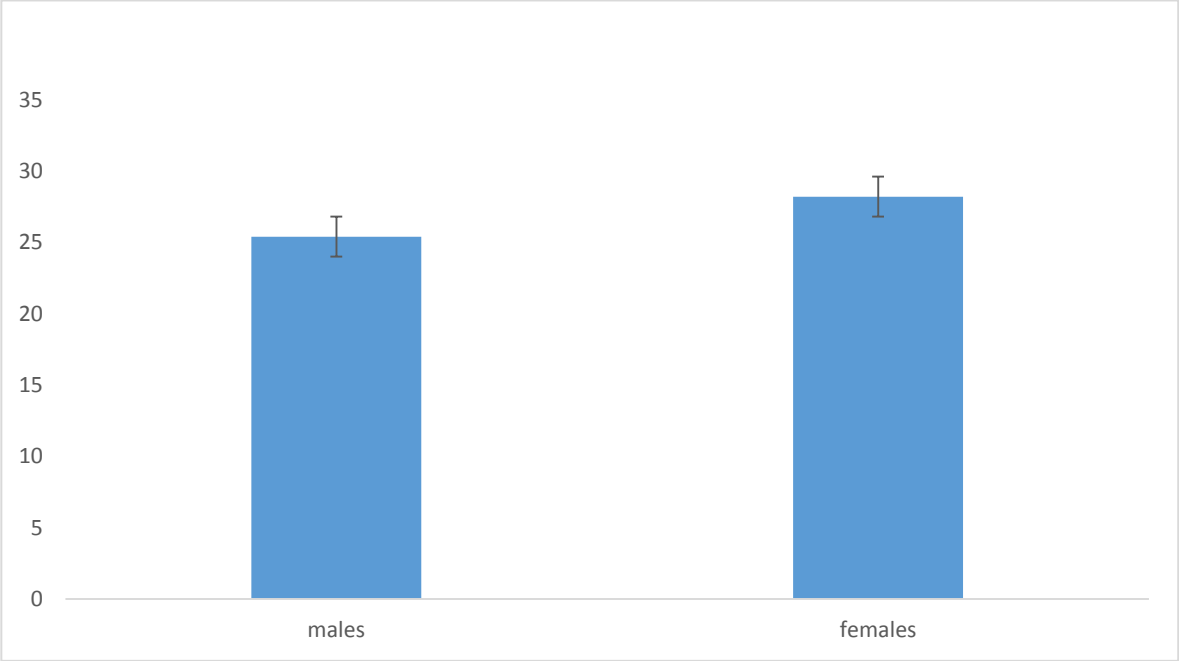


Figure 4.10: Descriptive statistics of the Furuhata's index of Ubang clan males and females

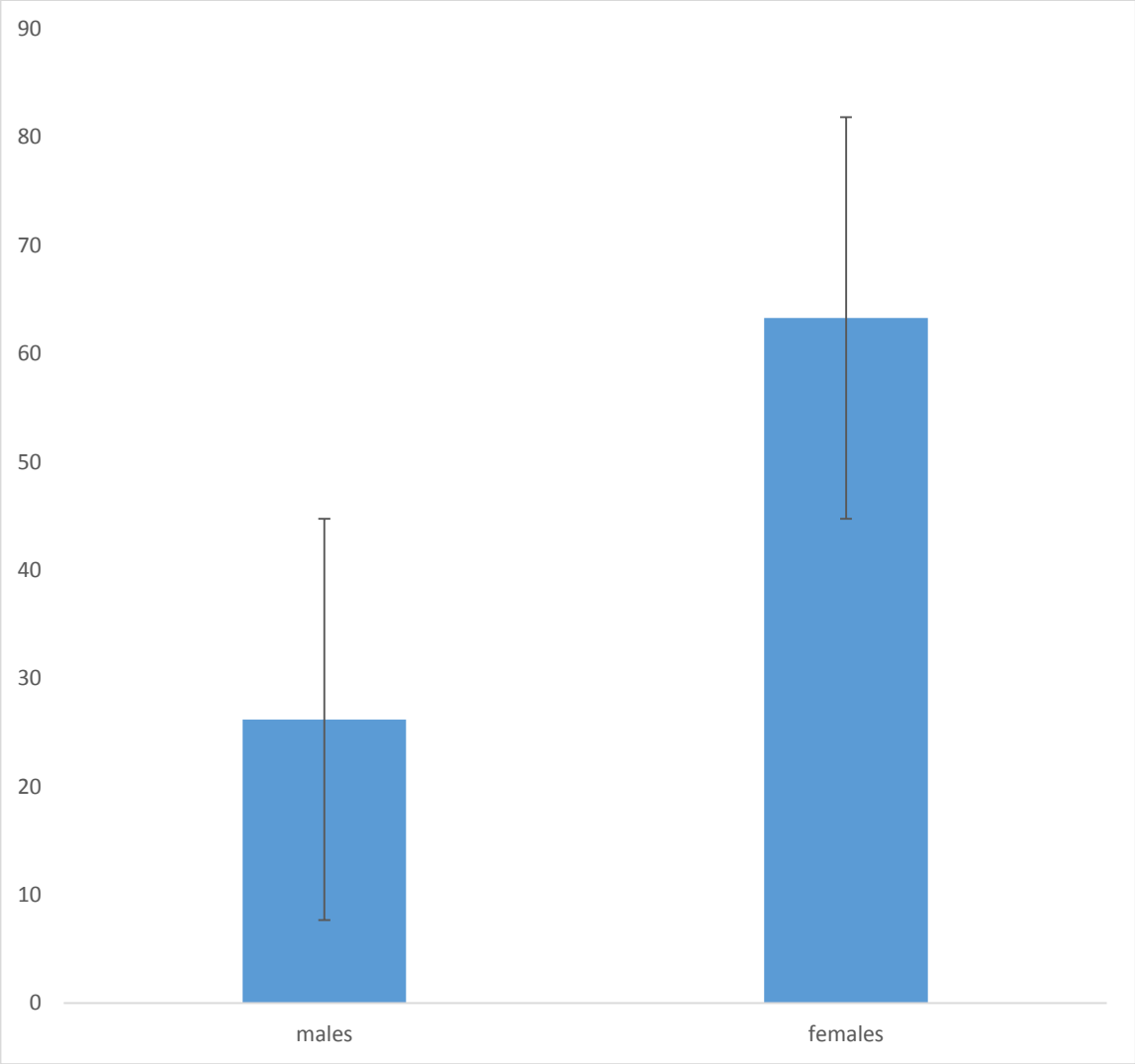


Figure 4.11: Descriptive statistics of the Furuhata's index for males and females in Ntamante

CHAPTER FIVE

5.0 DISCUSSION

5.1 Qualitative Dermatoglyphic Features (Arches, Loops and Whorl Patterns in Ubang Clan

Tables 4.1-4.8 show the dermatoglyphic features of the qualitative dermatoglyphic patterns. The results show that the ulnar loop was the highest in the mean frequencies in both males and females (14.3% and 15.3% respectively. The radial loop was the least distributed in females (0.16) and males (0.28).

5.1.1 Arches

The Arches in this study in both males and females and in both hands in Ubang clan and Ntamante showed significant differences ($P<0.05$). Table 4.1 is the male distribution table in Ubang clan. The table shows the mean standard diviation for arches in Ubang clan to be 4.5 ± 1.9 for males. The T-test was shown to be highly significant ($P<0.5$), the median in the percentile was 4.5, these values when compared with what was obtained from the Ntamante males 3.8 ± 2.3 was relatively higher. The T-test for the Ntamante males was also significant ($P<0.05$).

The mean standard deviation for female Arch pattern in Ubang clan is 16.4 ± 7.0, while that for Ntamante is 5.6 ± 4.7. The T-test was highly significant ($P<0.05$) in both Ubang clan and Ntamante.

The frequency of patterns of the Arches was next to that of the Whorls. This present study had the lowest amount of Arches. The Arch pattern in other Nigerian ethnic groups shows the following percentage distribution;

The Ibos female Arch pattern reveals that the left hand (12.9%) had the highest distribution as compared to the right hand (11.41%). The Ogonis also have a higher Arch pattern on the left (15.8%) as compared to the right (11.8%) in their females. Other ethnic groups like the Hausas [left-16.1%, right-13.7] and the Yorubas have [left-11.6, right-10.2%] have a higher Arch pattern in their females respectively (Anibor *et al.* 2011).

The Arch is the simplest pattern found in the finger tips. It is formed by a succession of more or less parallel ridge which transverse the pattern area and form a curve that is concave proximally. In the present study the arches in males left and right thumb were 17% and 8.3 respectively. The arches were most prominent in the thumb of both hands and less prominent on the ring fingers of the left hand (1%) and the index finger of the right hand. The mean percentage frequency for arches in the study was 7.6%. The arches in the males were least on the right thumb in the control (1.2%) and highest on the left thumb.

The numerical distribution of the Arches dermatoglyphics pattern in female of Ubang Clan of Cross River State were 84 on the left hand and on the right hand. The mean percentage frequency was 51.35% in both thumbs and most numerous on the thumb of both hands. It was least on the left ring finger (2.6%) and right little finger (2.6%). The mean percentage frequency was 4.32%. Their prevalence were next found on the index finger of the left hand(4.2%), Middle fingers of both hands (4.2%). The mean is percentage frequency 4.3%.

The mean percentage frequency for the control (Ntamante) was 4.9. The arches were most o the left thumb (12.6%) and least on the left ring finger (0.8%) and right index finger 0.8.

This present study had the lowest amount of arches (4.4%) on the Left hand and 4.2% on the right hand as compared to other tribes in Nigeria, the control Ntamante had slightly above Ubang on the right hand 4.5% and 8.3% on the lift hand. The left hand has the highest number of arches as compared to the right as documented in the previous studies of other Nigerian ethnic groups as well as the Ubangs.

Igbigbi et al, (1999) observed that the Malawians had dominant arches than other dermatoglyphics pattern. In 2005 Igbigbi et al, observed least frequency of the arches as compared to the other finger patterns amongst the Kenyans and Tanzania's. Basu observed low frequency of arch in castes mysere.

5.1.2 The Loops

Loop – A loop has a single tri radius. They are two types' radial and ulnar loops. The tri radius is usually located laterally on the fingertip and always on the side where the loop is closed. Loops may vary in size and shape greatly. The mean percentage frequency for ulnar loop for males in Ubang clan was 14.3 while that for radial loop was less than a percentage (0.28), the mean percentage frequency of ulnar loop and radial loops respectively in males of Ubang clan were14.3% and 0.28, as compared to that of the Ijaws 17.68% and 0 respectively (Anibor *et al.* 2011). The mean percentage frequency for the control (Ntamante) males for ulnar loop patterns was 12.54, the radial loop patterns was 0.12. The mean standard deviation for the Ulnar Loops in Ubang males was 51.7 ± 39.2. The radial loop mean standard deviation was 0.5, the T-test was likely significant ($P<0.05$).

The mean deviation for the Ulnar loop in females of Ubang was 58.2±41.9, while that for Ntamante was 10.8±12.2. the T-test was highly significant (P<0.05) in both gender. And the radial loop-mean standard deviation for Ubang clan was 0.6±1.9, while that for Ntamante was 1.2±2, the T-test value was highly significant.

The mean deviation for the Ulnar loop in Ntamante was 10.2±7.4, themedisn of the percentages was 9.5, the T-test was highly significant (P<0.05) for the Ntamante males.

The loop pattern for the various ethnic groups in Nigeria is as thus;

The loop (radial) patterns for this present study is similar with that of the Urhorbos (2) on the Left hand in females and the Ijaws right hand (0). These two (Ijaws and Urhorbos) are minority ethnic groups like the Ubangs in Nigeria, could there be some ancestral linkages? The control Ntamante was (0.66) on the left hand of females and (1.34) on the right hand of the females, this was slightly similar to the Hausa ethnic group (1.1).

In this present study the ulnar loop was the most frequent pattern as observed in other ethnic groups in Nigeria.

In this present study the radial loop was zero on the right hand of the males in Ubang as compared with other ethnic groups in Nigeria. This is a unique distribution. Radial loop patterns occur more on the left in females in Ubang and on the right in males as obtained among the Urhorbos and the Ijaws. In the control the radial loop occurred most on the right (1.34%) than on the left as seen amongst the Ogonis.

In this present study, the ulnar loop occurs more on the right (15.64) in females as seen amongst the Ijaws, Urhorbos, Hausa and Igbos.

5.1.3 Whorls Patterns

The mean standard deviation for whorls in Ubang clan in males is 13.3±8.5, while that for Ntamante was 2.7±2.4, the T-test for whorls in Ubang males was highly significant, ($P<0.05$) and that of Ntamante. The mean standard deviation for female in Ubang clan is 16.6±4.8 while that for Ntamante was 7.6±5.5, the T-test was highly significant for both Ubang clan and Ntamante ($P<0.05$).

Whorls – whorls possess two tri – radii one on the ulnar and the other at the radial side. In this present study the whorls patterns in Nigeria ethnic groups have been distributed thus;

The whorls in this present study are 3.08 on the left of the males and 2.56 on the right hand. The control was 3.98 on the left and 2.56 on the right hand.

They were more whorls on the left hand of the Ubangs(males) than on the right hand (2.56). This is at variant with the other ethnic groups listed above in Nigeria. They are also more whorls on the right hand of the Ubang females (4.84)than on the left (3.84). This is same with what is obtained amongst the Hausas and Ntamantes the control.

The percentage frequency of whorls in this present study is more in the females (4.8Right hands) than in the males (3.08 left hands). The values are very low as compare to other ethnic groups in Nigeria.

Comparative analysis was done to compare the qualitative patterns in both hands and gender in Ubang clan and Ntamante as stated above.

5.2 THE QUANTITATIVE DERMATOGLYPHIC FEATURES (ATD ANGLES, AB RIDGE COUNT AND C-LINE TERMINATIONS IN UBANG CLAN IN BOTH HANDS AND GENDER

Table 4.9 – 4.16 show the Quantitative variables which include:

- AB ridge count
- A T D angles
- C – line termination

The AB ridge count for males and females ridge from 22 to 40. The mean percentage frequency was highest in the females (25.68%) as compared to the males (21.95%).

The ATD angles mean percentage distribution is more in the females (33.79) as compared to that of males 31.71%. In present study the C- line termination in males had 50.6% distribution on the ulnar termination which is the highest in the study followed by the proximal distribution, next was the absent termination and none was present at the radial termination. In the females it was 50% for ulnar termination follow by proximal 30.3% then absent 16 and then radial 4%, the same frequency pattern followed the control.

This corresponds with other results obtained in other studies in Nigeria Africa, Asia and other parts of Europe.

5.2.1 The AB Ridge Count

AB ridge count distribution for males and females in Ubang clan, the values were homogenous and varied in both sexes and hands. Association Test was done for right hand in males (4.9) and right hands in females (5.6), also on the left hand in males (6.0) and left hand

in females (6.1), the mean difference was -1.1 in males and 0.5 in females, the correlation cooefficient (r) for males was 0.9 while for female was 0.7.

The percentage mean frerquency for males was highest in 30 counts (24.39%)while in females it was highest in 30 count (25.68) and 35 counts (25.68%) in Ubang community.

5.2.2 ATD Angles

The normal percentage distribution of ATD angles in Ubang clan for both males and females was highest in angle 46-50 (32.93%) males and at angles 41-45 (33.79%) females. It means the female had the highest frequency.

Association test was done for the right hand the males 14.6 and females 17.6 on the ATD angles while on the left hand it was 16.3 for males and 16.2 females, the correlation coefficient for male was 0.9 while that of females was 0.8 it means the males had the greater association than the females.

5.2.3 C-Line Termination

As a multiethnic country, Nigeria has over two hundred tribal entities with very few of these dermatoglyphically evaluated despite that dermatoglyphic traits may provide a means of assessing interpopulation affinity and in tracing the ethno historiography of a given people. Where available, dermatoglyphic reports on Nigerian populations often do not include analysis of palmar indices, especially the termination pattern of the C-line.(Jaja et al, 2010).

The usefulness of dermal ridge pattern configuration analysis derives from the fact that ridge pattern formation is polygenically controlled and as such less susceptible to genetic

drift. Unlike metric indices used in anthropometry, dermal ridge pattern configurations are postnatally unalterable (Jantz, 1987).

The main lines indicate the direction of palmar ridge alignment in any given individual or population (Sunderland et al, 1973), with the C – line being the only one of the four main lines that has been shown to be truly polymorphic (Plato, 1970). The termination patterns of C - line has been previously reported among the Yoruba of Nigeria by Jantz et al, (1978), while Igbigbi and coworkers (1994, 1996) provided further data among the Ibo, Hausa, Urhobo and the Yoruba as well. Beside these studies, no other studies in published literature has provided data on C-line termination patterns in Nigerian groups, to our awareness.

The C-line termination percentage frequencies for males and females in Ubang clan. For the males, the distributions were as follows: Ulnar termination = 69.5, Proximal Termination = 16.3, Absent Termination = 14 while there was no Radial Termination. In the females: Ulnar Loop termination = 55, Radial Termination = 4, Absent Termination = 10, while Proximal termination = 30.3

The C-line termination percentage frequencies for males and females in Ubang clan. For the males, the distributions were as follows: Ulnar termination = 50.6, Proximal Termination = 19.8, Absent Termination = 16.0 while Radial Termination = 11.1 In the females: Ulnar Loop termination = 52.9, Radial Termination = 3.4, Absent Termination = 14.3, while Proximal termination = 29.

The C-line termination amongst the Ubangs and Ntamantes follow a similar pattern in distribution with what is obtained in other ethnic groups in Nigeria (Appendix X) in both

males and females in both Ubang and Ntamante the Ulnar loops had the highest frequency in distribution, followed by the proximal, then the Absent and Radial.

In this present study the Ulnar loop (69.5%) is higher in males as compared the females (55%) amongst the Ijaws (males 44.5 and females 43.2%), Ulnar loops (males 40.4%, females 37.0%).

Amongst the Ntamante's the Ulnar loop is higher in percentage frequencies amongst the females (52.9%) as compare to the males(50.6%) this is same with what is obtained with other ethnic groups in Nigeria, in previous studies like Hausas (males 36.5%, females 40.1%), Yorubas (females 39.9%, males 34.4%), Ibos (female 43.6%, males 37.4%), Ogonis (females 48.0; males 38.4).

The ratios of the Ulnar loop terminations are highest in Ubang and Ntamante compare to previous study done in Nigeria and other parts of Asia. The nearest to it from the Ogonis (females – 48.0%). The Ubang males have Absent radial terminology as seen amongst the Ogonis and Ijaws (Jaja et al, 2010). Amongst the Ntamante's the radial loop was dominant amongst the males (11.1%) which the females had (3.4%) this tributaries as compared with what is seen amongst the Gujja tribe and Quechua tribe in India (Balgar et al, 1986). Sternberg *et al.* (1975) reported that black Americans have a higher incidence of Radial loops.

In the present study the Ubang and the Ntamante though in the same state of Cross river State South-South, Nigeria have distinguished C-Line terminators factors that shows significant differences amongst themselves but are in affinity with other ethnic groups in Nigeria , Asia and Black Americans. The Ulnar loop terminators of the Ubangs males is the highest recorded ever in previous literatures (69.5%). Could this be the reason for the men

language and female language in the community which is a norm prescribed by them and its been taught to their children given to them by the men, well, we believe that other factors in the environment like power, Ego, and dominance are also very fundamental.

5.3 Dermatoglyphics Studies in Ubang, Nigeria, Africa and the World

Population studies have continued to build the necessary descriptive and comparative bases for better understanding the full range of human variation. Nearly all regions of the world have been well represented in recent works, India and Europe led the way with most published reports followed by Asian population, sub- Saharan Africans, South American Indians, Middle Eastern populations, Pacific Islanders, and Australians. Also of significance were several articles which presented more general treatments by analyzing dermatoglyphic variation across continental borders or between different ethnic groups (Jantz et al, 1980; leguebe et al, 1983; Pons, 1982; Jant et al, 1983; Arricta et al, 1987). The importance of dermatoglyphics goes back to ancient china (1839) where it was common practice in the sale of land the deal of the land carried the impression of the finger prints as an acknowledgement of the deal has a thumb print. Dermatoglyphics studies have been used extensively for twins' studies, ethnology and ethnography, disputed paternity and inheritance study, clinical diagnosis of certain diseases like Down's syndrome, etc. (Gummit, 1939).

Basu studied the palmar dermatoglyphic of the castes series in Karnata; Ganeson and chattopadhyay have made a study of dermatoglyphics of Chiense and the malya of Malaysia; Dermatoglyphics of the Gaur Brahininswe was studied by Garg and Chattopadhyay; Dogras of Jammu were studied by Kaul and Kaur. A quantitative analysis of digital dermatoglyphics of 20 Dhanger Castes of Maharashtra was done by Malhotra, Chakraborty and Bhanu,

Brahmins of Andhra Pradesh were studied quantitatively on digital dermatoglyphics by Mathew and Satyanarayan, Dermatoglyphics in Muslims males were studied by Mukherjee, Study of dermatoglyphics was done in Chinese by Takeya, wilder had studied the Japanese, Cummins and Midloo made the study in European Americans. Cummins also studied the Negroes of West Africa. (Basu, 1981).

5.4 Effect of the Community in Speaking Ubang Language

Table 4.21 shows 99.0% of responders who speak Ubang language and other languages. The Ubang people understands the language of the surrounding communities but these communities do not understand nor speak Arasere nor Ofre .Table 23 shows the distribution of the people who speak Ofre and Arasere because of what other people in the community may say if they speak the language meant for the opposite sex. 100% percent of responders affirm to it. This means the different languages spoken by both males and females in Ubang clan are as a result of social pressure they learnt and spoke the language natives not as individuals from birth as claim by the community. This answers our 3rd research questions which states "How does gender and sex differences affect the way people engage in conversation". This is remarkable in Ubang clan.

5.5 Effect of Language on Dermatoglyphics in Ubang Clan

Table 4.26 - 4.29 show the effect of language on dermatoglyphic patterns. This were highly significant ($P<0.000$) on the qualitative variable and significant ($P<0.05$) on the quantitative variable (c- line) termination, ATD angle and AB ridge count. These answers our major research question which states "How does language and Gender influence dermatoglyphic patterns in Ubang clan. Language and gender has great influence on

dermatoglyphic patterns amongst the people of Ubang clan has shown from Table 24 – 30, as well as Table 1 – 9 above.

5.6 Effect of Gender on Categories

Table 4.29 shows the effect of Gender on categories it was one for the males. This shows a male dominant community where the females dare not challenge their authority as exhibited in the membership of the Ikweng cults which has exclusive membership of the male folks only. The males reverence their Language.

The perception of categories in Ubang clan starts with being a man or a woman. This determines the language spoken and your associations in the community.

Language has been seen as supporting male's dominance (Eckert *et al.* 1991). Studies of language and gender in the past twenty years have looked at many different dimension of language usage and have offered a rich variety of hypothesis about the interaction between gender and language and especially about the connection of power to that interaction (Eckert et al,1992). Gender is also produced and reproduced in differential forms of participation in particular communities of practice. Women tend to be sub ordinate to men in work place, women in the military do not engage in combat and in the academy, most theoretical disciplines are overwhelmingly male with women concentrated in descriptive and applied work that "supports" theorizing (Eckett et al, 1992).

Table 4.30 shows the anova of for both males and females in Ubang clan. It was highly significant ($P<0.000$) in this present study.

Tables 37 –40 show the effect of gender on category this is very remarkable in the Ubang clan (P<0.000).

5.7 Effect of Gender on Conversation

Table 4.29 – 4.36 show the effect of gender on conversation. The statistical instrument used showed clearly the impact of this in Ubang clan, this was highly significant (P<0.000). There is a language in Ubang clan exclusively for the males called “Ofre”, and that meant for the female Folks called Arasere. There is a strong effect of gender on conversation.

5.8 Analysis of Unique Finger Print Frequency Distribution Indices (Furuhata’s and Dankmeijer’s Indices)

On the analysis of unique finger print frequency distribution indices the Dankmeijer indices was higher in females (59.8%) in Ubang than the males (36.7). The Dankmeijer index in Ntamante control was also higher in the females (73.6%) than the males (91.1%). The values of the Dankmeijer index in Ntamante (144.7) was higher than values obtained in Ubang (96.5%) for both males and females total values. This may be as a result of higher Arches values in females compare to the males and more Arches in Ubang clan than the Ntamante females.

The Furuhata’s index is more in the females of Ubang community (28.2%) than in the males (25.4%).

In Ntamante the values were higher in the males (26.2%). There was a wide margin in the values between the males and females in Ntamante.

The total values of the Furuhata's index in Ntamante (89.5%) higher than that which is obtain in Ubang (53.6%) because of the whorl distributions.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The asymmetry in digital dermatoglyphics pattern, in the present study is in conformity with patterns expected in normal Nigerian and African population. The most exceptional in this present study is the arches and radial loops distribution. Gender disparity exists in the qualitative variables of arches, loops and whorls patterns in Ubang clan of Obudu Local government Area, Cross River State. The AB ridge count showed gender and sexual dimorphism($P<0.05$)

Dermatoglyphics are of interest in anthropology, criminology, and medicine, including dysmorphology (the study of congenital malformations) and the study of chromosome abnormalities such as trisomy 21 (Down syndrome) (Anitha et al.,2014). The study of fingerprints as a method of identification is also known as Dactylography or Dactyloscopy (Gutiérrez-Redomero et al., 2014), and currently it is also known as the Henry-Galton system of identification. Dactylography is the process of taking the impressions of papillary ridges of the fingertips for the purpose of identification of a person.

The present study had the lowest amount of Arch pattern as compared to previous literatures. The ulnar loop pattern was the highest amongst the qualitative variables that was the Radial loop as seen in other previous studies. In the order of frequency distribution of patterns Ulnar loop>whorls>Arches>Radial loops in both females of Ubang and Ntamante and Ubang males. The following pattern Ulnar loop >Arches>Whorls>Radial loops in relations to intelligence level more whorls are associated with Ulnar loop and associated with

affective learning Radial loop critical thinking and Arch associated with reflective thinking (kumeri et al., 2013). These was association between the quantitative variables between the males and females. The Dankmeijer and Furuhata indices were more in females. Indeed there is a language variation amongst the gender in Ubang clan.

Finally, language and power depend on dermatoglyphic and gender in Ubang clan, these four are inseparable.

6.2 Recommendations

More research work in line with the present study should be at the following:

i. A National fingerprints Institute should be established and domicile in a university for research and learning.

ii. Collaborative research should be encouraged among various departments and faculties to enhance learning and understanding.

iii. Research should be encouraged in dermatoglyphics studies of other ethnic groups especially the ones in danger of extinction.

iv. Research should be encouraged in dermatoglyphics studies and sport medicine

v. Research should be encouraged in dermatoglyphics and Human intelligence.

vi. Correlation of dermatoglyphics and Crime.

vii. Correlation of dermatoglyphics and metabolic diseases

6.3 CONTRIBUTION TO KNOWLEDGE

This research work Digito-Palmar Dermatoglyphic, language and gender is totally an Anthropological research which is mainly of Biological/physical/medical Anthropology and spice Linguistics Anthropology, Cultural Anthropology. The contribution to knowledge of this reproach work includes

1. The whorl digital dermatoglyphic pattern in Ubang clan is known in both males and females in both hands (Table 4.1 and 4.3).

2. The whorl digital dermatoglyphics pattern in Ntamante (control) is known in both male and females and on both hands (Table 4.2 and 4.4)

3. The Ulnar loop digital pattern in Ubang clan is known in both males and females and both hands (Table 4.1 and 4.3).

4. The ulnar loop digital pattern in Ntamante is known in both males and females and both hands

5. The radial loop digital pattern in Ubang clan is known in both males and females and both hands (Table 4.1 and 4.3).

6. The radial loop digital pattern in Ntamante is known in both males and females and on both hands (Tables 4.2 and 4.4).

7. The Arch digital pattern in Ubang Clan is known both in males and females and on both hands (Table 4.1 and 4.3).

8. The Arch digital pattern in Ntamante is known both in males and females and on both hands (Table 4.2 and 4.4).

9. The Furuhata`s Index for Males and Females in Ubang is known

10. The Pattern intensity index (PII) for Males and Females in Ubang is known

11. The Furuhata`s Index for Males and Females in Ntamante is known

12. The Pattern intensity Index for Males and Females in Ntamante is known

13. The Dankmeijer Index for Males and Females in Ubang is known

14. The Dankmeijer Index for Males and Females in Ntamante is known

15. The AB ridge count in Ubang clan is known in both males and females in both hands (Table 4.9 and 4.10).

16. The ATD angles in Ubang clan is known in both males and females and in both hands.

17. The C-Line termination in Ubang clan is known in both males and females and on both hands (Table 4.13 and 4.15).

18. The C-line termination in Ubang clan is known in both males and females and on both hands (Table 4.14 and 4.16)

19. The language variation in Ubang amongst males and females is known and this is documented for the future generations of Ubang should there be language change in future due to acculturation (Table 2.1).

20. The reason for the language variation is known in Ubang clan i.e influence of the society or environment on the natives of Ubang (Table 2.3 and 2.5).

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APPENDIX I

DEPARTMENT OF HUMAN ANATOMY

FACULTY OF MEDCINE ABUTH/HREC/K69/2014

Ahmadu Bello University, Zaria

Thesis for PhD (Human Anatomy)

QUESTIONNAIRE

Title of research project: Digito-Palmar Dermatoglyphics, Language and Gender in Ubang clan

Investigator Name; ABUE, ANDREW DONATUS (DR)

1. what is your age

   a. 18 to 27
   b. 28 to 37
   c. 38 to 47
   d. 48 to 57
   e. 58 to 68

2. What is your gender

   a. Male
   b. Female

3. What is your highest level of education?

   a. Primary school
   b. Secondary school
   c. Tertiary education
   d. Post graduate

e. None of the above

4. Are you a native of Ubangclan?
    a. Yes
    b. No
5. If No, what is your native language?
6. Is your father from Ubang?
    a. Yes
    b. No
7. Is your mother from Ubang?
    a. Yes
    b. No
8. Is your grandmother from Ubang?
    a. Yes
    b. No
9. Did you grow up in Ubang?
    a. Yes
    b. No
10. What is your state of origin paternally?
11. Do you speak any other language than Ubang?
    a. Yes
    b. No
12. Have you ever had people correct you while speaking Ubang?
    a. Yes

b. No

13. Have you been discriminated against while speaking Ubang?

    a. Yes

    b. No

14. If so, why or how?

15. So you think (or would others say) that you have an accent?

    a. Yes

    b. No

16. If so, what accent will that be?

17. Have you ever felt uncomfortable speaking in front of a group of people because of the way you speak?

    a. Yes

    b. No

18. You speak your language because of what people may say?

    a. Yes

    b. No

19. Pronounce the following items – Dog, Cat, Farm,

20. Pronounce the following items- Man, Woman, cutlass

21. Pronounce the following items- Cap, Stone, Friend

22. Complain of headache

23. Stop a bike to Obudu

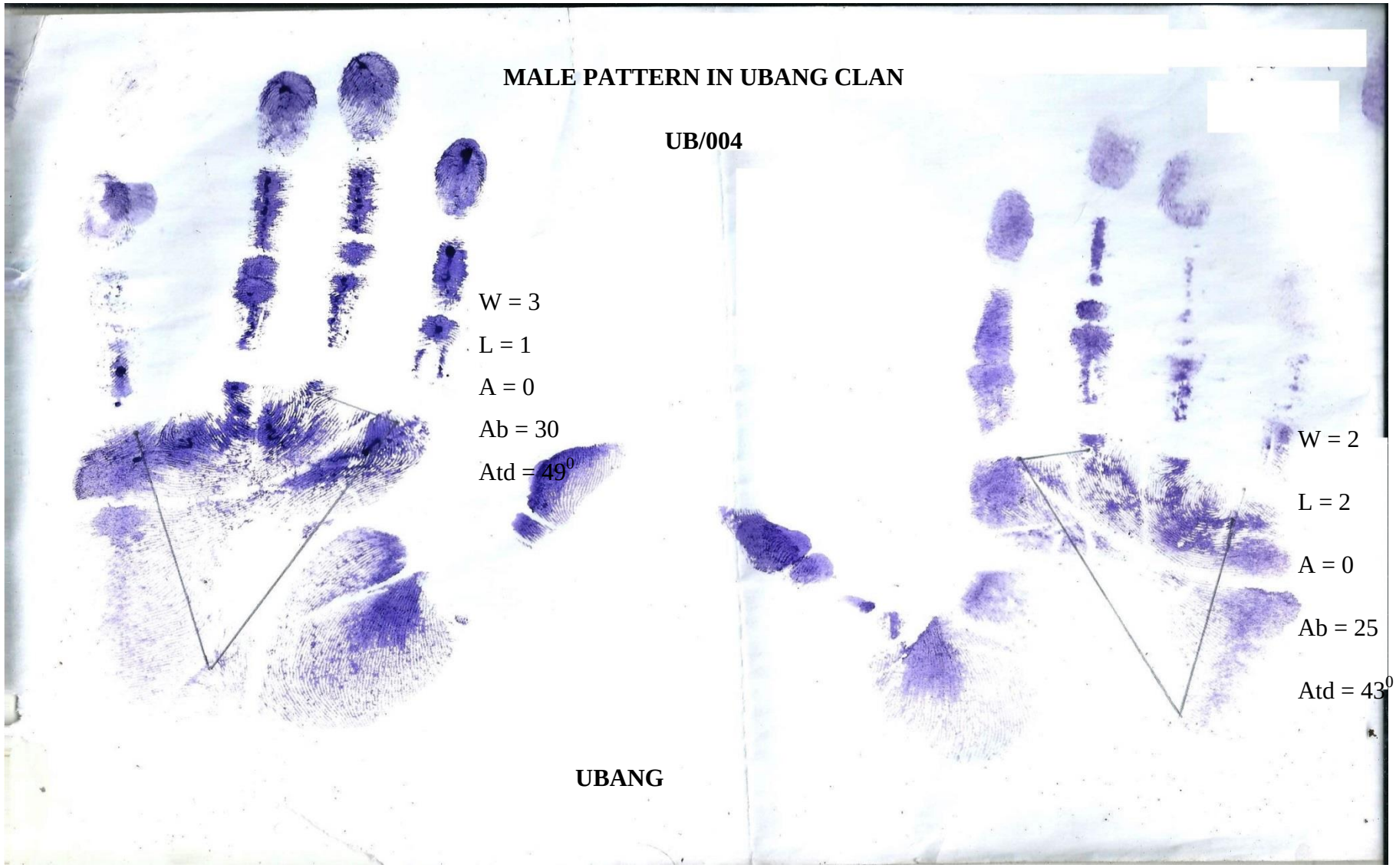
24. Tell the time

25. Invite me to eat

Dermatoglyphics data

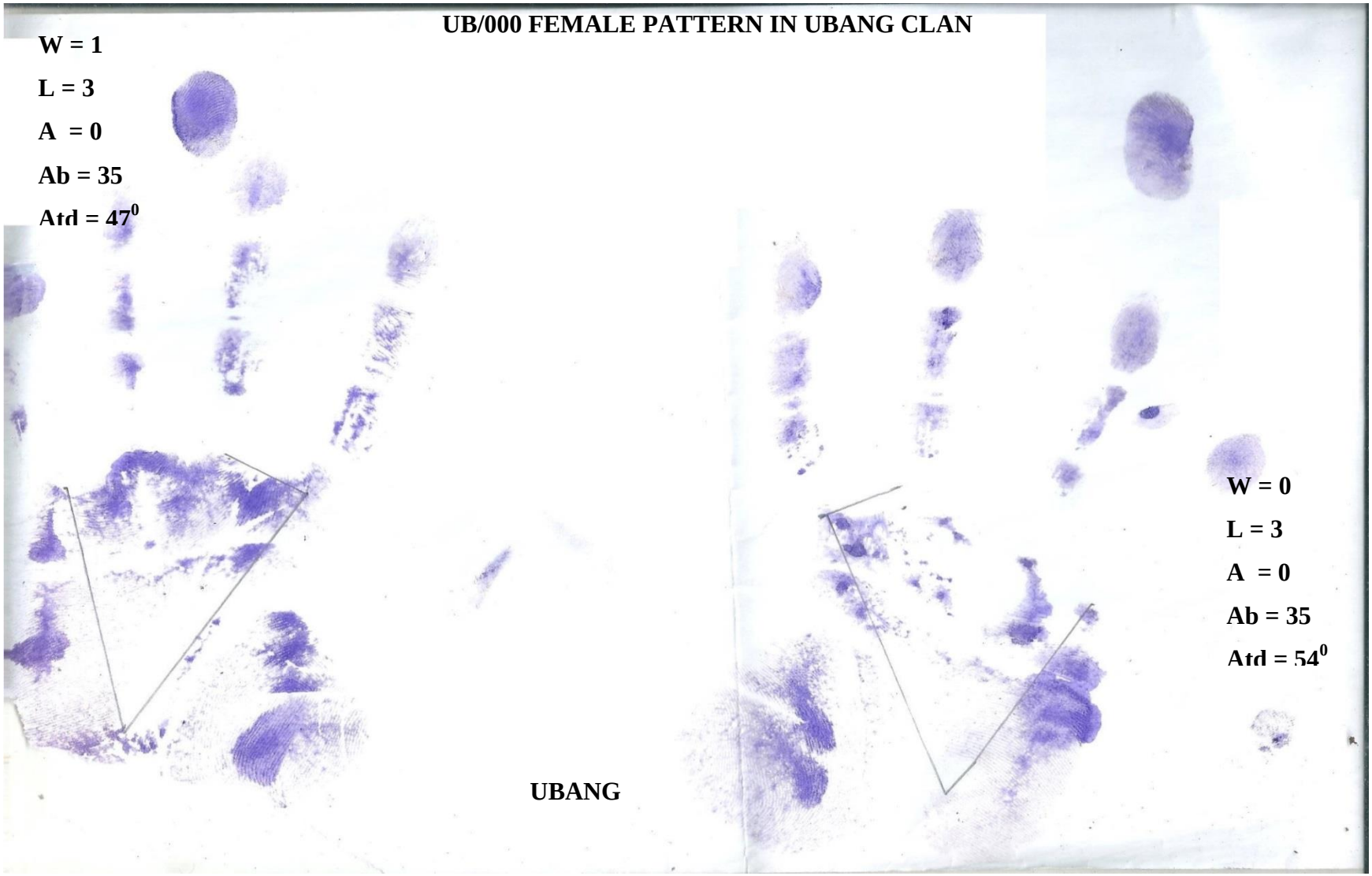
1. Qualitative Analysis Of Finger Prints
    a. Number of Whorls:
    b. Number of Loops:
    c. Number of Arches:
2. Quantitative Analysis of Finger Prints
    a. Total finger ridge count (TFRC):
    b. Absolute finger ridge count (AFRC):
3. Palmar Patterns
    a. Thenar area:
    b. Hypothenar area:
4. Position of Axial Triradii:
5. Number of Palmar Triradii:
6. Ab ridge count:
7. Cd ridge count
8. Atd angle:

APPENDIX II


MALE PATTERN IN UBANG CLAN
UB/004
W = 3
L = 1
A = 0
Ab = 30
Atd = 49^0
W = 2
L = 2
A = 0
Ab = 25
Atd = 43^0
UBANG

APPENDIX III

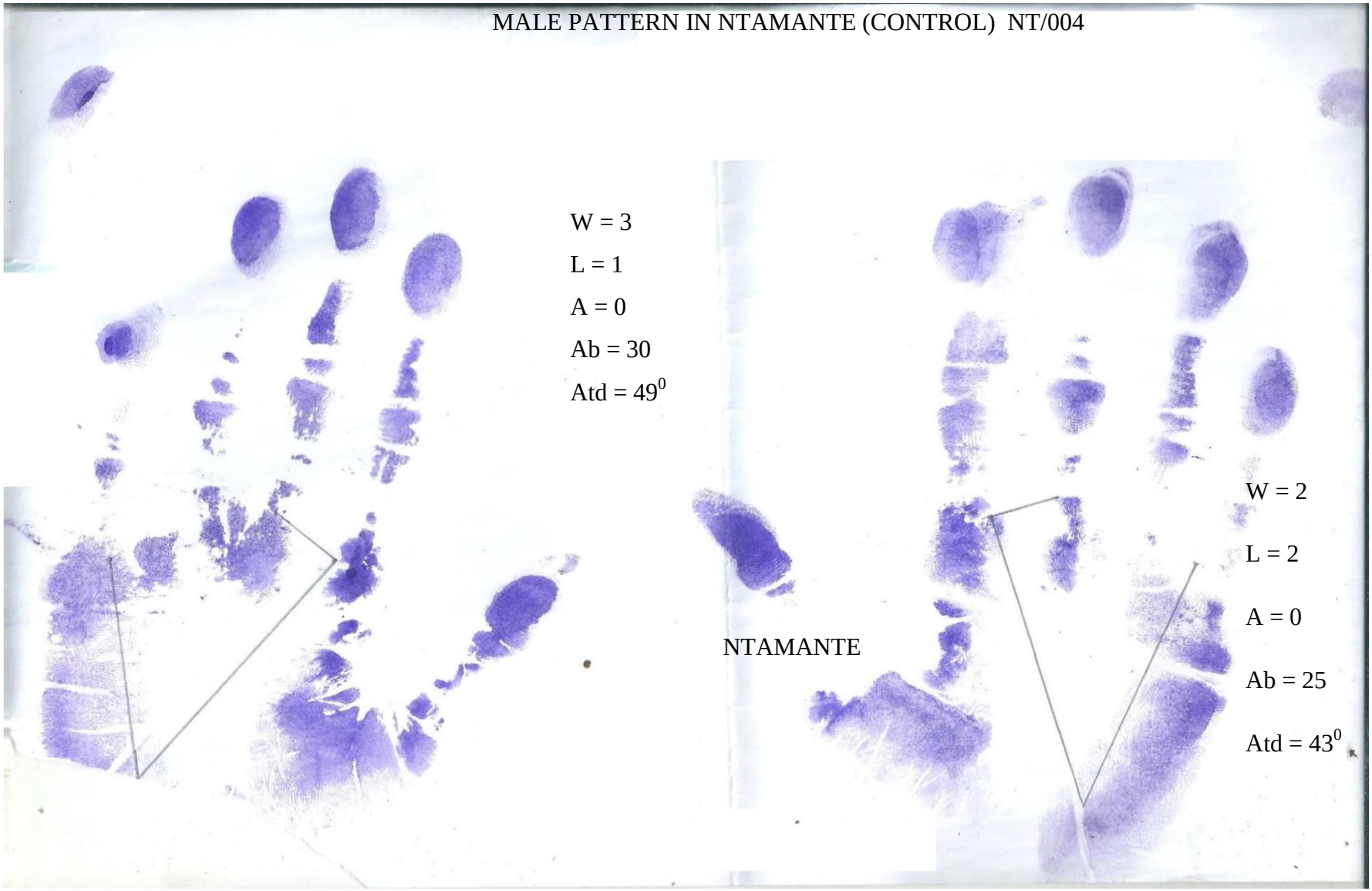
UB/000 FEMALE PATTERN IN UBANG CLAN



UBANG

APPENDIX IV

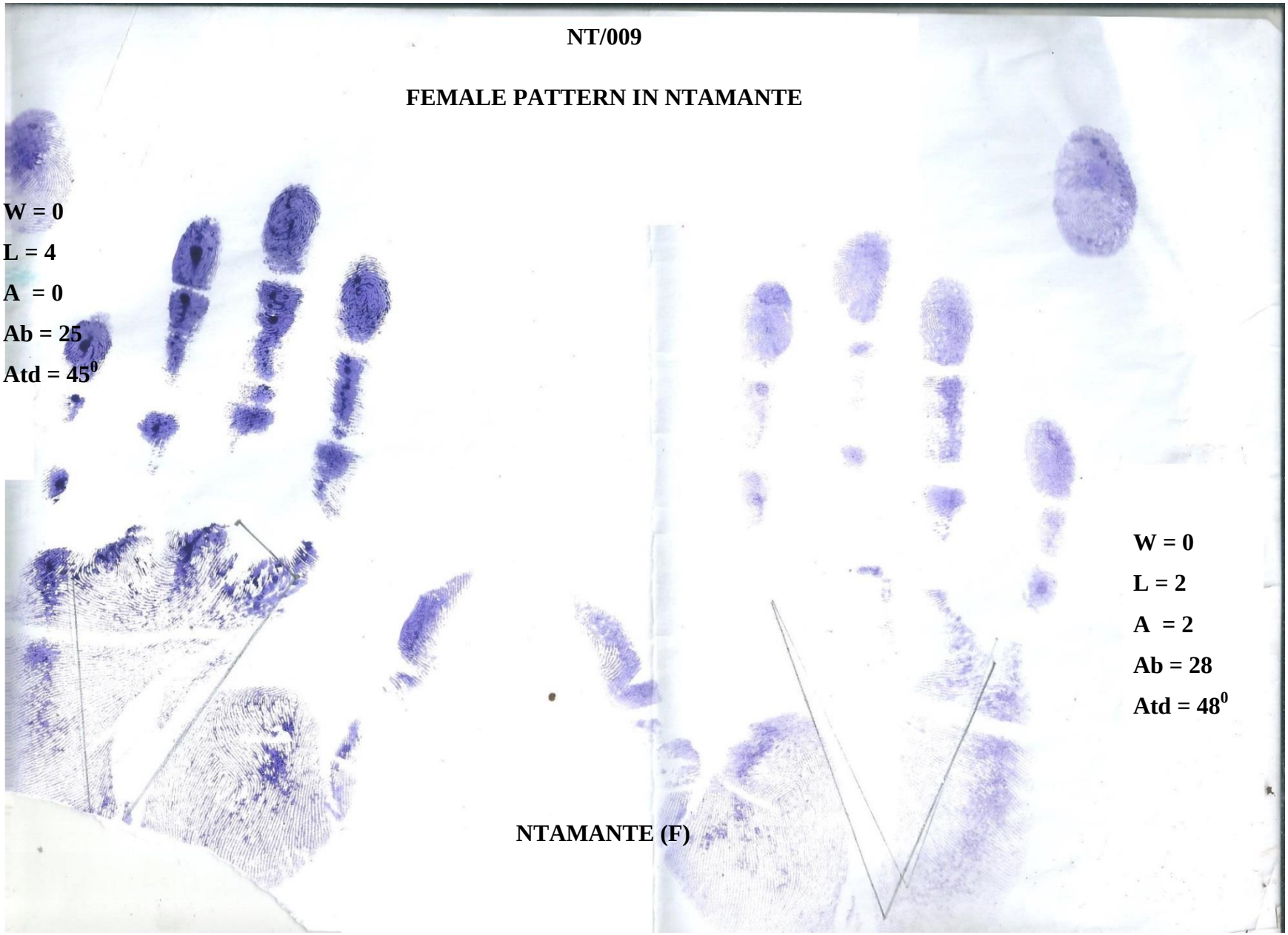
MALE PATTERN IN NTAMANTE (CONTROL) NT/004



APPENDIX V

NT/009

FEMALE PATTERN IN NTAMANTE

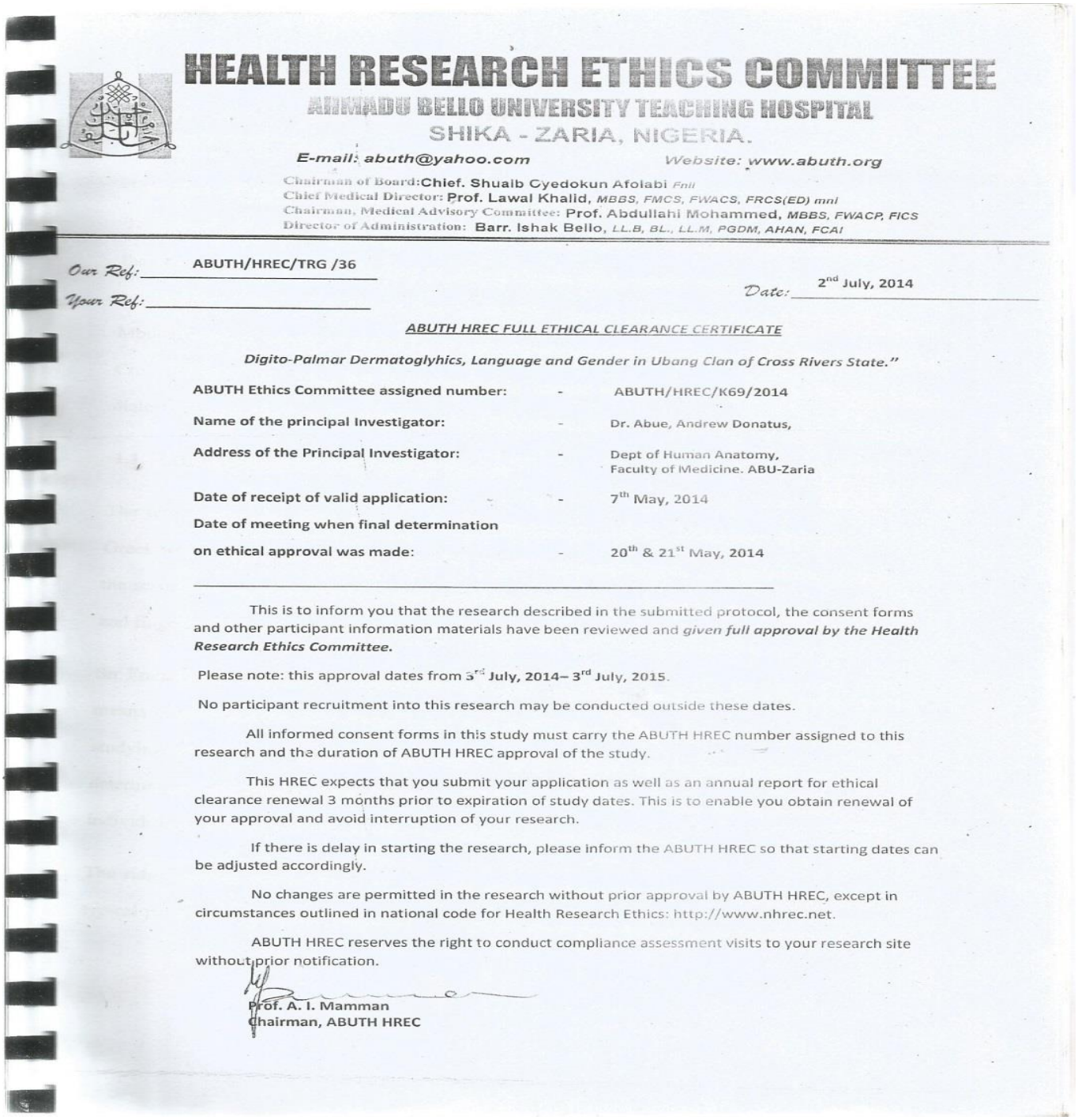


W = 0
L = 4
A = 0
Ab = 25
Atd = 45^0

W = 0
L = 2
A = 2
Ab = 28
Atd = 48^0

NTAMANTE (F)

APPENDIX VI



HEALTH RESEARCH ETHICS COMMITTEE

AHMADU BELLO UNIVERSITY TEACHING HOSPITAL

SHIKA - ZARIA, NIGERIA.

E-mail: abuth@yahoo.com Website: www.abuth.org

Chairman of Board: Chief. Shualb Oyedokun Afolabi *Fnil*
Chief Medical Director: Prof. Lawal Khalid, *MBBS, FMCS, FWACS, FRCS(ED) mnl*
Chairman, Medical Advisory Committee: Prof. Abdullahi Mohammed, *MBBS, FWACP, FICS*
Director of Administration: Barr. Ishak Bello, *LL.B, BL., LL.M, PGDM, AHAN, FCAI*

Our Ref: ABUTH/HREC/TRG /36

Your Ref: _____

Date: 2nd July, 2014

ABUTH HREC FULL ETHICAL CLEARANCE CERTIFICATE

Digito-Palmar Dermatoglyhics, Language and Gender in Ubang Clan of Cross Rivers State."

ABUTH Ethics Committee assigned number:	-	ABUTH/HREC/K69/2014
Name of the principal Investigator:	-	Dr. Abue, Andrew Donatus,
Address of the Principal Investigator:	-	Dept of Human Anatomy, Faculty of Medicine. ABU-Zaria
Date of receipt of valid application:	-	7th May, 2014
Date of meeting when final determination on ethical approval was made:	-	20th & 21st May, 2014

This is to inform you that the research described in the submitted protocol, the consent forms and other participant information materials have been reviewed and ***given full approval by the Health Research Ethics Committee.***

Please note: this approval dates from 3rd **July, 2014– 3rd July, 2015**.

No participant recruitment into this research may be conducted outside these dates.

All informed consent forms in this study must carry the ABUTH HREC number assigned to this research and the duration of ABUTH HREC approval of the study.

This HREC expects that you submit your application as well as an annual report for ethical clearance renewal 3 months prior to expiration of study dates. This is to enable you obtain renewal of your approval and avoid interruption of your research.

If there is delay in starting the research, please inform the ABUTH HREC so that starting dates can be adjusted accordingly.

No changes are permitted in the research without prior approval by ABUTH HREC, except in circumstances outlined in national code for Health Research Ethics: http://www.nhrec.net.

ABUTH HREC reserves the right to conduct compliance assessment visits to your research site without prior notification.

Prof. A. I. Mamman
Chairman, ABUTH HREC

APPENDIX VII

Nomenclatures for the Ten Digits of the Hand

LEFT HAND **RIGHT HAND**

5	4	3	2	1	1	2	3	4	5

Thus: L_5 Left thumb

L_4 Left Index finger

L_3 Left Middle finger

L_2 Left Right finger

L_1 Left Little finger

R_1 Right Little finger

R_2 Right Ring finger

R_3 Right Middle finger

R_4 Right Index Finger

R_5 Right Thumb

APPENDIX VIII

Female Arch Pattern in Nigeria Ntamante (control) and Ubang

ETHNIC GROUP	LEFT HANDS (%)	RIGHT HANDS (%)
Ibos	12.9	11.4
Ogoni	15.8	11.8
Hausa	16.1	13.7
Yoruba	11.6	10.2
Urhobo	14.1	11.8
Ijaw	1.59	1.42
Ubang clan (present study)	4.4	4.2
Ntamante	8.3	4.5

APPENDIX IX

Ulnar Loop Patterns in Nigeria Ntamante (control) and Ubang (males)

ETHNIC GROUP	LEFT HANDS (%)	RIGHT HANDS (%)
Ibos	62.0	61.8
Ogoni	55.5	52.0
Hausa	54.9	53.8
Yoruba	61.2	58.7
Urhobo	53.0	49.4
Ijaws	33.24	34.48
Ubang	13.72	12.8
Ntamante	10.4	14.8

APPENDIX X

Ulnar Loop Patterns in Nigeria Ntamante (control) and Ubang (Females)

ETHNIC GROUP	LEFT HANDS (%)	RIGHT HANDS (%)
Ibos	55.7	58.3
Ogonis	52.9	57.2
Hausa	51.9	53.1
Yoruba	66.5	65.4
Urhobo	51.3	84.7
Ijaw	15.62	19.74
Ubangs	15.0	15.64
Ntamante	9.0	9.0

APPENDIX XI

Radial Loop Patterns in Nigeria Ntamante (control) and Ubang Radial loop (males)

ETHNIC GROUP	LEFT HANDS (%)	RIGHT HANDS (%)
Ibos	2.3	2.6
Ogoni	2.5	2.1
Hausa	1.3	2.4
Yoruba	1.9	2.7
Urhobo	2.7	3.7
Ijaws	0	0.24
Ubang (present study)	0.2	0.36
Ntamante	0.24	0

APPENDIX XII

Radial Loop Patterns in Nigeria Ntamante (control) and UbangRadial loop (Females)

ETHNIC GROUP	LEFT HANDS (%)	RIGHT HANDS (%)
Ibos	3.1	2.1
Ogoni	3.2	4.1
Hausa	2.1	1.1
Urhobo	2.0	1.9
Ijaw	0	0
Ubang	2	0
Ntamante	0.66	1.34

APPENDIX XIII

Whorls in Nigeria, Ntamante (control) and Ubang (Males)

ETHNIC GROUP	LEFT HANDS (%)	RIGHT HANDS (%)
Ibos	22.3	24.2
Ogoni's	32.8	37.1
Hausa	34.3	36.8
Yoruba	26.7	28.5
Urhobo	29.7	35.1
Ijaw	19.67	22.38
Ubang (present study)	3.08	2.56
Ntamente	3.98	2.72

APPENDIX XIV

Whorls in Nigeria, Ntamante (control) and Ubang (Females)

ETHNIC GROUP	LEFT HANDS (%)	RIGHT HANDS (%)
Ibos	28.3	28.1
Ogoni's	28.2	26.8
Hausa	29.9	31.5
Yoruba	25.7	23.3
Urhobo	32.6	31.6
Ijaw	27.24	27.27
Ubang (present study)	3.84	4.88

APPENDIX V

Percentage Frequency of C – line Terminations among the sampled Ijaw and Ogoni Subjects (left and right hands combined) Terminations

	Ijaw		Ogoni	
	Male (197)	Female (193)	Male (201)	Female (201)
Ulnar	44.5	43.2	38.4	48.0
Radial	0	0	0	0
Proximal	28.1	41.7	53.2	46.3
Absent	27.4	14.1	8.4	5.7

APPENDIX XVI

Distribution of Palmar C – line terminations (%) among male subjects of some select populations previously studied.

Tribe	N				
		Proportion of terminations in percentage			
		Ulnar	Proximal	Radial	Absent
Hausa1	320	36.5	42.5	0	21.0
Urhobo1	342	40.4	46.5	0	13.2
Yoruba2	250	34.4	44.0	0	21.6
Ibo2	250	37.4	40.2	0	22.6
Ijaw3	197	44.5	28.1	0	27.4
Ogoni3	201	38.4	53.2	0	18.4
Gujjar4	92	30.5	16.6	38.1	14.7
Quechua5	115	55.7	10.8	14.8	18.8

APPENDIX XVII

Distribution of palmar C – line terminations (%) among female subjects of some populations previously studied.

Tribe	N	Proportionofterminationsinpercentage			
		Ulnar	Proximal	Radial	Absent
Hausa1	305	40.1	43.7	0	16.2
Urhobo1	207	37.0	51.5	0	11.5
Yoruba2	133	39.9	42.9	0	17.3
Ibo2	140	43.6	42.1	0	14.3
Ijaw3	193	43.2	41.7	0	14.1
Ogoni3	201	48.0	46.3	0	5.7
Gujjar4	108	41.7	15.3	24.5	18.5
Quechua5	120	59.1	13.0	14.0	14.1

1 = Igbigbi *et al.*, 1996
2 = Igbigbi *et al.*, 1994
3 = Present study
4 = Balgir and Sharma, 1986
5 = Klayman *et al.*, 197

APPENDIX XVIII

Effect of sex on conversation

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
sex * conversation	780	100.0%	0	0.0%	780	100.0%
gender * conversation	780	100.0%	0	0.0%	780	100.0%

APPENDIX XIX

Chi-square test for effect on conversation.

Chi-Square Tests				
	Value	df	Asymp. Sig. (2-sided)	Inference
Pearson Chi-Square	107.320[a]	5	.000	Significant
Likelihood Ratio	117.641	5	.000	Significant
Linear-by-Linear Association	7.148	1	.008	Significant
N of Valid Cases	780			
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.79.				

$P < 0.05$

APPENDIX XX

Chi – square test for effect of gender on conversation.

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Inference
Pearson Chi-Square	180.903[a]	10	.000	Significant
Likelihood Ratio	209.522	10	.000	Significant
Linear-by-Linear Association	17.642	1	.000	Significant
N of Valid Cases	780			

a. 1 cells (5.6%) have expected count less than 5. The minimum expected count is 1.58.

$P < 0.05$

APPENDIX XXI

Frequencies distribution for sex, gender and conversation

Statistics

		Sex	gender	Conversation
N	Valid	780	780	780
	Missing	0	0	0
Mean		1.49	1.67	2.29
Std. Error of Mean		.018	.023	.059
Std. Deviation		.500	.647	1.660
Variance		.250	.418	2.755
Skewness		.051	.436	.823
Std. Error of Skewness		.088	.088	.088
Kurtosis		-2.002	-.709	-.954
Std. Error of Kurtosis		.175	.175	.175
Range		1	2	5
Minimum		1	1	1
Maximum		2	3	6



Plate 1: Clan Head of Ubang



Plate 2: Reception on Arrival

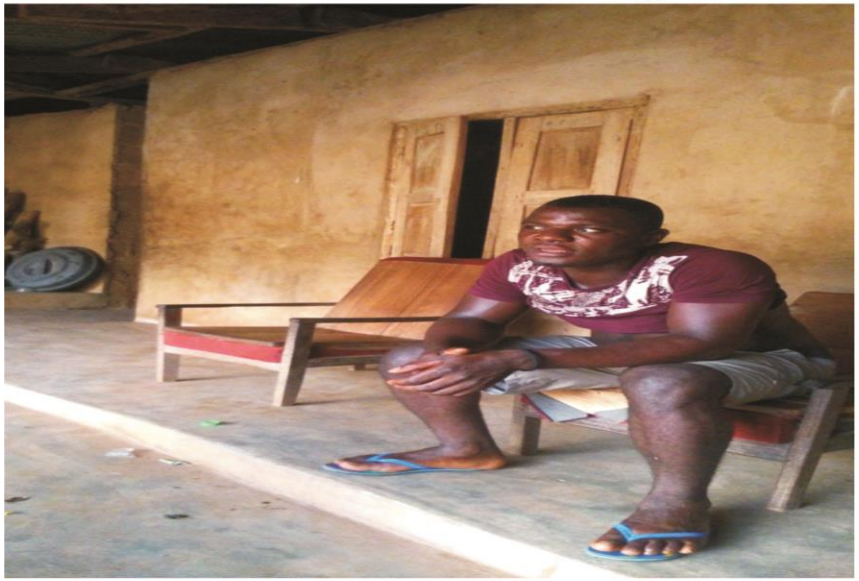


Plate 3:Ubang Male Youth



Plate 4: Ubang Elderly Female



Plate 5: Village Arena for Men



Plate 6: Traditional Women Activities



Plate 7: Typical Ubang Kitchen



Plate 8: Ubang Traditional Broom