"STUDY OF PALMAR DERMATOGLYPHICS IN PATIENTS WITH ECZEMA IN AGE GROUP BETWEEN 20-50 YEARS IN BOTH SEXES"

BY

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DISSERTATION SUMBMITTED TO THE

BLDE UNIVERSITY,

BIJAPUR.

IN PARTIAL FULFILLMENT OF THE

REQUIREMENTS OF THE DEGREE OF

DOCTOR OF MEDICINE

IN

ANATOMY

UNDER GUIDANCE OF

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2012

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ACKNOWLEDGEMENT

I would like to express my sincere gratitude and thanks to my teacher and guide **Dr.V.N.Kulkarni** MS(Anat) ,**Professor**,Department of Anatomy,Shri B.M.Patil Medical College,Hospital and Research centre,Bijapur, for his guidance and encouragement in completing my thesis. At the end of this work I feel enriched with knowledge and a better approach to the subject.

I feel privileged and honored to express my most humble respect and profound gratitude to my eminent and esteemed teacher **Dr. S.D. Desai** MS (Anat), **Professor and Head,** Department of anatomy, Shri B.M. Patil Medical college, Hospital and Research Centre, Bijapur. His never ending willingness to help, and encouragement coupled with his rich knowledge and keen interest were a constant source of inspiration.

I sincerely thank **Dr.A.C.Inamdar** M.D.(DVL) **Professor and Head** Department of Dermatology,Venerology and leprosy Shri B.M. Patil Medical college, Hospital and Research Centre, Bijapur, for his guidance.

My deep gratitude to **Dr. R.C. Bidri** MD, **Principal,** B.L.D.E.U's Shri B.M. Patil Medical college, Hospital and Research Centre, Bijapur for permitting me to utilize resources in completion of this book.

I sincerely thank to all the teaching staff members, non teaching staff and colleagues of anatomy department for their kind support and cooperation.

I thank Mrs.Vijaya Sorganvi Statistician and Dr. S. B. Madagi, Statistician, for their valuable help in statistical analysis of data.

My thanks to library and digital library staff for their valuable help and kind cooperation in my study.

I am deeply indebted to my husband Dr.Vikas, daughter, In-laws, Parents and all my family members whose constant encouragement and moral support led me to successful completion of my dissertation work.

My sincere thanks to one and all who supported for the completion of this dissertation.

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LIST OF ABBREVATIONS USED

A	Arch
AFRC	Absolute finger ridge count
Di	Dissociation
F	Female
Fig	Figure
Fr	Frequency
HS	Highly Significant
Hy	Hypothenar
L_1	Left hand thumb
L_2	Left hand-index finger
L_3	Left hand middle finger
L_4	Left hand ring finger
L_5	Left hand little finger
L_r	Radial Loop
L_u	Ulnar Loop
M	Male
N	No
No	Number
NS	Not Significant
P	Palm
R_1	Right hand thumb
R_2	Right hand-index finger
R_3	Right hand middle finger
R_4	Right hand ring finger
R_5	Right hand little finger
SD	Standard deviation
Sm	Simian Line
Sy	Sydney Line
TFRC	total finger ridge count
Th	Thenar
W	Whorl
Y	Yes

ABSTRACT

Background

Dermatoglyphics is a branch of science which deals with the study of ridge patterns on finger tips, palms, soles and toes. Dermatoglyphic traits are formed under genetic control early in the development, but may be affected by environmental factors during 1st trimester of pregnancy. They however do not change thereafter, thus maintaining stability and personal identification. Thus they represent the genetic makeup of an individual and therefore predisposition to certain diseases. Genetic factors play a role in the susceptibility of an individual for Eczema. By analyzing various parameters of dermatoglyphics in the palms and fingers, it is possible to predict individual's chance of acquiring Eczema upto certain extent.

Methods and Results

The finger and palm prints of two hundred and twenty diagnosed patients of Eczema in the age group between 20 to 50 years were compared with, one hundred and fifty controls, of the same age group, among which 133 were males & 87 were female patients. Screening questions were asked to exclude other genetic disorders. The quantitative study includes total finger ridge count (TFRC), absolute finger ridge count (AFRC), mean 'atd' angle.

The quantitative study includes finger print patterns (whorls, radial loops, ulnar loops and arches) and palmar pattern (simian line and Sydney line).Statistical analysis for quantitative analysis, the arithmetic mean and standard deviation were

calculated, ‘Z’ test was applied. For qualitative analysis, the ‘Chi’ square test was applied whenever necessary.

The following significant parameters have been found in the present study of: **“**STUDY OF PALMAR DERMATOGLYPHICS IN PATIENTS WITH ECZEMA IN AGE GROUP BETWEEN 20-50 YEARS IN BOTH SEXES”

1. Higher mean ‘atd’ angle in study group in right hand of males cases.
2. Higher Mean Absolute Finger Ridge Count (AFRC) in female cases.
3. Higher Mean Total Finger Ridge Count (TFRC) in female cases.

Conclusion

The significant dermatoglyphic parameters found in the study may be used to predict individual’s chance of acquiring Eczema.

Key words: - Dermatoglyphics, Eczema.

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INTRODUCTION

Eczema is a pattern of inflammatory responses of the skin, which can be defined either clinically or histologically. Clinically, acute eczema is associated with marked erythema, superficial papules and vesicles which easily excoriate and lead to crusts. Chronic eczema is composed of rather faint erythema, infiltration and scaling.[1]

The word eczema seems to be originated in 543AD and is derived from the Greek word Ekzein meaning 'to boil forth or to effervesce". Histologically Eczema is an inflammatory skin reaction characterized by spongiosis with varying degrees of acanthosis and a superficial perivascular lymphocytic infiltrate.[2]

It is difficult to determine the true prevalence of eczema in general population because, there have been few studies involving general practioner attendees and fewer still involving population surveys. The incidence of eczema is difficult to establish. Variations occur in various ethnic groups and according to living habits and also environmental factors.[2]

All eczemas are dermatitis. But all dermatitis are not eczemas. The complications of eczema include : chronicity, cosmetic disfigurement, secondary infection, systemic dissemination and sometimes, are associated with asthma, which severely compromises the quality of life and in rare cases may be lethal.[2]

The present work is entitiled "study of palmar dermatoglyphics in patients with eczema in age group between 20-50 years in both sexes"

The term Dermatoglyphics [from the Greek, Derma = skin, glyphics = carvings] is the scientific term coined by Prof. Harold Cummins. The analysis of dermal ridges and their configurations by studying prints of them is called Dermatoglyphics.[3] The

term is also used as a collective name for all the features of ridged skin. The skin patterns are studied from prints or impressions.[4]

In ancient India, palmistry, an art of fortune telling by reading the pattern of friction ridges and palmar lines, dates from about 2000 B.C. [5] Skin is one of the largest organs of the body. The skin over most of the body is relatively smooth. Friction ridges however are found on the digits, palms and soles. They are called friction ridges because of their biological ability to assist in our ability to grasp and hold onto objects. There are approximately 2700 ridge units per square inch of friction skin. Each ridge unit corresponds to one primary ridge formed directly beneath each pore opening. Pore openings are present along the surface of the friction ridges. They are evenly spaced due to fact that one pore opening along with one sweat gland exists for one ridge unit. [6]

Friction ridges are in their definitive form in the foetus before birth. Once this blue print has been established in the stratum basale of the epidermis in the foetus, it does not change except for the injury, disease or decomposition after death. In case of injury to stratum basale it may affect the skin ability to regenerate and scar tissue forms. Location and size of pore ducts and pore opening along the surface of friction ridges are also in their definitive form before birth and do not change. [6]

Dermatoglyphics is a growing discipline and its easy and ready applicability renders it as a useful tool to the clinician. The relevance of dermatoglyphics is not to diagnose, but to prevent by predicting a disease; not for defining an existing disease, but to identify people with genetic predisposition to develop certain diseases.[7] If a dermatoglyphic marker of eczema can be found, it will be of immense clinical

significance. Very few works have been done on palmar dermatoglyphics in eczema. Hence there is a lacunae in current knowledge.

Hence need for a study in palmar dermatoglyphics in patients with Eczema.

OBJECTIVES OF STUDY

(1) To find out various dermatoglyphic patterns in eczema patients in the age group of 20-50 years.

(2) To compare dermatoglyphic features of normal and eczema patients.

(3) To evaluate the significance of dermatoglyphics in eczema.

REVIEW OF LITERATURE

HISTORY OF DERMATOGLYPHICS

The first description of epidermal ridges which make characteristic patterns when prints are taken of fingertips, was learnt in 1684 by ingenious physician Nehemiah Grew. In 1685, Grew's paper was followed by the publication in Amsterdam of a brief account in Bidloo's 1685 Anatomica Humani Corporis.

In 1686, a comparable description was given by Malphigi in De Eterno Tactus Organo.

In 1823, John Evangelist Purkinji described nine types of patterns on the fingers.

In 1890, Francis Galton systematically studied the whole subject and published his book` Fingerprints' in 1892. He showed his interest for personal identification for the prints which persist throughout life.

In 1926, Harold Cummins, coined the word `dermatoglyphics'. Derma means skin and glyphics is carving. He studied all aspects of fingerprint analysis from anthropology to genetics and even embryology perspectives. In 1943 he published book titled` Fingerprints, palms and soles' a bible in the field of dermatoglyphics.

In 1968, Sarah Holt, published `The Genetics Dermal Ridges'. She summarizes her research in dermatoglyphic patterns of both fingers and palms. In both normal and congenitally afflicted.

In 1976, Schaumann Alter's published` Dermatoglyphics in medical Disorders'. Significant investigations have also been carried out into dermatoglyphic

indicators of CHD, Leukemia, Cancer, Coeliac disease.Intestinal disorders, , Alzemier's disease, Rubella, Schizophrenia, and mental illness.

In 1985, Dr. Chen Yi Mou of Harvard university, applied dermatoglyphics to educational fields and brain physiology.

In 2000, Dr.Stowens, chief of pathology at St Luke's Hospital in New York, claims to be able to diagnose Schizophrenia and Leukemia with up to a 90% accuracy.

In 2004,International behavioral and medical Biometrics Society- over 7000 reports and thesis were published. Many countries such as U.S.A. Japan, China, Taiwan apply dermatoglyphics for various educational fields.

In 2007-'Gene Code Dermatoglyphics Multiple Intelligent Analysis Report' test centre wishing to promote this knowledge aggressively. [8]

EMBRYOGENESIS

DEVELOPMENT OF VOLAR PADS

Embryological research has shown that the development of epidermal ridges are preceded by the formation of volar pads. Swelling of the mesenchymal tissue appears as elevation on the palm around 6.5 weeks post fertilization .Volar pads exhibit rapid growth between 6.5 and 10.5 weeks, initially they appear evenly rounded. However by 9 weeks, the pads begin to take position and shape.

In 1929 Harold Cummins described that the various configurations are not determined by self-limited mechanisms of the skin. The skin possesses the

capacity to form ridges but alignments of these ridges are responsive to stress in growth as are the alignment to sweeping by wind or wave.

The initial regression of volar pads around 10-11 weeks correspond to the initial formation of epidermal ridges, which first appear as localized cell proliferation in the basal layer of the epidermis during 10 weeks post fertilization.

The primary ridges that are formed develop at the epidermis-dermis interface and not on the skin surface. Due to general growth of the hand the numbers of primary ridges increase along with increase in the width and penetrate deeper in the underlying dermis. Around 14 weeks, the sweat glands appear at uniform intervals along the ridges. This association has resulted in the term Glandular fold, corresponds to the surface ridge that we can see.

At 15 weeks secondary ridges lacking sweat gland appear. Secondary ridges/furrow fold correspond to the furrow of secondary ridge. Primary ridges cease proliferation. So at 17weeks, epidermal ridges become visible on the volar surface as finger prints.

From 17-24 weeks, secondary ridges continue to proliferate until they are in a one to one correspondence with primary ridges.

At 24 weeks the epidermal ridge system has an adult morphology. At 24 weeks bridging and anastomoses between primary and secondary ridges begin to appear. The dermis between anastomotic epidermal bridges, progressively form peg like structures ‘the dermal papillae” characterstic of definite dermal ridge. [9]

HEREDITY AND DERMATOGLYPHICS:

Heredity plays an important role in the formation of dermatoglyphic patterns. The inheritance of dermatoglyphic traits was initially studied by Galton in 1892, Wilder in 1902, Penrose in 1954 and Holt in 1968.[10] Studies of inheritance of pattern sizes, direction and shape often give contradictory conclusions. Individual dermatoglyphic traits have been claimed to be inherited as dominant, recessive, and a single gene or polygenic with complete or in-complete penetrance and variable expression of genes.

Holt studied total ridge count of fingers and inheritance. She stated that this trait was determined almost entirely by one or more additive or co-dominant genes.[11] There are also normal variations which represent hereditary differences between ethnic groups and even within the same family.[12]

At present, there is wide agreement that the heredity of most dermatoglyphic features confirm to polygenic system. Modern cytogenetic methods allow precise identification of chromosomes and thus help in studying the correlation between individual chromosome observations and dermatoglyphic features. [10]

On the basis of current knowledge it can be said that the total ridge has greater clarity in terms of heritability, followed by 'atd' angle and the patterns on the fingers and the palms in that order.[13]

TECHNIQUE OF OBTAINING PRINTS:

A number of techniques have been recorded for recording dermatoglyphics are known. The methods vary in their requirements for equipment, time experience and in the quality of prints produced. Dermatoglyphic patterns are usually recognizable by the naked eye. A simple magnifying lens preferably with a light source such as is found in an otoscope, helps greatly in scanning dermatoglyphics, especially in infants

and small children whose patterns are very fine. But permanent impressions or prints are necessary for quantitative analysis of dermatoglyphics. [10]

To obtain good quantity of dermatoglyphic prints following care should be taken.

1. Hands of person should be washed with soap and water to remove oil, sweat and dirt from the skin.
2. The ridged areas should be printed completely, fingers should be rolled to obtain a print of the whole pattern.
3. Palm print must include the area from the distal crease of the wrist to the Metacarpo-Phalangeal creases.
4. Palm should be printed completely to get printings of both ulnar and radial side.

METHOD OF RECORDING OF DERMATOGLYPHICS

A number of methods for recording dermatoglyphics are known. The methods vary in their requirements for equipments, time and experience and in the quality of prints produced.

For qualitative and quantitative study of permanent print, a magnifying lens of four to five power is helpful for inspecting ridge details as well as in counting ridges. A low power binocular Microscope [Eyepiece 6x and objective 0.7] with a large field (25mm) has been recommended for study of the ridge detail for quantitative analysis the ridges can be counted by using needle or other object with a sharp point.[10]

The ‘atd’ angle can be marked with lead pencil and measured by using transparent protractor of the variety which is contracted of a semicircle of plastic material.[14]

Dermatoglyphic patterns are usually recognizable by the naked eye. A simple magnifying lens, preferably with a light source, helps greatly in scanning dermatoglyphics, especially in infants and small children, whose patterns are very fine. Permanent impressions or prints are necessary for quantitative analysis of dermatoglyphics.

To enhance the quality of dermatoglyphic prints, it is necessary to remove sweat, oil and dirt from the skin. This can be accomplished by washing the ridged areas with soap and water and with ethyl alcohol or ether.

Care must be taken to print the ridged areas completely. The ridges are primarily on the volar surface but also pass upwards and along the lateral margins of the fingers, palm, toes and soles. Therefore a print of only the volar surface may be incomplete and it is often necessary to roll the digits, palms and soles to ensure obtaining a print of the whole pattern. Palm prints must include, the area from the distal crease of the wrist to the metacarpo-phalangeal creases, and complete printing of both ulnar and radial sides of the ridged areas must be assured. Very fine ridges may be accentuated by a coloring agent, such as ink from felt pens.[10]

A) Standard Methods:

1) Ink Method
2) Chemical Method
3) Transport adhesive type Method
4) Photographic Method
5) Special Methods

Ink Method:-

This method, described by Purvis-Smith, is widely used and gives good results. Simple material such as printer's ink, a rubber roller, glass or metal inking

slab, a sponge rubber pad and good quality paper with a slightly glazed surface is needed.

A small amount of ink is placed on the slab and spread with the roller in to a thin even film. The area to be printed is pressed against the slab, taking care that the whole area to be printed is covered with the ink.

A firm surface is used under the sheet of paper on which the inked finger is pressed. To ensure complete print and also to print the hollow of the palm it is advisable to place a sponge rubber pad under the paper on which the prints are made. The rubber pad gets moulded into concave portions of the hand and complete palm print is ensured.[9]

Ordinary ink stamp pad can also be used instead of slab and printer's ink. The rubber stamping pads are made moist with ink and glycerin.

Advantages of Ink Method are:

a) It is very easy to use.

b) It is rapid and inexpensive.

c) Prints are permanent and can be inspected qualitatively and quantitatively.[10]

B) Special methods:

These methods are not widely used and they are-

1) Hygrophotography

2) Radiodermatography

3) Plastic Moulds[10]

GENERAL FEATURES OF RIDGE ARRANGEMENT ON PALMS

On examining a palm print, it can be seen that the ridges form nearly parallel rows. Their course is never straight, except in a very small area of skin. On both palms and soles, the ridges run in different directions in the various areas. At the junction of three ridge systems, three ridges meet to form a triradiate pattern, generally termed the triradius (Fig.1). In the distal palm there are usually four triradii, one above each finger, except the thumb. These are the digital triradii, called a, b, c, d (Fig.2). a is situated proximal to the index finger b, c, and d are located proximal to the middle, ring and little fingers, respectively. Normally there is another triradius, the axial triradius (t), situated at the proximal end of the palm. Not infrequently, a number of triradii other than the mentioned four, are found in the distal palm. Two triradii may be fused into a single triradius, or there may be an additional (accessory) triradius or triadii in some of the interdigital areas. A special case of a missing triradius is an interdigital triradius, which may subtend two or more digits. Such a triradius, lying in the centre of an interdigital area is labeled in relation to the triradii it replaces, eg., bc for a triradius in the third inter-digital area, between the normally formed triradii b and c. Occasionally one of the triradius may be absent. In certain areas the ridges may be arranged to form patterns, and triradii may be associated with these designs. By marking the ridges running from each triradius, a picture of the chief features of ridge arrangement is obtained.

Patterns can be traced from the triradii and these provide skeletons of the patterns. An accessory triradius can be observed in an inter-digital area and these are referred to as a1, b1, c1 and d1. In definite areas, the sites of the fetal volar pads, the ridges may be arranged to form patterns. There are five of these areas on the palm

(Fig.2); The thenar area under the thumb, with which is usually included the first inter-digital area; the second, third, and fourth inter-digital areas; and the hypothenar area on the ulnar side of the palm.

FINGER PATTERNS

Patterns on the finger-tips were classified by Galton into three main types depending on the number of triradii present. The simplest pattern to be found on the fingertips is an arch. It has no triradius. It is subdivided into two types. The simple (plain) arch and tented arch (Fig 3). The most common pattern on the fingertip is a loop. It has one triradius. It is of two types. If the ridge opens on the ulnar side the resulting loop is termed an ulnar loop (Fig.4) whereas if it opens towards the radial margin it is called a radial loop (Fig.4). A whorl in Galton's classification is any ridge configuration with two or more triradii. There are different types of whorls – concentric whorl , spiral whorl , central pocket whorl , double loop pattern, etc. (fig 5) A person may have the same pattern on all ten fingers, but various patterns often occur on different digits.

PALMAR PATTERNS

Patterns on palms are similar to those found on fingers, but usually larger and sometimes more complex. Thus in the hypothenar area the principal patterns are loops of various types, including S-shaped patterns made up of double loops, and whorls, often with three triradii. Thenar patterns are frequently distinctive, incorporating loops, with some ridges running at right angles to the general ridge direction in the area. Inter-digital patterns are almost invariably loops open into the nearest inter-digital space. Rarely very small whorls are found in this part of the palm. Pattern frequencies in all areas differ in the two sexes. For e.g. on fingers, females have more arches and fewer whorls than males.

The characteristics of dermatoglyphics can be described quantitatively i.e. by counting the number of ridges within a pattern and measuring angles or distance between specified points of triradii.

The total finger ridge count (TFRC) represents the sum of the ridge counts of all ten fingers. Larger count is used on those digits with more than one ridge count. In a loop there is one triradius, so one ridge count; in a whorl with two triradii, there are two counts and the higher is used. For an arch the score is zero. In a double loop whorl, the counting is done from the triradii to the core that is nearer the triradius. Thus two counts – a radial and an ulnar are obtained.

Weninger proposed improvement of ridge counting in bicentric patterns by adding the ridge numbers between the two cores to the conventional count. Absolute Finger ridge count (AFRC) is the sum of the ridge counts of all the fingers. The TFRC and the AFRC are the same if no whorls are present. The TFRC expresses the size of pattern and the AFRC reflects the pattern size as well as its intensity.

Holt in 1961 illustrated that the mean ridge count of loop may be considerably lower than that of whorls in both males and females. A ridge count of 'zero' implies the presence of a simple or tented arch in the finger. Pattern intensity refers to the complexity of ridge configurations. It can be expressed by widely used method to interpret the position of axial triradius in the palm is the atd angle (Fig.11). This angle is formed by lines drawn from the digital triradius 'a' to axial triradius and to digital triradius 'd'. The symbol 't' is reserved for axial triradii found in the proximal region of the palm, near the wrist crease. A triradius situated near the center of the palm is termed 'tll' the symbol 'tl' represents the intermediate position of the triradius. An extremely distally placed triradius (distal to proximal transverse crease) is termed as tlll. The more distal the position of the axial triradius, the larger the atd angle. The

axial triradius shifted toward the radial side is called 'tr' and that shifted to the ulnar side is called 'tu'. Palms with pattern in hypothenar area may have more than one axial triradius. In such cases it is customary to record the widest atd angle i.e., the angle from the distal 't'.

There are several disadvantages in using the atd angle as a dermatoglyphic parameter. a) The most important one is that the atd angle tends to decrease with age because the palm grows more in length than in breadth.

b) The size of the angle is also affected by the amount of spreading of the fingers when the patterns are printed.

c) The pressure exerted while the palm is printed also can affect the atd angle.

The numerical values of the atd angles have been employed in determining the axial triradius position, i.e. to distinguish between t and tl. and tll. Penrose suggested that, an angle less than 45^0 be designated as t, angles between 45^0 and 56^0 as tl, and any larger angles as tll. Cripel considered 61^0 as tll. Cascos considered 71^0 as tll and Preus and Fraser considered 63^0 as tll.[10]

FLEXION CREASES – PALM AND FINGERS

These creases represent the location of the firmer attachment of the skin to underlying structures. The first to appear is the radial longitudinal crease that borders the thenar eminence. This is followed by the proximal transverse crease and distal transverse crease. Sometimes the proximal and distal transverse creases are replaced by or joined into one single crease that traverses the whole palm. This single transverse flexion crease is usually referred to as a Simian crease or line (Fig 7). Variants of single palmar crease have been noted .They are transitional type 1 (proximal and distal creases connected by a bridging crease) and transitional type 2

(fusion of the transverse creases with branching proximal and distal segments, incomplete single palmar crease). A variation in appearance of Proximal Transverse crease is the Sydney Line (Fig.8) after the city in Australia where it was observed first. Sydney Line represents Proximal Transverse crease extending beyond hypothenar eminence to the ulnar margin of the palm. The distal transverse crease persists and that appears normal.[10]

CONGENITAL MALFORMATIONS OF HUMAN DERMATOGLYPHICS:

Malformations of the ridged skin are sometimes seen on the volar aspects of human hands and feet. The study of congenital malformations as physical signs in pediatric practice is very important.

Classification of congenital malformation of Dermatoglyphics:

i) Ridge Aplasia :-

This is a rare malformation. In this epidermal ridges over the entire palmar and plantar surface are absent. The palmar and interphalangeal flexion creases remain normal. The palmar and plantar surfaces do not sweat. Terry R and Richard L S reported the absence of fingerprints in five consecutive generations.

ii) Ridge hypoplasia:-

In ridge hypoplasia, ridges are present but they are reduced in height. This condition is inherited as an autosomal dominant trait. The epidermal ridge atrophy is partly reversible change found in extreme old age and in some people with mental sub-normality and 90 to 95% of adults with coeliac disease.

iii) Ridge dissociation:-

In ridge dissociation, the ridges instead of running in more or less parallel lines, are broken up into disorganized short ridges and are often dot like.

It is a heterogeneous condition which can be inherited as an autosomal dominant trait or it can be sporadic. It is present in 18% schizophrenics. Ridge dissociation occurs, with increased frequency in individuals suffering from various medical disorders.

iv) Ridge-off-the-end:-

The fingertip ridges in this condition run vertically of the end of fingertips. It is unassociated with any disease but the hair pattern on the head is abnormal in some cases.[10]

DERMATOGLYPHICS AND DEVELOPMENTAL ABNORMALITIES.

The relative frequencies of various dermatoglyphic features have been reviewed for chromosomal disorders.When combined with other clinical features of a particular disease, dermatoglyphics can serve to strengthen diagnostic impression and may be useful in screening selective individual for additional diagnostic studies. [17]

In a study done on 84 persons of both sexes (42 patients of myocardial infarction 32 males and 10 females and 42 controls), patients had higher incidence of whorls 35.87% and lower incidence of loops 54.71% in all the digits, as compared to controls. Whorls were 22.97% and loops were 67.37%. Both the findings had $p<0.001$ which was statistically highly significant.[18]

In a study of fingerprints in 73 patients with coeliac disease showed changes. 63 of them had epidermal ridge atrophy and actual loss of fingerprint patterns compared to 3 out of 485 controls.A high degree of correlation existed between ridge atrophy and changes in clinical state of patients with coeliac disease.[19]

In a study of 52 cases of congenital Talipes Equino Varus (44 males and 8 females) and 48 controls (40 males and 8 females) there was significant decrease in a-

b ridge count , frequency of ulnar loops,while frequency of whorls was increased, frequency of arches and radial loops were lower in cases as compared to controls.[20]

In a study on 100 patient of pulmonary tuberculosis whorls were predominant with decrease in loop pattern as compared to controls. The difference in mean TFRC was highly significant $P<0.02$, mean AFRC was significant $P<0.05$, atd angle highly significant $P<0.02$.[21]

Down's syndrome individuals have characterstic dermatoglyphic patterns . A study done on Down's syndrome aborted fetuses showed increased frequency of ulnar loops on finger tips,radial loops on 4^{th} and 5^{th} fingers ,a distal axial triradius on the palms ,a simian crease on the palms and a single flexion crease on 5^{th} finger.[22]

In trisomy 13(Patau syndrome) excess of arches on finger tips and single transverse palmar creases are seen in 60%.

Trisomy 18 (Edward syndrome) showed 6-10 arches on finger tips and single transverse palmar crease in 30%.

In Turner syndrome whorls were predominant .[23]

In Klienfelter's syndrome, excess of arches on digit 1,excess of frequent ulnar loops on digit 2, over all fewer whorls, lower ridge counts for loops and whorls as compared with controls. A significant reduction in TFRC was seen.

In inborn blindness , abnormal triradius and excess of arches on fingertips are seen.

In Criduchat syndrome, excess of arches on fingertips and single transverse palmar creases are seen in 90%.

Noonan syndrome showed increased frequency of whorls on finger tips and axial triradius .[24]

In skin disorders such as Psoriasis, Vitiligo and Alopecia areata, dermatoglyphic patterns are studied. In a study conducted in 35 clinically diagnosed

cases of Psoriasis, Vitiligo and Alopecia areata, along with sex matched controls, dermatoglyphic patterns revealed, loop to be predominant in both males and females. Mean atd angle in females of vitiligo (37.7) showed a statistically significant decrease ($p<0.05$) when compared with control females(42.2).[25]

Genetics and eczema: Eczema belongs to a group of complex disorders, where the development of the phenotype results from a complex interplay of different susceptibility genes and their polymorphic variants with environmental factors.[26]

The genetic component in the disease etiology is most clearly illustrated by family studies.In an ascertained 199 families with at least two affected siblings based on established diagnostic criteria, a genome-wide linkage study revealed highly significant evidence for linkage on chromosome 3q21 (Z_{all}=4.31, P= 8.42×10^{-6}). Moreover this locus provided significant evidence for linkage of allergic sensitization under the assumption of paternal imprinting (hlod=3.71, α=44%), further supporting the presence of an atopy gene in this region. Our findings indicate that distinct genetic factors contribute to the susceptibility to atopic dermatitis and that the study of this disease opens new avenues to dissect the genetics of atopy.[27]

A representative twin series with atopic dermatitis from a total twin population of 592 like-sexed twin pairs was studied. It was found that the cumulative incidence rate (0-7 years) of atopic dermatitis in Denmark had increased significantly from 0.03 for the birth cohort 1960-1964 to 0.10 for the birth cohort 1970-1974, that monozygotic twin pairs are more often concordant for atopic dermatitis than dizygotic twin pairs, that monozygotic twins run a risk of 0.86 of having atopic dermatitis if the twin partner has the disease, whereas the disease risk of 0.21 run by dizygotic partners does not differ from the frequency seen in ordinary brothers and sisters. [28]

In a genome screen for atopic dermatitis (AD) and have identified linkage to AD on chromosomes 1q21, 17q25 and 20p. These regions correspond closely with known psoriasis loci, as does a previously identified AD locus on chromosome 3q21. The results indicate that AD is influenced by genes with general effects on dermal inflammation and immunity.[29]

A mailed questionnaire study was conducted involving 812 twin pairs living in Fyn County, Denmark, as of Jan. 1, 1987 and born between 1965 and 1979. Zygosity was determined by the similar method. The response rate was 92%. The cumulative incidence rate (up to 7 years) of atopic dermatitis increased significantly from 0.06 for the birth cohort 1965–1969 to 0.12 for the birth cohort 1975–1979. The pairwise concordance rate was 0.72 in monozygotic and 0.23 in dizygotic twin pairs.[30]

In 406 families with at least two siblings affected with atopic dermatitis (in total 1514 individuals) from the Swedish population, linkage and association to five chromosomal regions (2q35, 5q31-33, 6p21, 11q13 and 14q11) previously implicated in atopic diseases. The region on 14q11 gave evidence for linkage to atopic dermatitis (NPL-score: 2.36, P<0.009). In the 11q13 region, there was a clear association to an intragenic marker in the #-subunit of the high-affinity IgE receptor for raised allergen-specific serum IgE levels (P<0.009). When a quantitative variable for the severity of atopic dermatitis was studied, evidence was found in favour of linkage to the 5q31-33 region, with the highest Z-score (2.06) close to the marker D5S458 (P<0.005).[31]

In a case control study on 103 eczema patients and 261 matched controls, 16 synonymous single nucleotide polymorphisms have been identified and a 4bp insertion has been found in the 3'UTR. It was found a significant trend between the AACC allele with two insertions and disease in the overall data set p=0.0007.[32]

The prevalence in children is ~81% when both parents have the disease and ~56% when only one parent is affected . Twin studies have shown concordance rate of 0.72-0.77 in monozygotic and 0.15-0.23 in dizygotic twin pairs.[28]

At least 20 genes have been reported as showing a statistically significant association with eczema but only 6 associations have been replicated in two or more studies.Genes showing association with atopic eczema are:

Filaggrin gene: Mutations in this gene that encodes for Profilaggrin, a precursor of Filaggrin, lead to epidermal barrier dysfunction. This is a significant breakthrough in understanding the genetic basis and pathogenesis of atopic disease including eczema, allergies and asthma.

Interleukin-4: It promotes the switch to TH-2 immune response and IgE production.

Interleukin-4 Receptor.

Interleukin-13: It promotes cell switch to IgE production.

Mast cell chymase: It promotes increased microvascular permeability and accumulation of inflammatory cells.

Serine Protease inhibitor Kazal-type 5: Mutation in this gene cause Netherton syndrome.

A number of candidate genes have been implicated in eczema. They fall in two groups. Those related to physical epidermal barrier formation/homeostasis, named as Filaggrin, Stratum corneum chymotropic enzyme, serine protease inhibitor, Cystatin A, Collagen XX1X alpha 1. Second type are genes mainly related to immune signaling, such as Toll-like receptor 2, Cytotoxic T Lymphocyte associated-4 Interleukin-4,Interleukin-18.

Eczema is an important public health problem worldwide. Though many st udies are not done on Dermatoglyphics in eczema, there are a few of them done in atopic eczema.[33]

In a study Fingertip dermatoglyphic patterns of 45 patients with atopic dermatitis were compared to those of 60 non atopic dermatitis patients, 21 of whom had hand dermatitis and was observed that 3 or more digits with linear grooves were found in 95.2% of atopic patients with hand dermatitis and in 61.9% of controls with hand dermatitis ($P<0.005$).[34.]

In a study, 92 patients with atopic eczema (58 women and 34 men)were examined and were compared with two different control groups. First group with normal 100 females and 100 males. Second group (55 women and 24 men) excluded any persons with a history of atopic syndrome. Dermatoglyphic patterns showed no significant difference from first control group. In second group the probability was 93.1%, 76.4% of the women examined were found to have atopic eczema. The probability among male patients was 99.9% and sensitivity was 77.7%.[35]

In a double blind case control study the frequencies of fingerprints in 551 patients (240 eczema, 164 cases with psoriasis and 147 cases with alopecia areata) as well as in general population of Hamadan city (control group 188 males and 529 females), it was observed that they are significantly different in various case groups and between case groups and control.[36]

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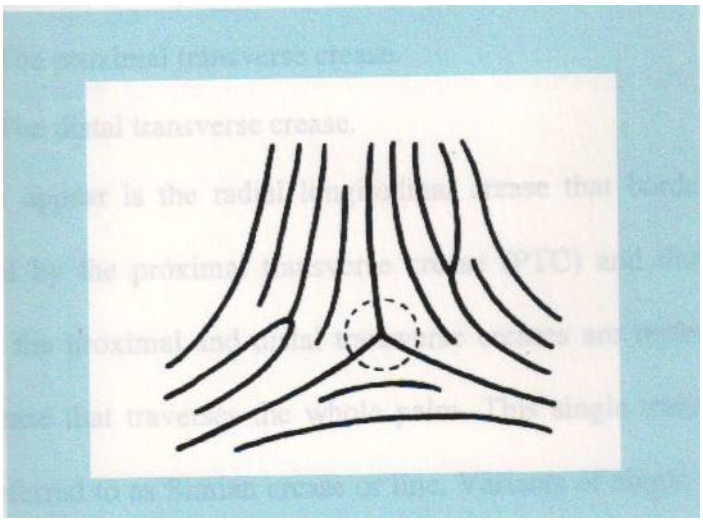


Fig.1. Tri-radius

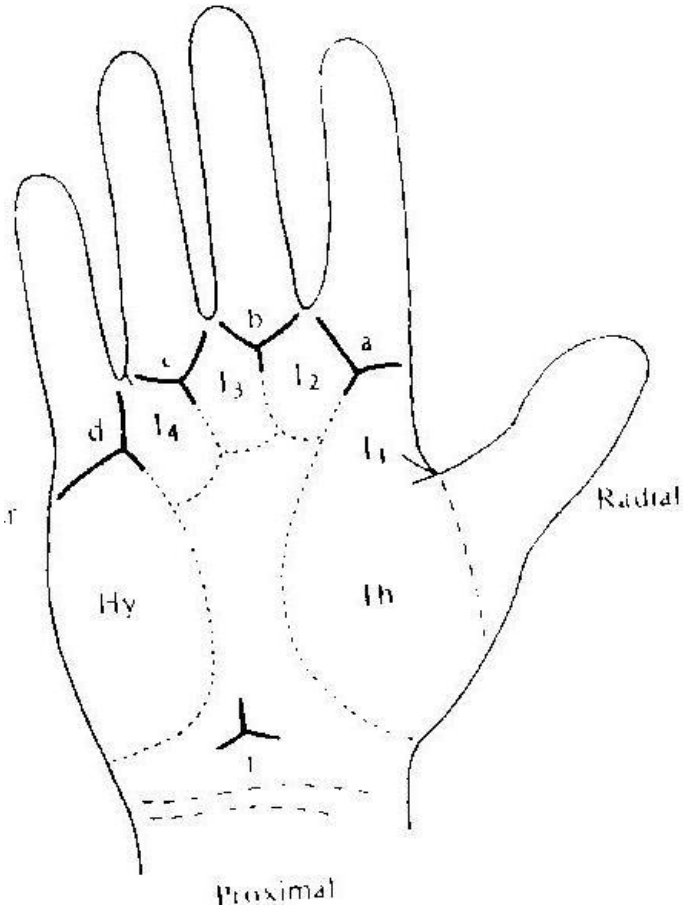


Fig.2. Palmar dermatoglyphic patterns

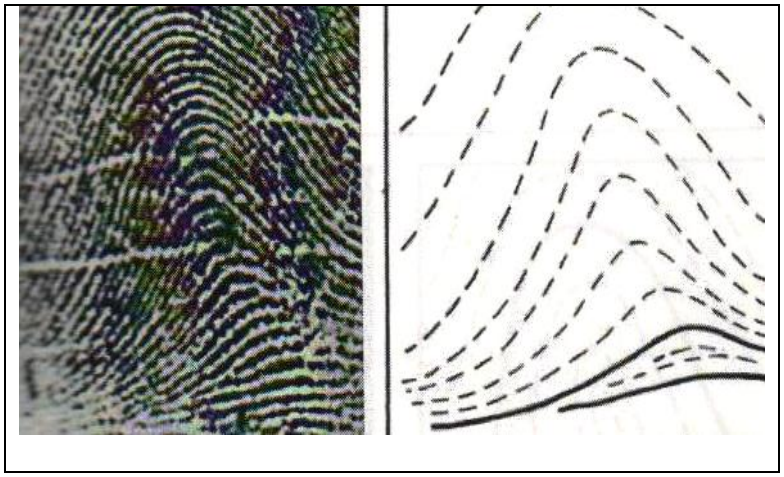


Fig.3. Fingertip pattern-simple arch

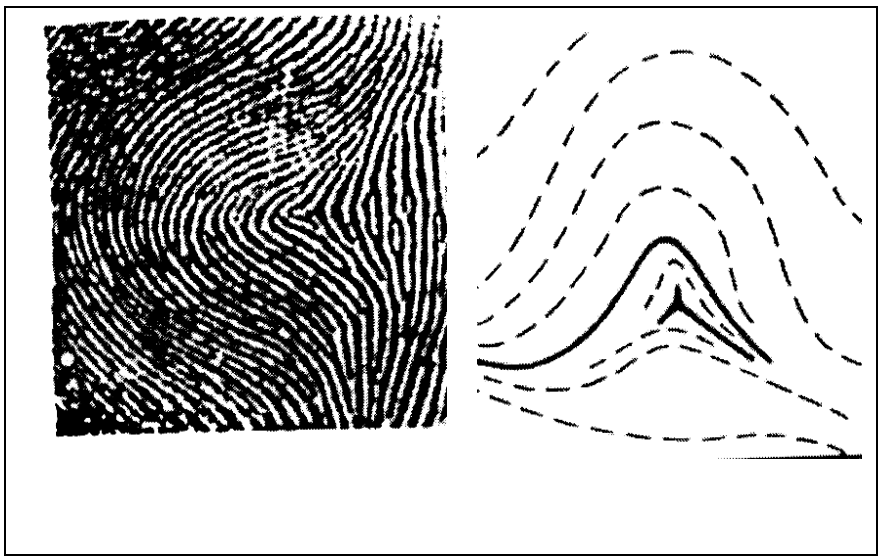


Fig. 3. Fingertip pattern- tented arch

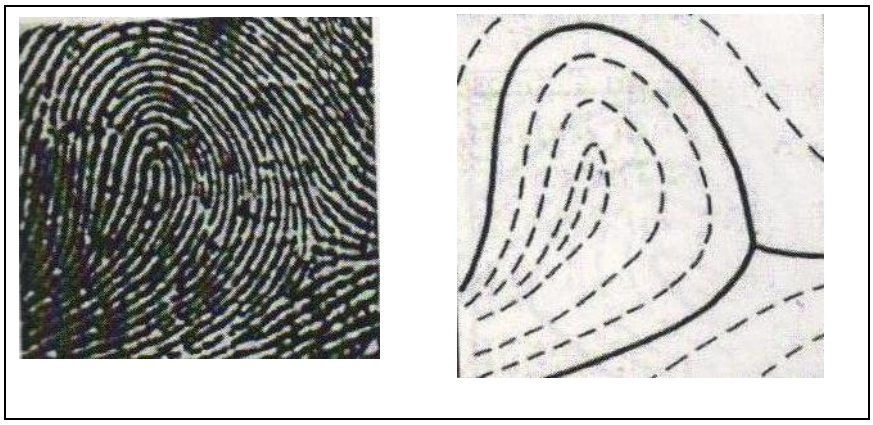


Fig. 4. Fingertip pattern- ulnar loop/radial loop

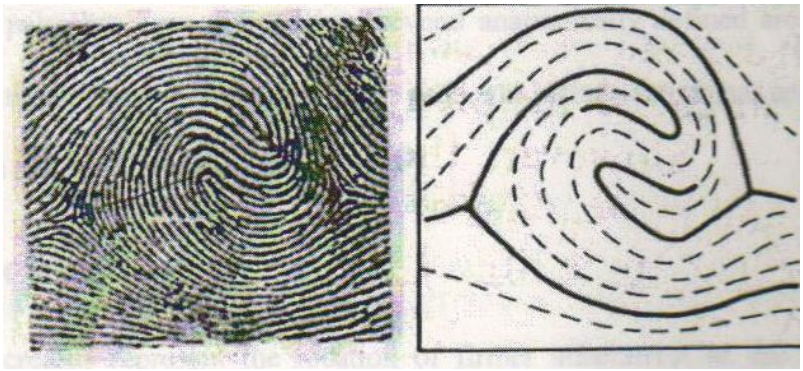


Fig. 5. Fingertip pattern-simple whorl

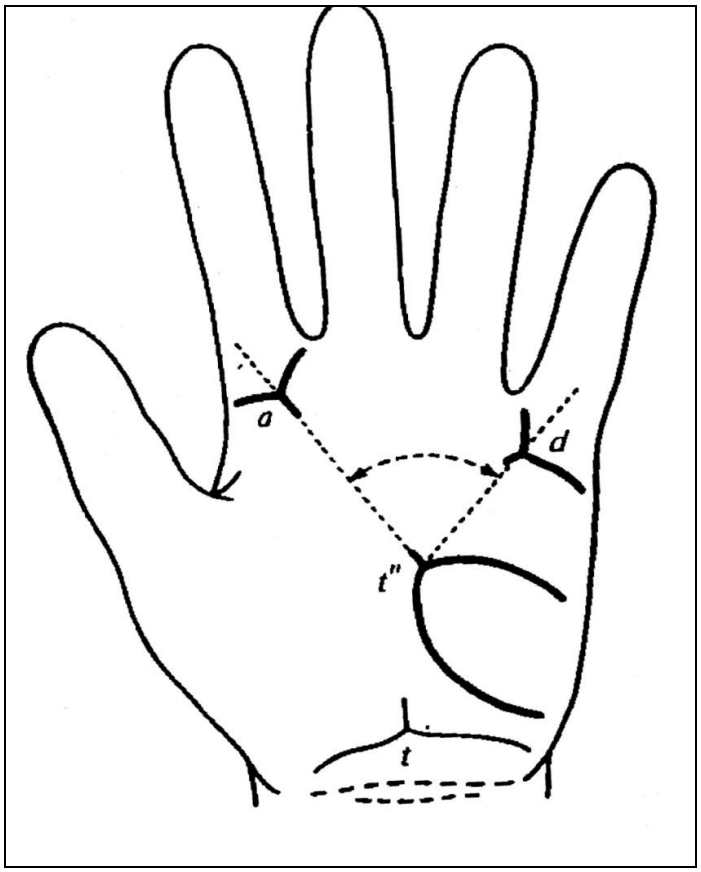
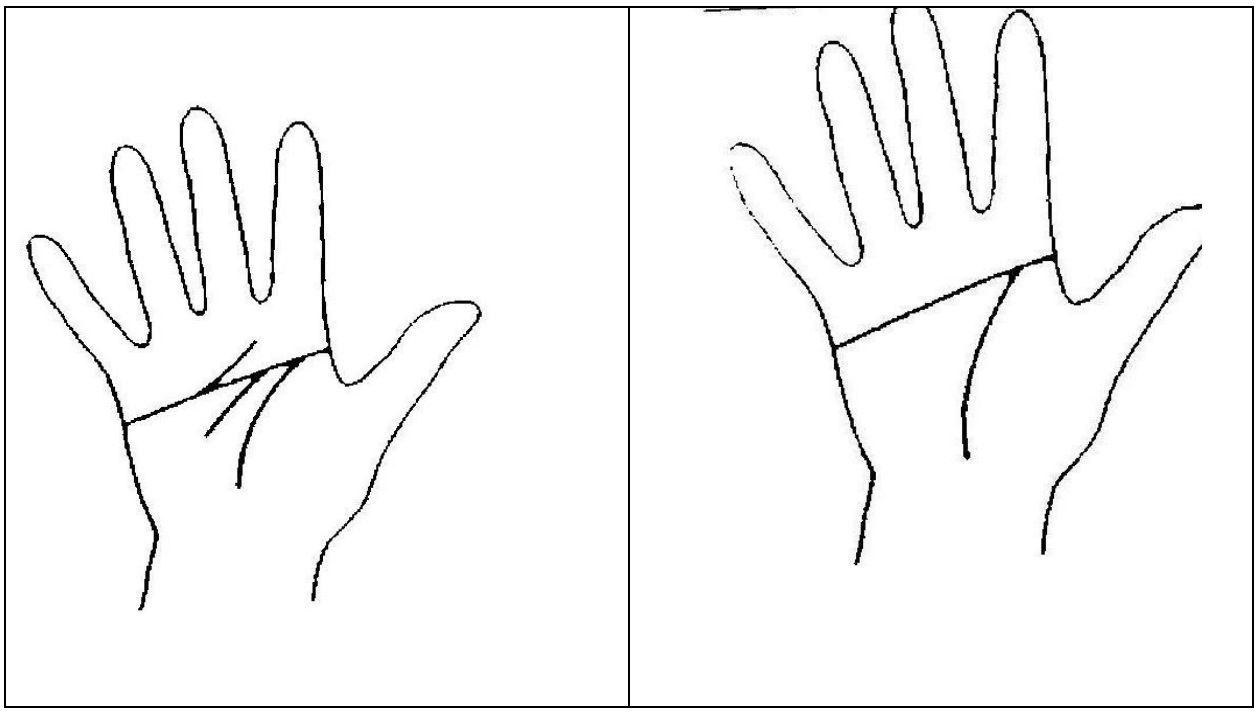


Fig. 6‘at”d’Angle

Fig.7. Simian crease



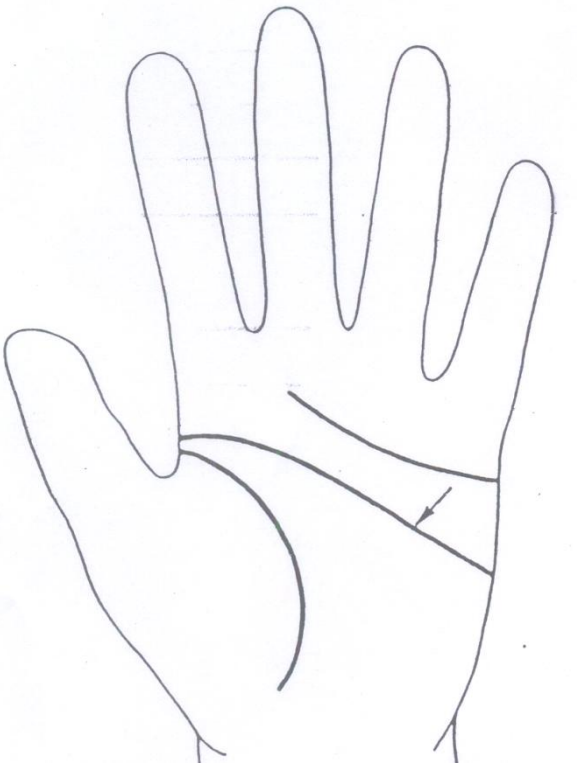


Fig.8.Sydney crease or line

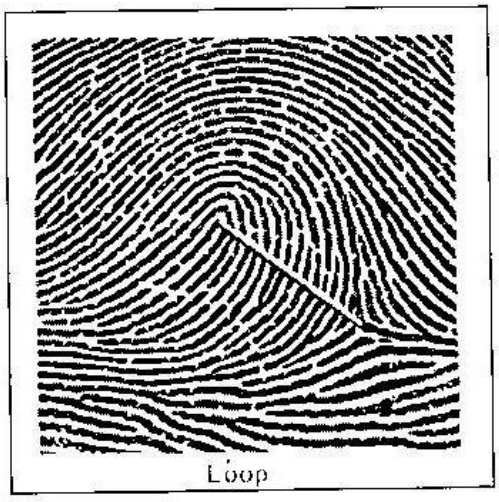
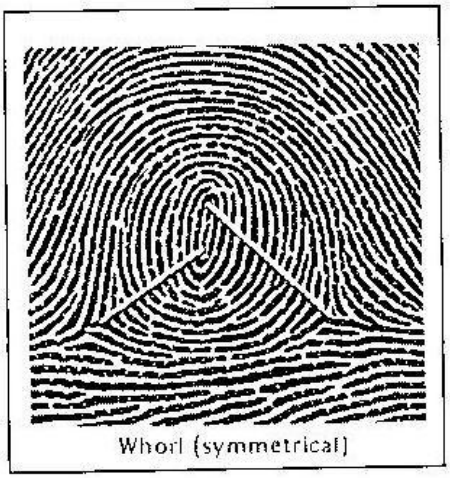


Fig. 9. Method of ridge counting in loop.



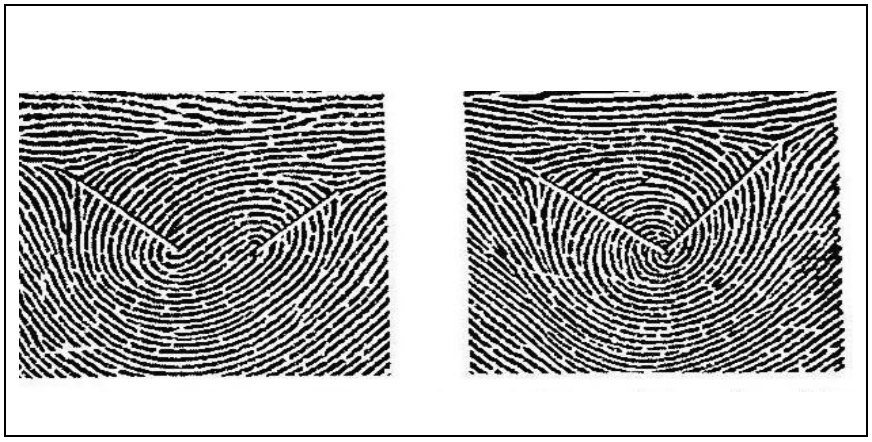


Fig. 10. Method of ridge counting in Whorl

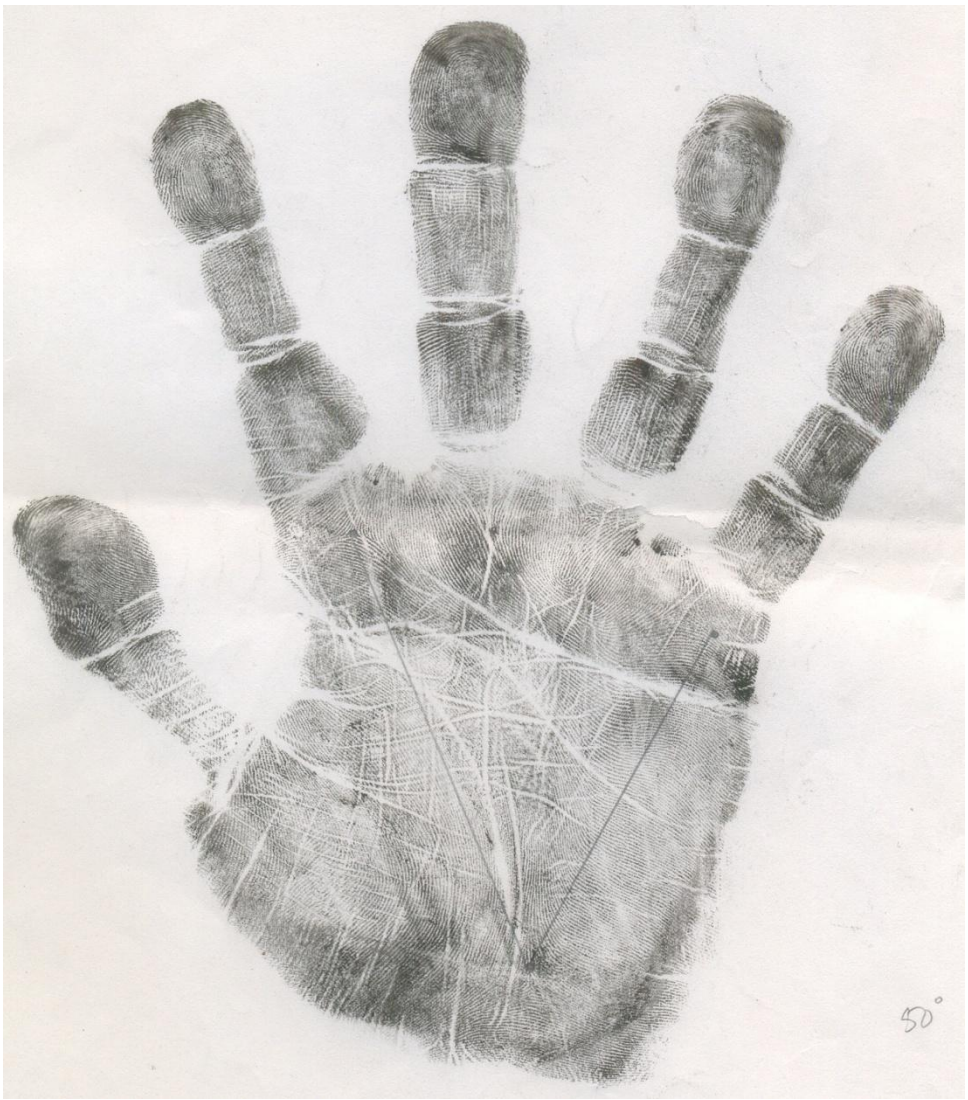


Fig- 11. Hand print of ‘atd’angle.

MATERIAL AND METHODS

Material used:-

1. Wooden table of suitable height.
2. 'Kores' duplicating ink.
3. Roller.
4. White crystal bond paper.
5. Soap, water and towel
6. Magnifying lens
7. Needle, Scale

Method:-

The materials used are stamp pad, bond paper and roller. The modified Purvis Smith method was applied. Patients were asked to wash both their hands with soap and water so as to remove any oil or dirt. Black duplicating ink (Kores, Bombay) was smeared on both hands one by one and prints were taken by rolling the hands from wrist creases to finger tips on the roller covered with bond paper.

Fingerprints:-

The distal phalanges of person's right hand were inked over the tile by firm pressure on the dorsum, starting from little finger. The distal phalanges of left hand were similarly inked.

White crystal bond paper, applied firmly over a wooden pad, was used for recording the inked epidermal ridge patterns. Rolled finger prints were recorded after applying uniform pressure on white bond paper as following order. [Ulnar to radial side].[10]

Right Hand

Thumb → Index Finger → Middle Finger → Ring finger →

(R_1) (R_2) (R_3) (R_4)

Little Finger

(R_5)

Left Hand

Thumb → Index Finger → Middle Finger → Ring finger →

(L_1) (L_2) (L_3) (L_4)

Little Finger

(L_5)

Palm Print:-

Palm prints of both hands were obtained after inking them with help of rubber roller. A white crystal bond paper was wrapped around a wooden rod placed on the table. The hand was horizontally placed against it and the rod was gradually rolled on the table. Complete palm impression, including the hollow of the palm was obtained over paper. Thus one set of finger prints and palm prints was obtained.

The prints obtained were immediately examined with hand-lens and care was taken to include all essential details. Dermatoglyphics of sole and toes were not recorded.

Collection of Data:-

With the help of above method, finger and palm prints of 220 eczema patients in the age group of 20-50 years were obtained from:

1. Department of Dermatology, Venerology and Leprology. BLDEU'S Shri B.M.PATIL Medical college, Hospital and Research Centre, Bijapur.

Finger and palm prints of 150 normal people for control of same age group were obtained from

1. Staff of BLDEU'S Shri B.M. PATIL Medical college, Hospital and Research Centre , Bijapur
2. Post Graduate residential doctors of BLDEU'S Shri B.M.PATIL Medical college, Hospital and Research Centre , Bijapur

All the data were analyzed qualitatively and quantitatively. Findings of each case were recorded in separate forms.

Method of Data Collection

Sample Size:

It is expected to consider a sample of 220 eczema patients for the desired conclusion with prevalence rate of 5.5% [37] at 3% margin of error and 95% confidence level using the statistical formula as follows.

. $n=(1.96)^2 P(1-P) \div d^2$

Where n = sample size, P = prevalence rate, d=margin of error.[38]

The study was carried out for a period of one year six months from November 2009 to april 2011 with maximum sample of 220 patients of eczema confirmed by clinical history, examination, in the age group of 20-50 years of either sex (133 males and 87 females) and 150 normal healthy subjects (75 males and 75 females) of identical age group and either sex served as control.

Type of Study:

The quantitative study includes total finger ridge count (TFRC), absolute finger ridge count (AFRC), mean 'atd' angle.

The qualitative study includes finger print patterns (whorls, radial loops, ulnar loops and arches) and palmar pattern (simian line and Sydney line).

Statistical analysis for quantitative analysis, the arithmetic mean and standard deviation were calculated, 'Z' test was applied. For qualitative analysis, the 'Chi' square test was applied whenever necessary.[38]

Inclusion Criteria:

Diagnosis of eczema is made clinically on various signs- which include erythema,swelling of the skin,oozing and or vesiculation, crusting and scaling, lichenification or thickening and evidences of repeated excoriation, hyperpigmentation and or hypopigmentation.

Exclusion Criteria:

Patients with deformed fingers and palms, infections and injuries like burns of fingers and palms, scars of burns of fingers and palms of both hands were excluded from the study. Allergic contact dermatitis is excluded.

To analyze finger pattern frequency, the fingertip pattern configurations were classified as arches (A), loops (L), whorls W). The arches were further recorded as simple (A), or tented (A^t) arches depending upon the presence or absence of a triradius. For statistical purpose, both were grouped together as arches only.

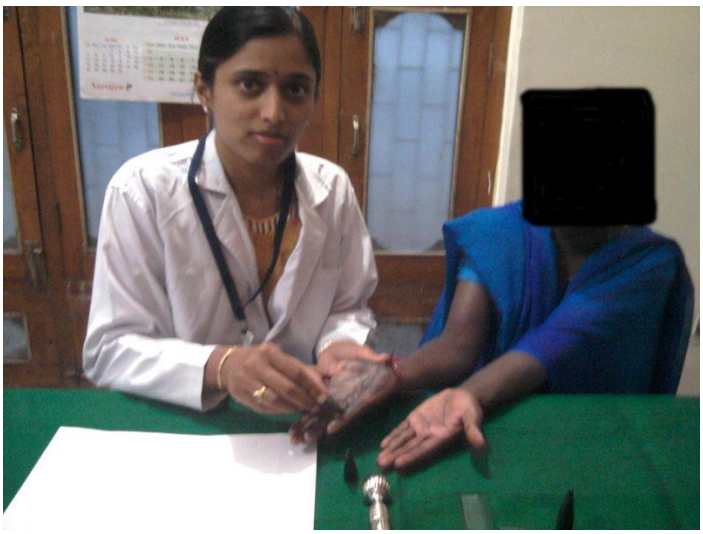
Loops (L) were recorded as ulnar or radial depending upon the side on which it opened and whorls were recorded as double loop whorls and whorls. But for quantitative analysis, they were grouped together and were called as whorls.

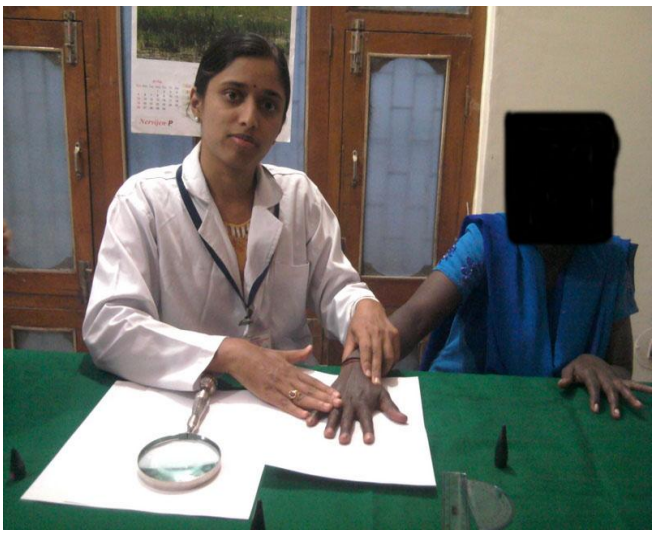
'P' value is probability rate at 0.05 level of significance for the corresponding degree of freedom.

$P<0.05$ is significant.

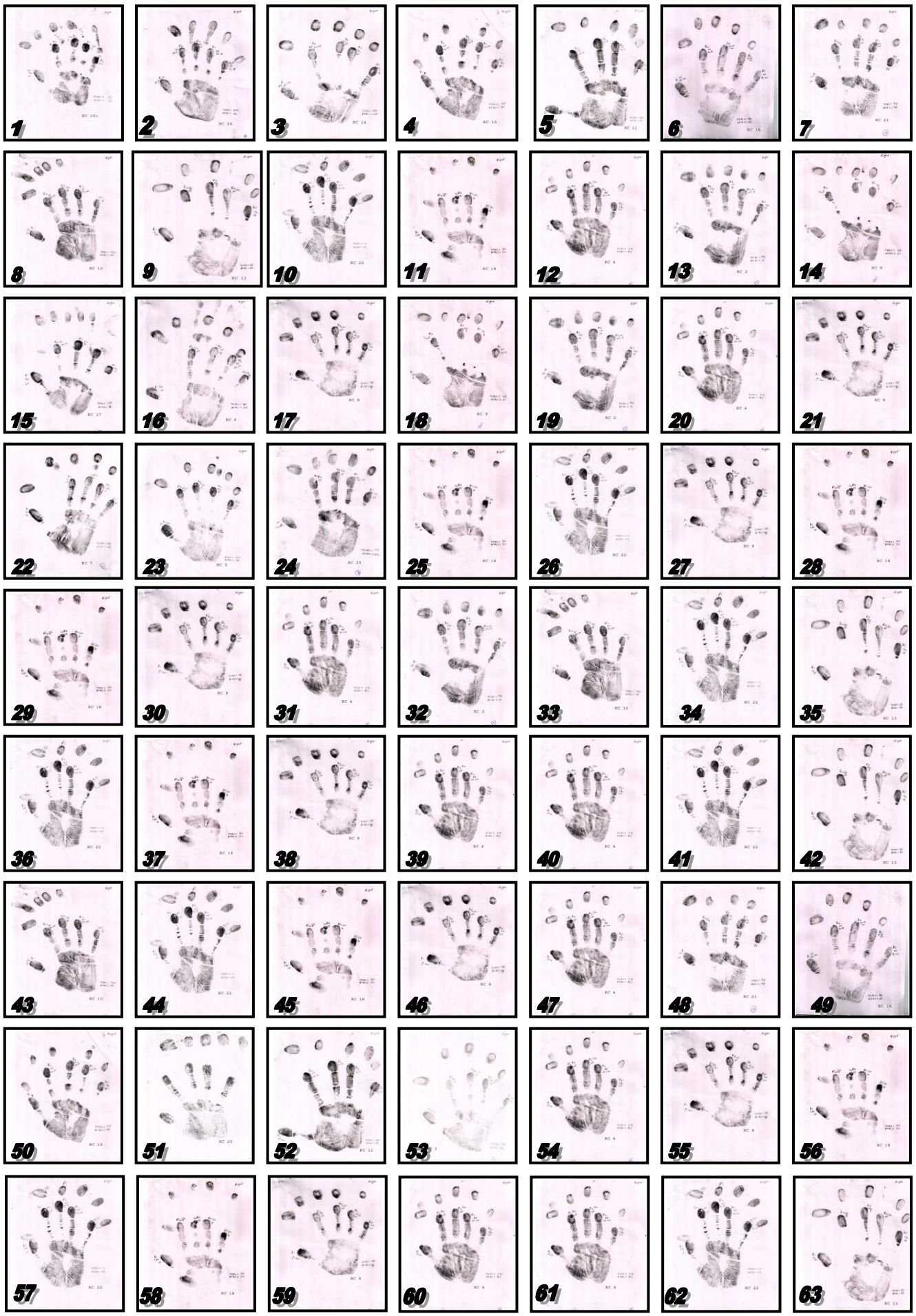
$P>0.05$ is not-significant.

Material and Methods





Male cases Right Hand 1-133

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Male cases left hand 1-133


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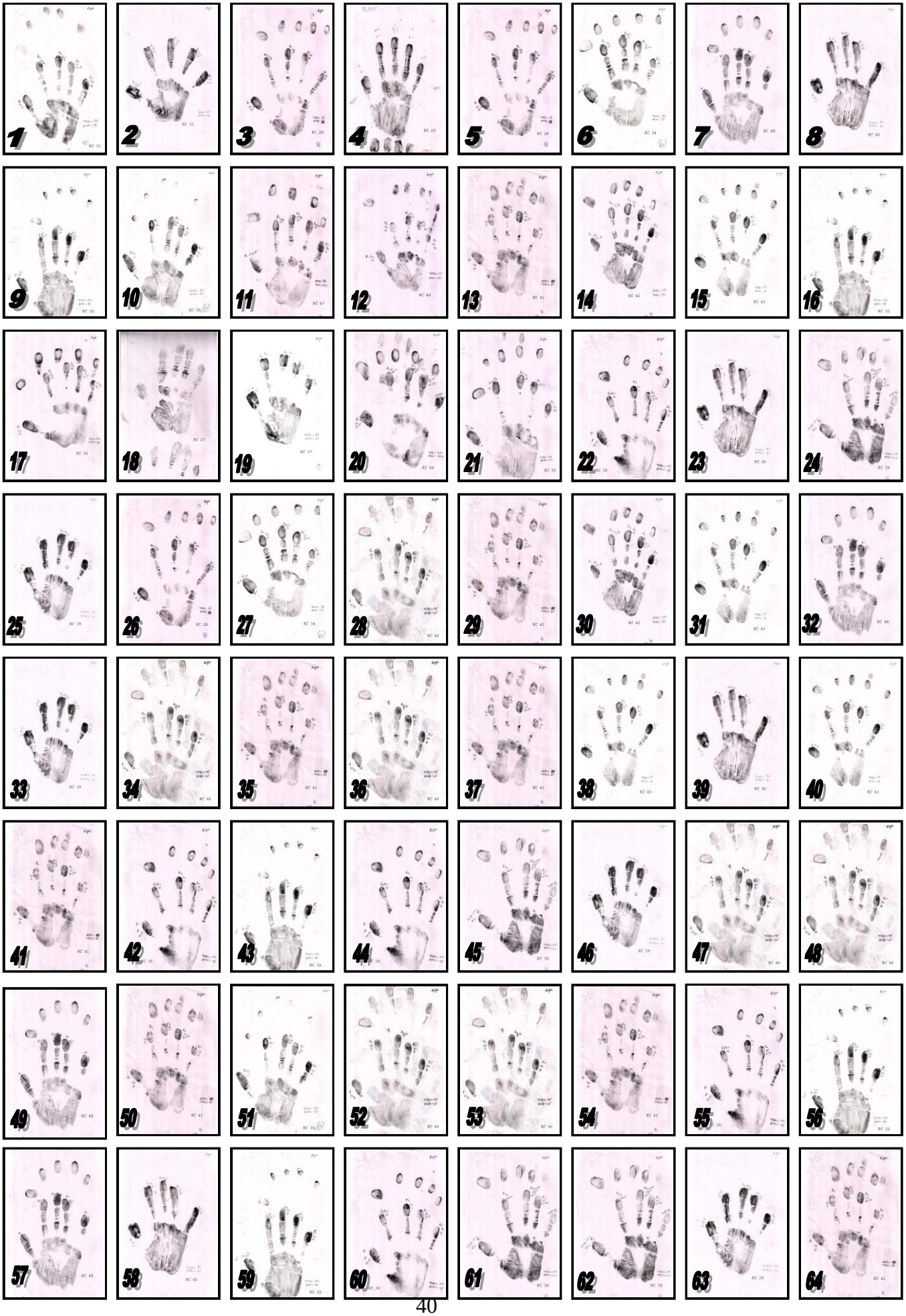
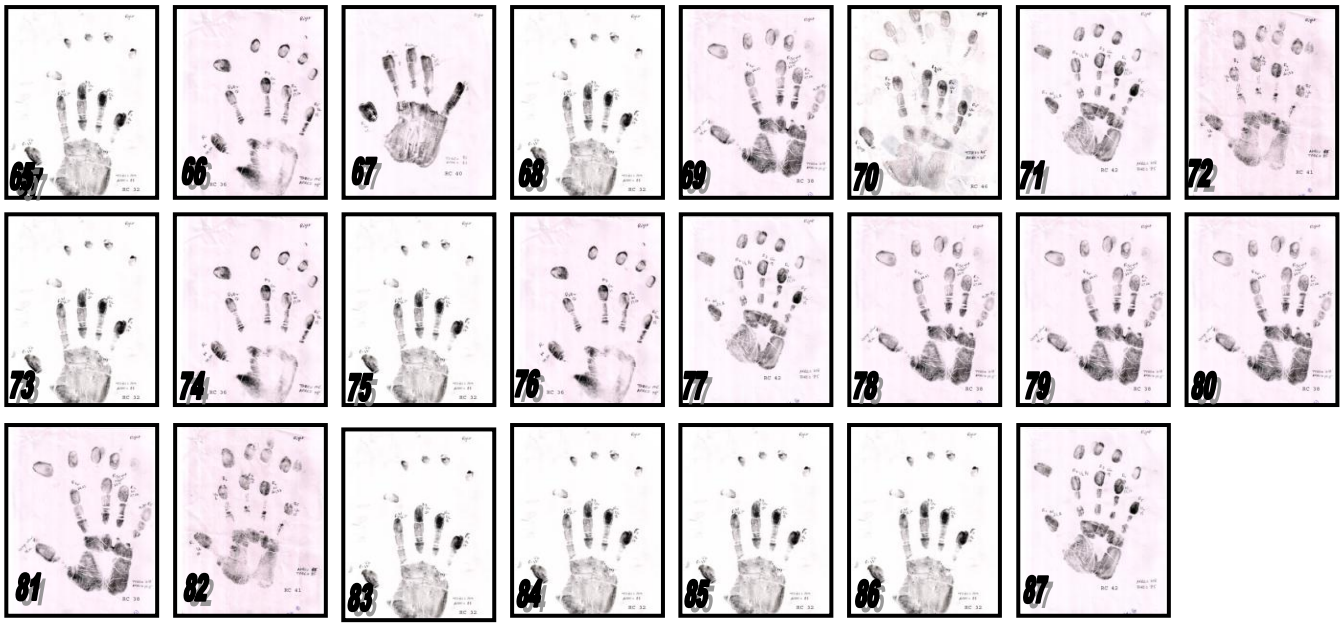
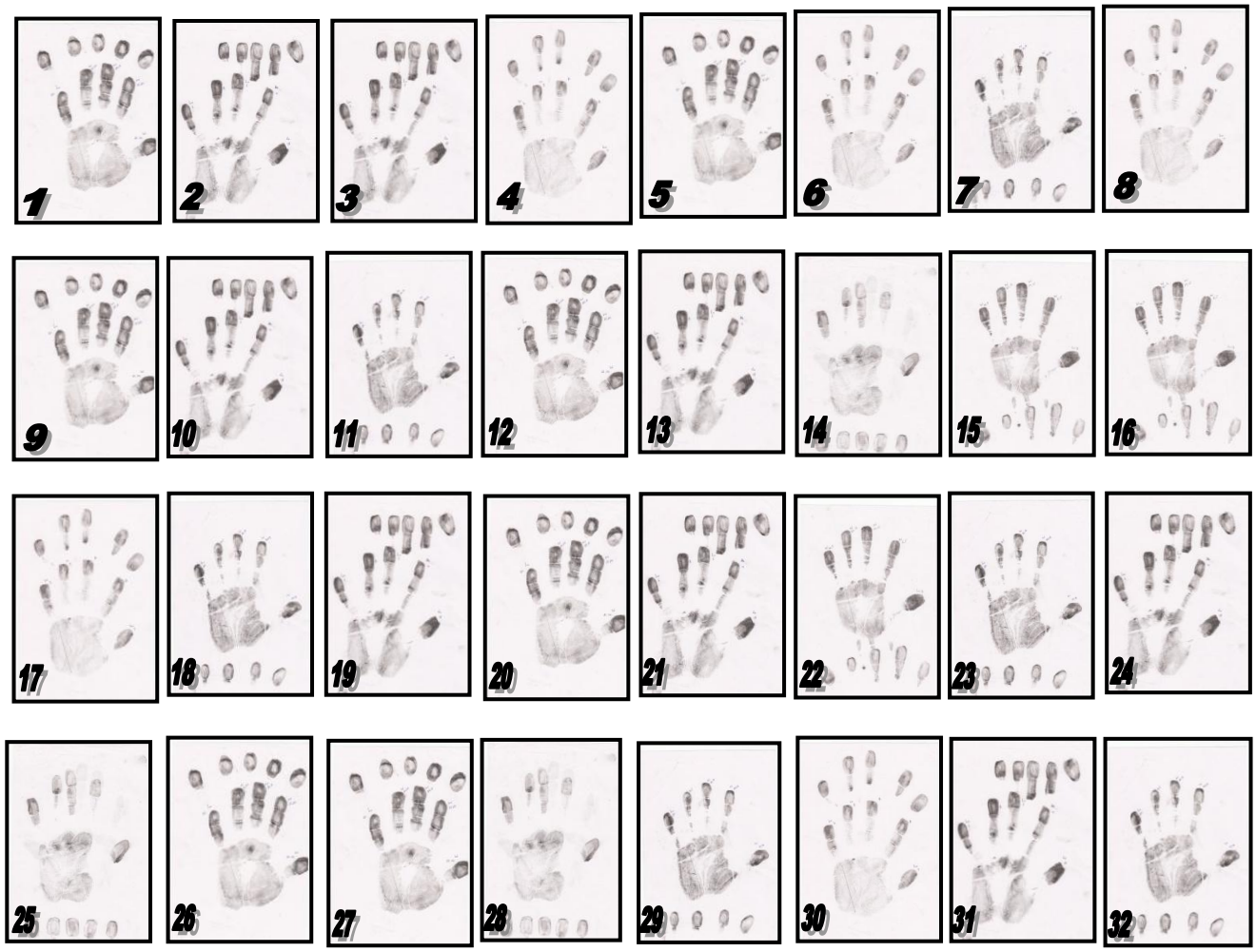
Female cases Right hand 1-87





Female cases left hand 1-87

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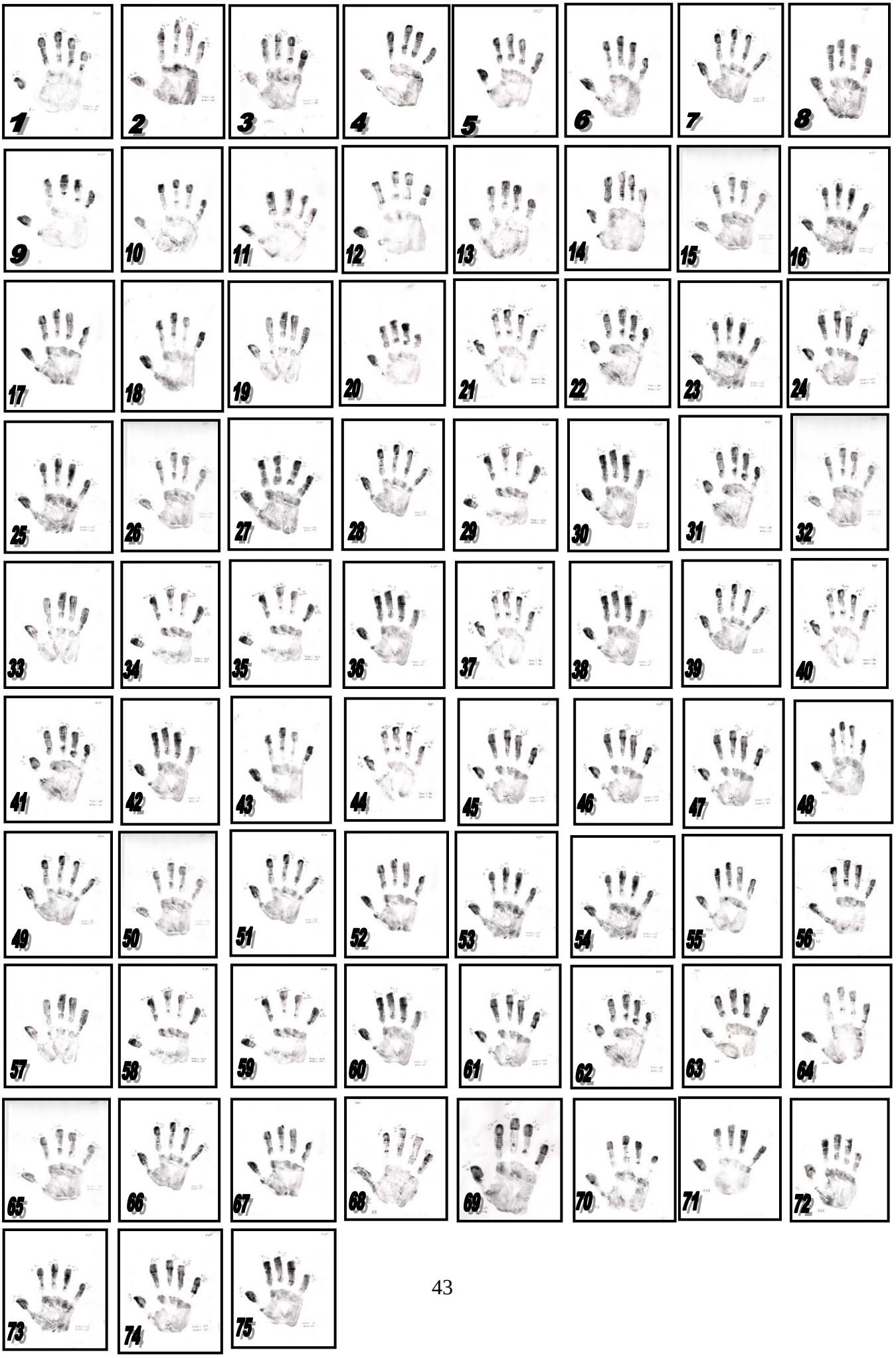
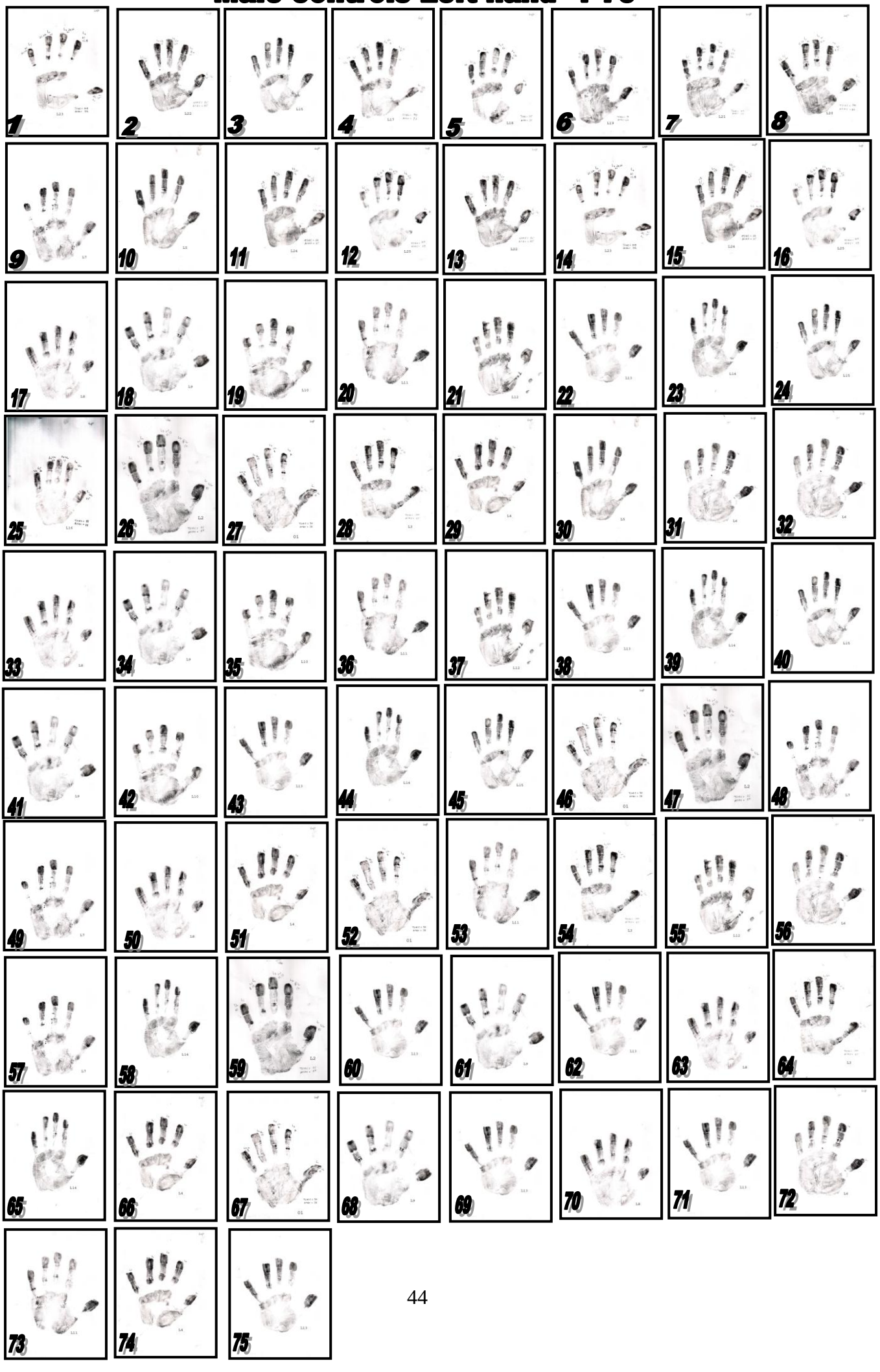
Male controls Right hand 1-75



Male controls Left hand 1-75



Female controls Right Hand 1-75

Female controls Left Hand 1-75

OBSERVATIONS

Development of dermatoglyphic pattern is under genetic control. Hence qualitative and quantitative study of dermatoglyphic traits may give us a clue to the susceptibilityof eczema.

In present study, 220 eczema patients (133 males and 87 females) in the age group of 20-50 years were studied. For such traits observations were compared with 150 normal control group of people of identical age group (75 males and 75 females).

The Quantitative Analysis includes:

- The Total Finger Ridge Count (TFRC)
- Absolute Finger Ridge Count (AFRC)
- 'atd' Angle

The Qualitative Analysis includes

- Analysis fingertip patterns of
  - Right hand and left hand separately
  - Right hand and left hand combined
- Abnormal palmar creases Sydney line (Sy line) and simian line(Sm line).

The arithmetic mean and standard deviation were calculated and Z- test was applied.

Fingertip patterns:-

Fingertip patterns were studied in both groups for arches (A), ulnar loops (L_u) and radial loops (L_r) and whorls (W).

TABLE NO.1

DIGIT WISE FREQUENCY OF PATTERN IN MALE STUDY GROUP.

Digit	Arches(A)		Radial Loops L_r)		Ulnar Loops (L_U)		Whorls (W)	
	No	%	No	%	No	%	No	%
R_1	11	8.27	0	0.00	66	49.62	56	42.11
R_2	21	15.79	9	6.77	50	37.59	53	39.85
R_3	6	4.51	2	1.50	86	64.66	39	29.32
R_4	3	2.26	0	0.00	49	36.84	81	60.90
R_5	4	3.01	1	0.75	84	63.16	44	33.08
L_1	9	6.77	0	0.00	69	51.88	55	41.35
L_2	13	9.77	16	12.03	52	39.10	52	39.10
L_3	7	5.26	2	1.50	86	64.66	38	28.57
L_4	2	1.50	1	0.75	60	45.11	70	52.63
L_5	3	2.26	3	2.26	95	71.43	32	24.06

TABLE NO 2

DIGIT WISE FREQUENCY OF PATTERN IN MALE CONTROL GROUP

Digit	Arches(A)		Radial Loops L_r)		Ulnar Loops (L_U)		Whorls (W)	
	No	%	No	%	No	%	No	%
R_1	5	6.67	0	0.00	33	44.00	37	49.33
R_2	12	16.00	2	10.67	20	26.67	35	46.67
R_3	5	6.67	0	0.00	48	64.00	22	29.33
R_4	2	2.67	0	0.00	23	30.67	50	66.67
R_5	1	1.33	1	1.33	50	66.67	23	30.67
L_1	5	6.67	0	0.00	38	50.67	32	42.67
L_2	7	9.33	9	12.00	21	28.00	38	50.67
L_3	4	5.33	0	0.00	38	50.67	33	44.00
L_4	3	4.00	1	1.33	30	40.00	41	54.67
L_5	1	1.33	1	1.33	58	77.33	15	20.00

Table no. 1 and 2 shows:

R_1 - There is decrease in whorls and increase in arches and ulnar loops in patients as compared to controls.

R_2 - There is decrease in arches, whorls and radial loops and increase in ulnar loops in patients as compared to controls.

R_3 - There is decrease in arches, whorls and increase in radial loops, ulnar loops in patients as compared to controls.

R_4 There is decrease in arches, whorls and increase in ulnar loops in patients as compared to controls.

R_5 - There is decrease in radial loops and ulnar loops and increase in arches and whorls in patients as compared to controls.

L_1 - There is decrease in whorls and increase in arches and ulnar loops in patients as compared to controls.

L_2 - There is decrease in whorls and increase in ulnar loops, arches, radial loops in patients as compared to controls.

L_3 - There is decrease in arches and whorls and increase in ulnar loops and radial loops in patients as compared to controls.

L_4 - There is decrease in arches, Whorls and increase in ulnar loops and radial loops in patients as compared to controls.

L_5 - There is decrease in arches and ulnar loops and increase in whorls and radial loops, in patients as compared to controls.

TABLE NO.3

DIGIT WISE FREQUENCY OF PATTERN IN FEMALE STUDY GROUP.

Digit	Arches(A)		Radial Loops L_r)		Ulnar Loops (L_U)		Whorls (W)	
	No	%	No	%	No	%	No	%
R_1	2	2.30	1	1.15	57	65.52	27	31.03
R_2	6	6.90	9	10.34	45	51.72	27	31.03
R_3	3	3.45	0	0.00	73	83.91	10	11.49
R_4	3	3.45	0	0.00	45	51.72	39	44.83
R_5	6	6.90	0	0.00	65	74.71	16	18.39
L_1	2	2.30	3	3.45	54	62.07	28	32.18
L_2	8	9.20	3	3.45	51	58.62	25	28.74
L_3	3	3.45	1	1.15	67	77.01	16	18.39
L_4	0	0.00	0	0.00	53	60.92	34	39.08
L_5	3	3.45	1	1.15	67	77.01	16	18.39

TABLE NO. 4

DIGIT WISE FREQUENCY OF PATTERN IN FEMALE CONTROLS.

Digit	Arches(A)		Radial Loops L_r)		Ulnar Loops (L_U)		Whorls (W)	
	No	%	No	%	No	%	No	%
R_1	6	8.00	2	2.67	32	42.67	35	46.67
R_2	14	18.67	2	2.67	26	34.67	33	44.00
R_3	5	6.67	0	0.00	53	70.67	17	22.67
R_4	1	1.33	0	0.00	31	41.33	43	57.33
R_5	1	1.33	0	0.00	55	73.33	19	25.33
L_1	3	4.00	1	1.33	45	60.00	26	34.67
L_2	13	17.33	6	8.00	24	32.00	32	42.67
L_3	7	9.33	0	0.00	48	64.00	20	26.67
L_4	2	2.67	2	2.67	35	46.67	36	48.00
L_5	3	4.00	0	0.00	50	66.67	22	29.33

Table no. 3 and 4 shows :

R_1 - There is decrease in arches, whorls and radial loops and increase in ulnar loops in patients as compared to controls.

R_2 - There is decrease in arches, whorls and increase in ulnar loops and radial loops in patients as compared to controls.

R_3 - There is decrease in arches and whorls and increase in ulnar loops in patients as compared to controls.

R_4 -. There is decrease in arches and whorls and increase in ulnar loops in patients as compared to controls.

R_5 - There is decrease in arches and whorls and increase in ulnar loops in patients as compared to controls.

L_1- There is decrease in arches and whorls and increase in ulnar loops and radial loops in patients as compared to controls

L_2 - There is decrease in arches and whorls and radial loops and increase in ulnar loops in patients as compared to controls

L_3 . -. There is decrease in arches and whorls and increase in ulnar loops and radial loops in patients as compared to controls

L_4 - There is decrease in whorls and increase in ulnar loops in patients as compared to controls

L_5 -. There is decrease in arches and whorls and increase in ulnar loops and radial loops in patients as compared to controls

TABLE NO.5

FREQUENCY OF PATTERNS IN MALE STUDY GROUP AND CONTROLS

(RIGHT HAND)

Pattern	Study Group		Control Group		Z-Test	P-Value	Inference
	No	%	No	%			
Arches(A)	45	6.77	25	6.67	0.33	0.74	NS
Radial Loops (L_r)	12	1.80	9	2.40	0.80	0.42	NS
Ulnar Loops (L_U)	335	50.38	174	46.40	0.01	0.99	NS
Whorls (W)	273	41.05	167	44.53	0.05	1.00	NS

Table no. 5 Shows Ulnar loops were predominant pattern seen in 50.38% of the patients as compared to 46.40% in controls. While Radial loops were the least common pattern (1.80%) in patients. But this difference is not statistically significant (P>0.05).

GRAPH-1

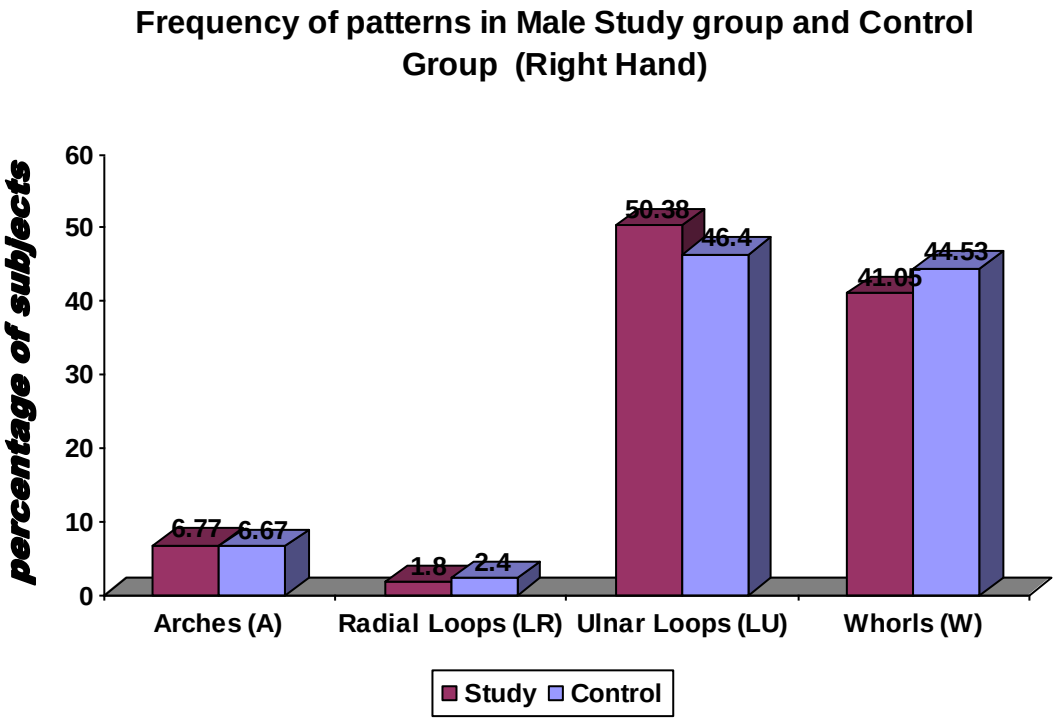

Frequency of patterns in Male Study group and Control Group (Right Hand)
percentage of subjects
60
50
40
30
20
10
0
6.77
6.67
1.8
2.4
50.38
46.4
41.05
44.53
Arches (A)
Radial Loops (LR)
Ulnar Loops (LU)
Whorls (W)
Study
Control

TABLE NO.6
FREQUENCY OF PATTERNS IN MALE STUDY GROUP AND CONTROLS

(LEFT HAND)

Pattern	Study Group		Control Group		Z-Test	P-Value	Inference
	No	%	No	%			
Arches(A)	34	5.11	20	5.33	0.26	0.79	NS
Radial Loops (L_r)	22	3.31	11	2.93	0.54	0.59	NS
Ulnar Loops (L_U)	362	54.44	185	49.33	0.01	0.99	NS
Whorls (W)	247	37.14	159	42.40	0.07	0.94	NS

Table no. 6 shows Ulnar loops were predominant pattern seen in 54.44% of the patients as compared to 49.33% in controls. While Radial loops were the least common pattern (3.31%) in patients , but this difference is not statistically significant (P>0.05).

GRAPH-2

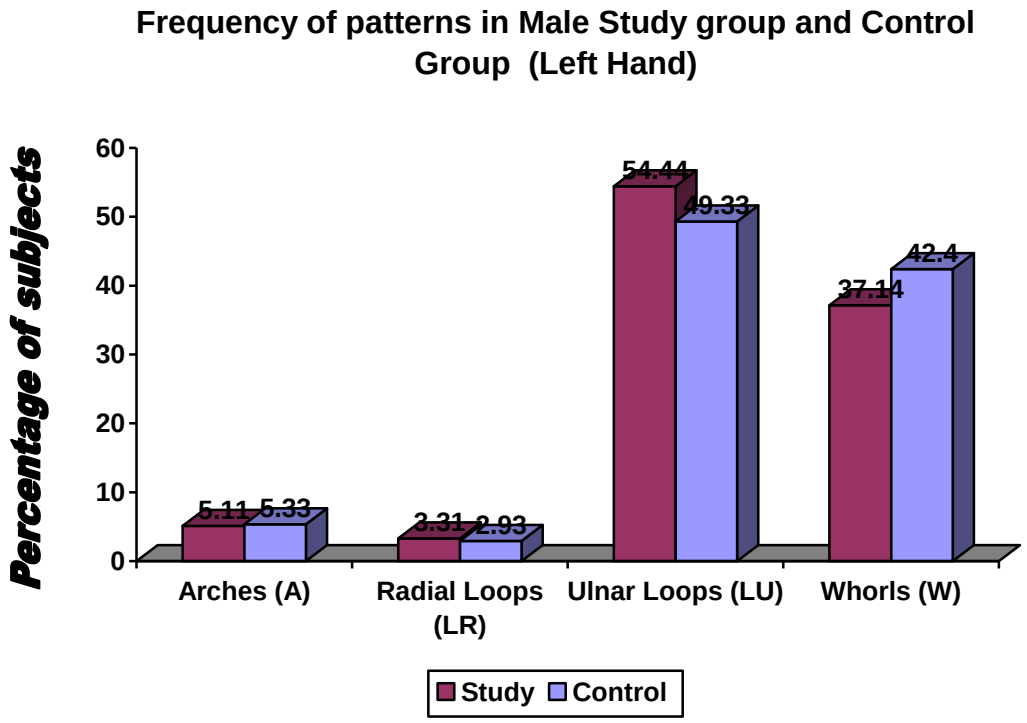

Frequency of patterns in Male Study group and Control Group (Left Hand)
Percentage of subjects
60
50
40
30
20
10
0
5.11
5.33
3.31
2.93
54.44
49.33
37.14
42.4
Arches (A)
Radial Loops (LR)
Ulnar Loops (LU)
Whorls (W)
Study
Control

TABLE NO.7

FREQUENCY OF PATTERNS IN MALE STUDY GROUP AND CONTROLS

(BOTH HANDS)

Pattern	Study Group		Control Group		Z-Test	P-Value	Inference
	No	%	No	%			
Arches(A)	79	5.94	45	6.00	0.13	0.90	NS
Radial Loops (L_r)	34	2.56	20	2.67	0.49	0.62	NS
Ulnar Loops (L_U)	697	52.41	359	47.87	0.00	1.00	NS
Whorls (W)	520	39.10	326	43.47	0.00	1.00	NS

Table no.7 shows Ulnar loops were predominant pattern seen in 52.41% of the patients as compared to 47.87% in controls. While Radial loops were the least common pattern (2.56%) in patients, but this difference is not statistically significant (P>0.05).

GRAPH-3

Frequency of patterns in Male Study group and Control Group (Both Hands)

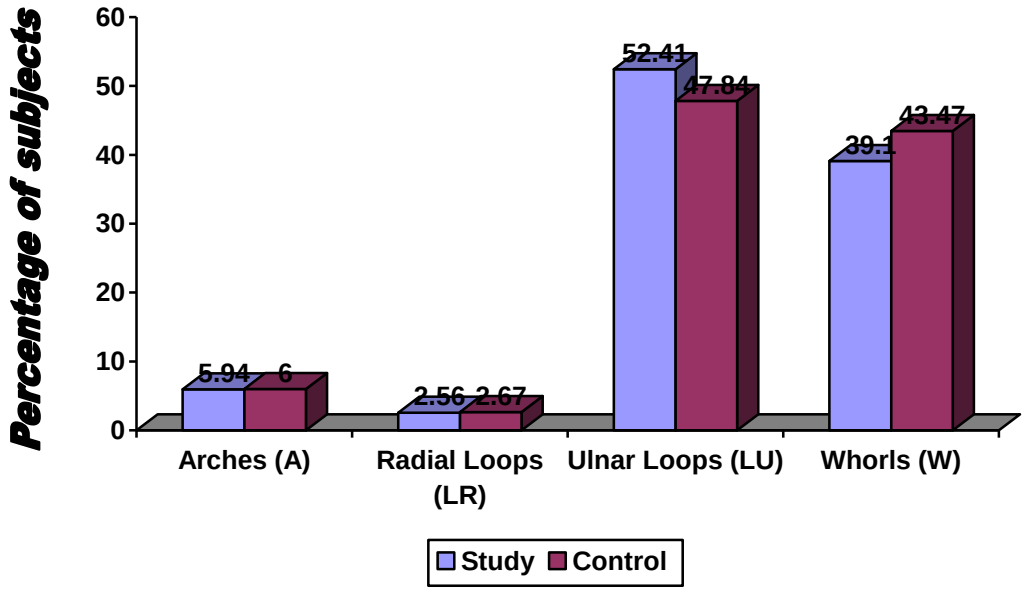


TABLE NO.8

FREQUENCY OF PATTERNS IN FEMALE STUDY GROUP

AND CONTROLS (RIGHT HAND).

Pattern	Study Group		Control Group		Z-Test	P-Value	Inference
	No	%	No	%			
Arches(A)	20	4.61	27	7.20	0.60	0.55	NS
Radial Loops (L_r)	10	2.30	4	1.07	0.54	0.59	NS
Ulnar Loops (L_U)	285	65.67	197	52.53	0.06	0.95	NS
Whorls (W)	119	27.42	147	39.20	0.45	0.65	NS

Table no.8 shows Ulnar loops were predominant pattern seen in 65.67% of the patients as compared to 52.53% in controls. While Radial loops were the least common pattern (2.30%) in patients. But this difference is not statistically significant (P>0.05).

GRAPH-4

Frequency of patterns in Female Study group and Control Group (Right Hand)

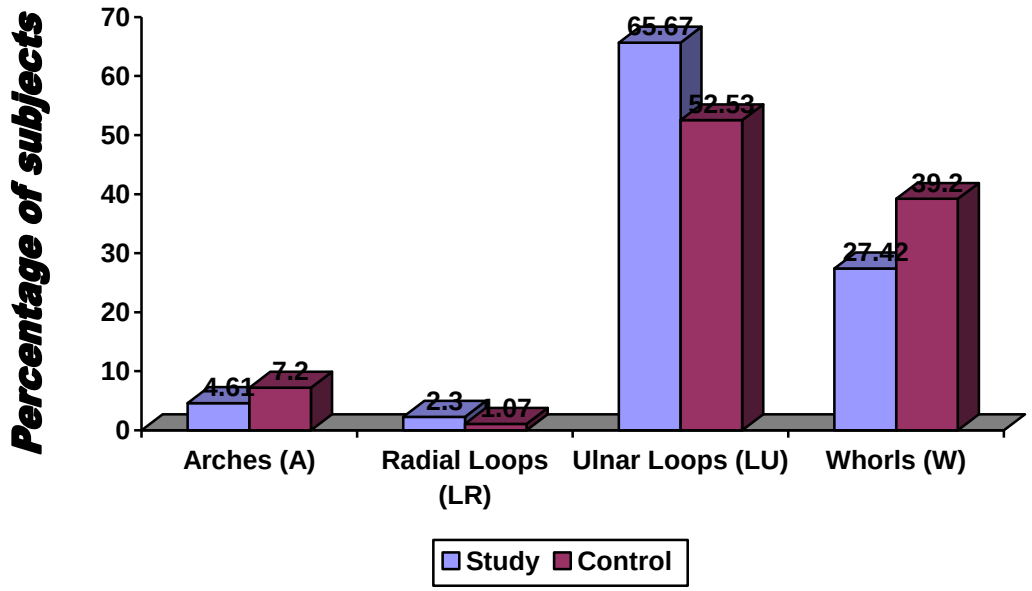


TABLE NO.9

FREQUENCY OF PATTERNS IN FEMALE STUDY GROUP

AND CONTROLS (LEFT HAND)

Pattern	Study Group		Control Group		Z-Test	P-Value	Inference
	No	%	No	%			
Arches(A)	16	3.68	28	7.47	0.36	0.72	NS
Radial Loops (L_r)	8	1.84	9	2.40	0.88	0.38	NS
Ulnar Loops (L_U)	292	67.13	202	53.87	0.02	0.98	NS
Whorls (W)	119	27.36	136	36.27	0.48	0.63	NS

Table no.9. shows Ulnar loops were predominant pattern seen in 67.13% of the patients as compared to 53.87% in controls. While Radial loops were the least common pattern (1.84%) in patients, but this difference is not statistically significant (P>0.05)

GRAPH-5

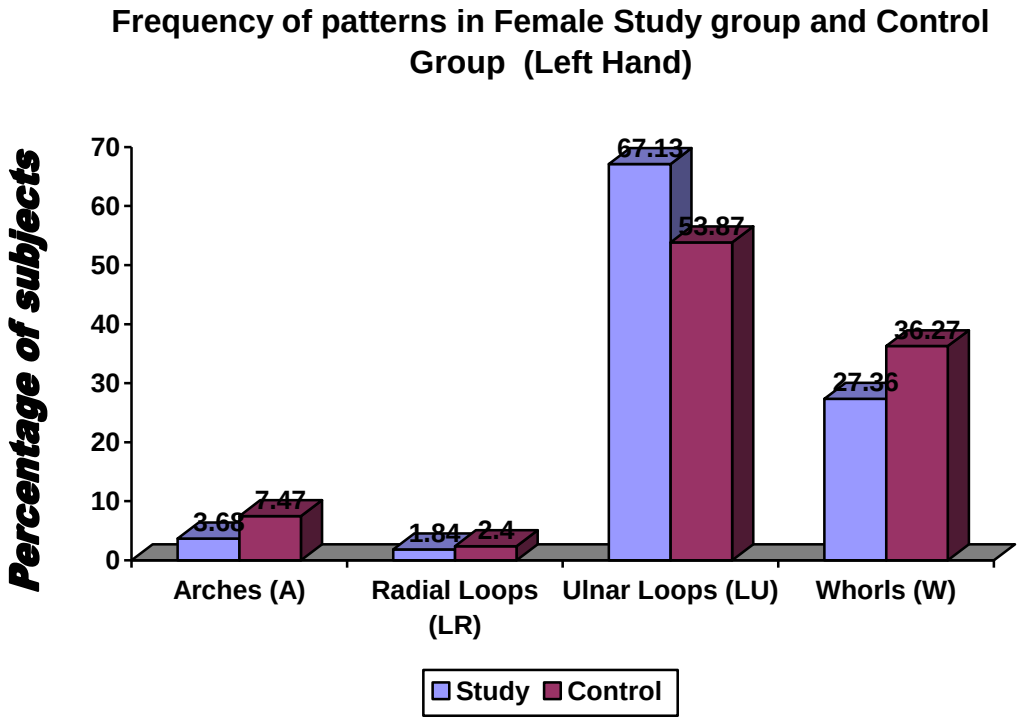

Frequency of patterns in Female Study group and Control Group (Left Hand)
Percentage of subjects
70
60
50
40
30
20
10
0
3.68
7.47
1.84
2.4
67.13
53.87
27.36
36.27
Arches (A)
Radial Loops (LR)
Ulnar Loops (LU)
Whorls (W)
Study
Control

TABLE NO. 10

FREQUENCY OF PATTERNS IN FEMALE STUDY GROUP AND CONTROLS (BOTH HANDS)

Pattern	Study Group		Control Group		Z-Test	P-Value	Inference
	No	%	No	%			
Arches(A)	36	4.14	55	7.33	0.27	0.79	NS
Radial Loops (L_r)	18	2.07	13	1.73	0.64	0.52	NS
Ulnar Loops (L_U)	577	66.40	399	53.20	0.00	1.00	NS
Whorls (W)	238	27.39	283	37.73	0.27	0.79	NS

Table no.10. shows Ulnar loops were predominant pattern seen in 66.40% of the patients as compared to 53.20% in controls. While Radial loops were the least common pattern (2.07%) in patients, but this difference is not statistically significant (P>0.05).

GRAPH-6

Frequency of patterns in Female Study group and Control Group (Both Hands)

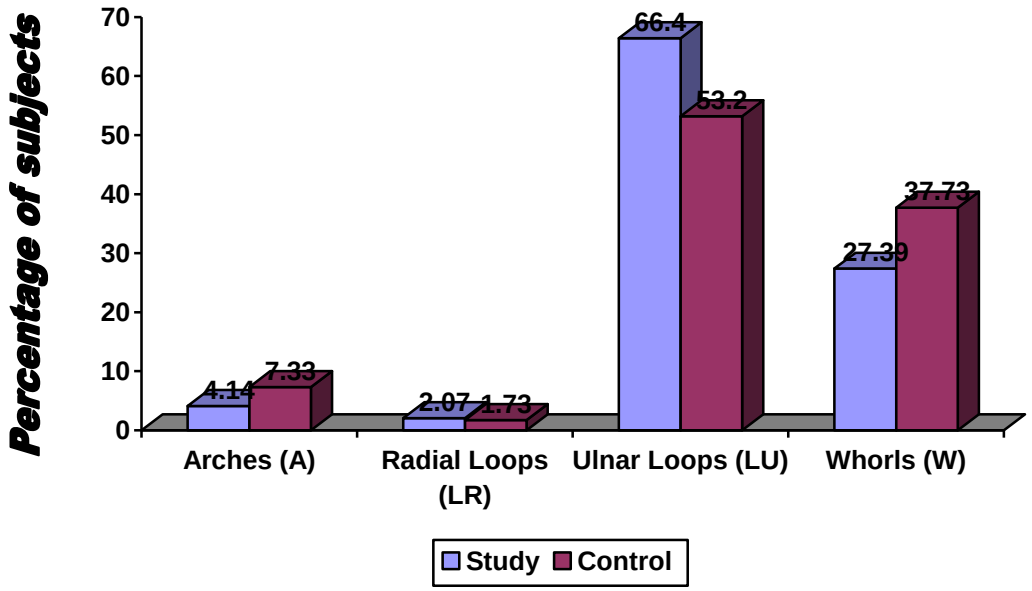


TABLE NO. 11

FREQUENCY OF PATTERNS IN MALE & FEMALE STUDY GROUP AND CONTROLS (BOTH HANDS)

Pattern	Study Group		Control Group		Z-Test	P-Value	Inference
	No	%	No	%			
Arches(A)	115	5.23	100	6.67	0.05	0.96	NS
Radial Loops (L_r)	52	2.36	33	2.20	0.17	0.86	NS
Ulnar Loops (L_U)	1274	57.94	758	50.53	0.00	1.00	NS
Whorls (W)	758	34.47	609	40.60	0.00	1.00	NS

Table No. 11 shows Ulnar loops were predominant pattern seen in 57.94% of the patients as compared to 50.53% in controls. While Radial loops were the least common pattern (2.36%) in cases as compared to controls but this difference is not statistically significant (P>0.05).

GRAPH-7

Frequency of patterns in Male & Female Study group and Control Group (Both Hands)

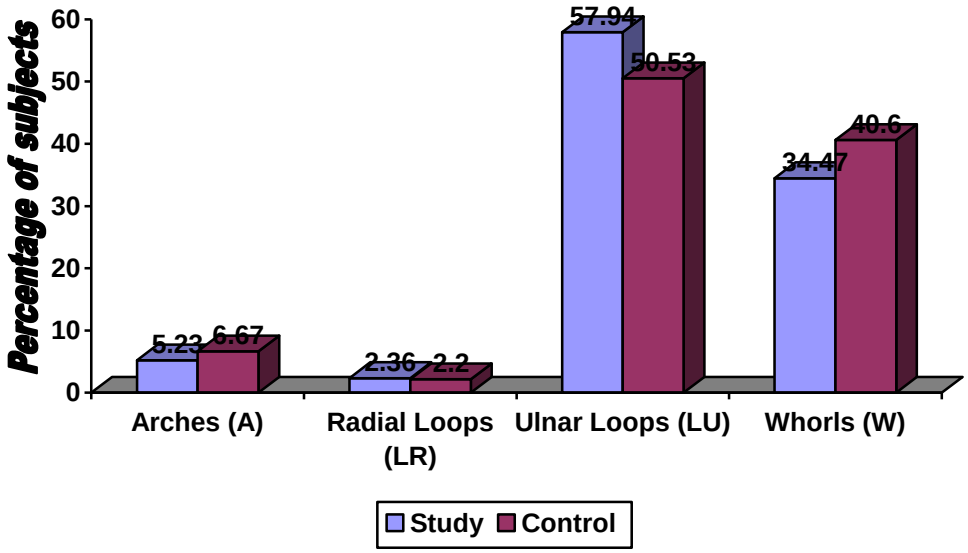


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TABLE NO.12

PRESENCE OF SYDNEY LINE IN MALES

Hands	Study Group (%)	Control Group (%)	Z-Test	P-Value	Inference
Right	1 (0.75%)	5(6.66%)	2.08	P < 0.038	Significant
Left	1 (0.75%)	5(6.66%)	2.08	P < 0.038	Significant

Table no.12 shows that the Sydney crease is very rare. 0.75% of study group in males had Sydney line as compared to 6.66% of controls in both cases and controls. It is statistically significant. (P<.038)

TABLE NO.13

PRESENCE OF SYDNEY LINE IN FEMALES

Hands	Study Group (%)	Control Group (%)
Right	2 (2.20%)	0 (0%)
Left	0 (0.00%)	7 (9.33%)

Table no.13 shows that the Sydney line is very rare.

2.20% of study group in females had Sydney line in right hand as compared to none of controls. 9.33% of control group had Sydney line in left hand as compared to none in patients. Z test cannot be applied to zero sample size.

TABLE NO.14

PRESENCE OF SIMIAN LINE IN MALES

Hands	Study Group (%)	Control Group (%)	Z-Test	P-Value
Right	1 (0.75%)	1 (1.33%)	0.38	P = 0.708
Left	0 (0.00%)	1 (1.33%)	---	---

Table no.14 shows that the Simian line is also very rare. On left side, simian line was not seen in study group while 1.33% of control had . On right hand, 0.75% of patients had simian line while 1.33% of control subjects had. It is not significant statistically (P>.05). Z test cannot be applied to zero sample size in as seen in left hand.

TABLE NO.15

PRESENCE OF SIMIAN LINE IN FEMALES

Hands	Study Group (%)	Control Group (%)
Right	1 (1.14%)	0 (0.00%)
Left	0 (0.00%)	0 (0.00%)

Table no.15 shows that the Simian line is also very rare. Simian line was not seen in any control female subjects compared to 1.14% in cases on right side but none on left side . Z test cannot be applied to zero sample size.

TABLE NO.16

MEAN TOTAL FINGER RIDGE COUNT (TFRC) IN MALES

Study Group Mean (SD)	Control Group Mean (SD)	Z-Test	P-Value	Inference
140 (46.79)	158 (48.23)	2.63	P < 0.008	Significant

Table no.16 shows that the Mean Total Finger Ridge Count (TFRC) in Male patients was lower 140 with S.D. of 46.79 as compared to male control group which had TFRC 158 with S.D. of 48.23. This difference is Significant. (Z test=2.63 and P<.008)

GRAPH-8

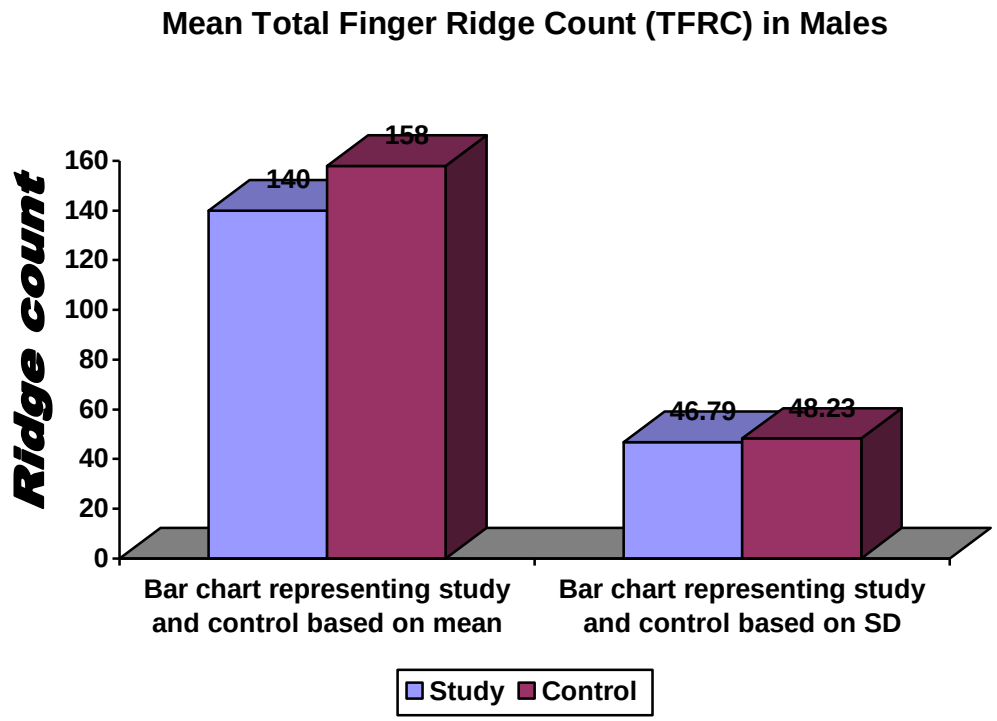
Mean Total Finger Ridge Count (TFRC) in Males
Ridge count
160
140
120
100
80
60
40
20
0
140
158
46.79
48.23
Bar chart representing study and control based on mean
Bar chart representing study and control based on SD
Study
Control

TABLE NO.17

MEAN TOTAL FINGER RIDGE COUNT (TFRC) IN FEMALES

Study Group Mean (SD)	Control Group Mean (SD)	Z-Test	P-Value	Inference
141 (40.90)	113 (37.72)	4.87	P < 0.0001	Highly Significant

Table no.17 shows that the Mean Total Finger Ridge Count (TFRC) in female patients was higher 141 with S.D. of 40.90 as compared to Female control group which had TFRC 113 with S.D. of 37.72. This difference is statistically highly significant (Z- test =4.87 and P<.0001).

GRAPH-9

Mean Total Finger Ridge Count (TFRC) in Females

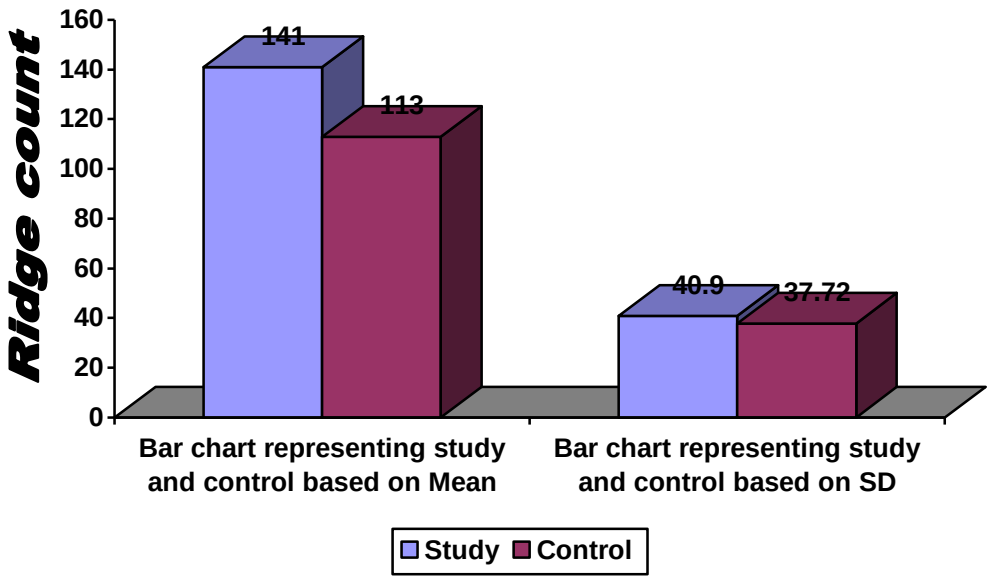

TABLE NO.18

MEAN TOTAL FINGER RIDGE COUNT (TFRC) IN MALE AND FEMALE STUDY AND CONTROL GROUP

Study Group Mean (SD)	Control Group Mean (SD)	Z-Test	P-Value
140.5 (43.82)	135.5 (42.6)	1.09	P = 0.278

Table no.18 shows that the Mean Total Finger Ridge Count (TFRC) in study group was higher i.e.140 with S.D . of 43.82 as compared to control group which had TFRC of 135.5 with S.D. of 42.6 . This difference is not statistically significant (Z-test =1.09 and P>.05).

GRAPH-10

Mean Total Finger Ridge Count (TFRC) in Males & Females together

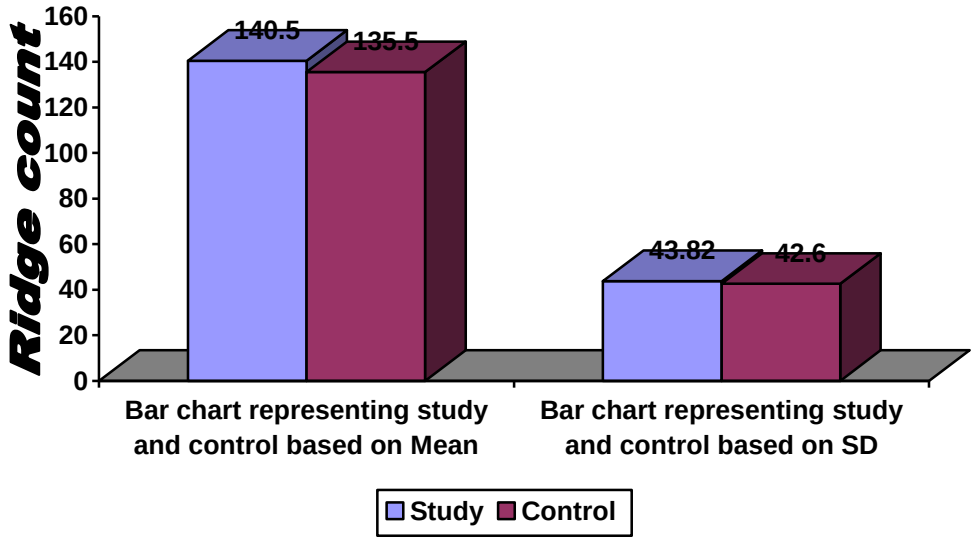

TABLE NO.19

MEAN ABSOLUTE FINGER RIDGE COUNT (AFRC) IN MALES

Study Group Mean (SD)	Control Group Mean (SD)	Z-Test	P-Value	Inference
187 (81.18)	221 (89.16)	2.79	P =0.006	significant

Table no.19 shows that the Mean Absolute Finger Ridge Count (AFRC) in Male patients was lower 187 with S.D. of 81.18 as compared to male control group which had AFRC 221 with S.D. of 89.16.This difference is statistically significant (Z- test= 2.79 and P=.006).

GRAPH-11

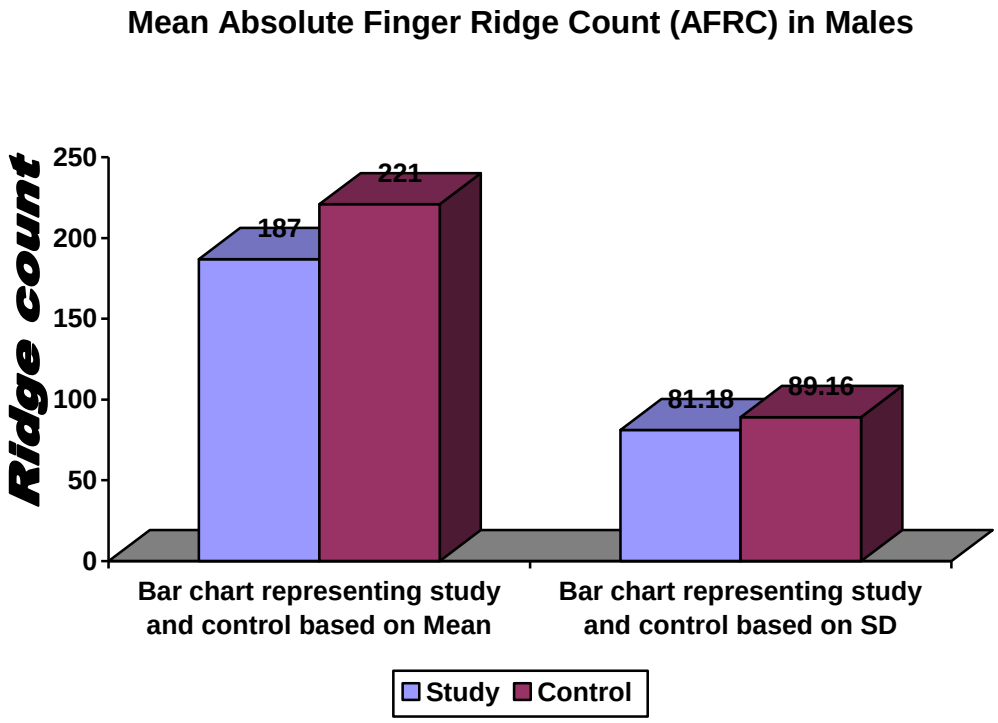
Mean Absolute Finger Ridge Count (AFRC) in Males
Ridge count
250
200
150
100
50
0
187
221
81.18
89.16
Bar chart representing study and control based on Mean
Bar chart representing study and control based on SD
Study
Control

TABLE NO.20

MEAN ABSOLUTE FINGER RIDGE COUNT (AFRC) IN FEMALES

Study Group Mean (SD)	Control Group Mean (SD)	Z-Test	P-Value	Inference
181 (79.49)	148 (61.63)	3.10	P < 0.0001	Highly Significant

Table no.20 shows that the Mean Absolute Finger Ridge Count (AFRC) in female patients was higher 181 with S.D. of 79.49 as compared to Female control group which had AFRC 148 with S.D. of 61.63. This difference is statistically highly significant (Z- test=3.10 and P <0.0001).

GRAPH-12

Mean Absolute Finger Ridge Count (AFRC) in Females

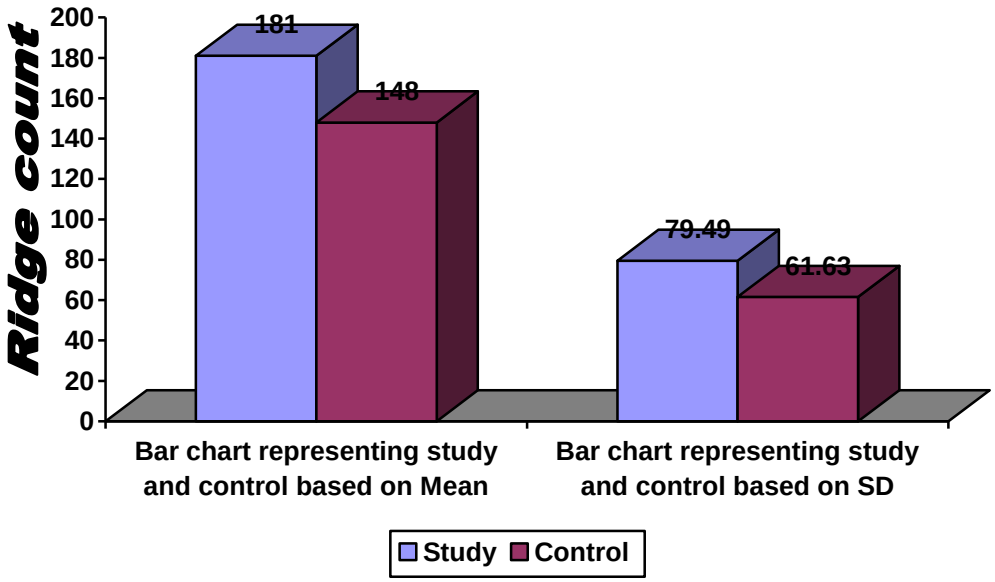

TABLE NO.21

MEAN ABSOLUTE FINGER RIDGE COUNT (AFRC) IN MALE AND FEMALE STUDY AND CONTROL GROUP

Study Group Mean (SD)	Control Group Mean (SD)	Z-Test	P-Value
184.71 (80.38)	184.25 (84.79)	0.038	P < 0.980

Table no.21 shows that the Mean Absolute Finger Ridge Count (AFRC) in study group was 184.71 higher with S.D. of 80.38 as compared to control group which had AFRC 184.25 with S.D. of 84.79. This difference was not statistically significant (Z test=.038 and P>.05).

GRAPH-13

Mean Absolute Finger Ridge Count (AFRC) in Males & Females together

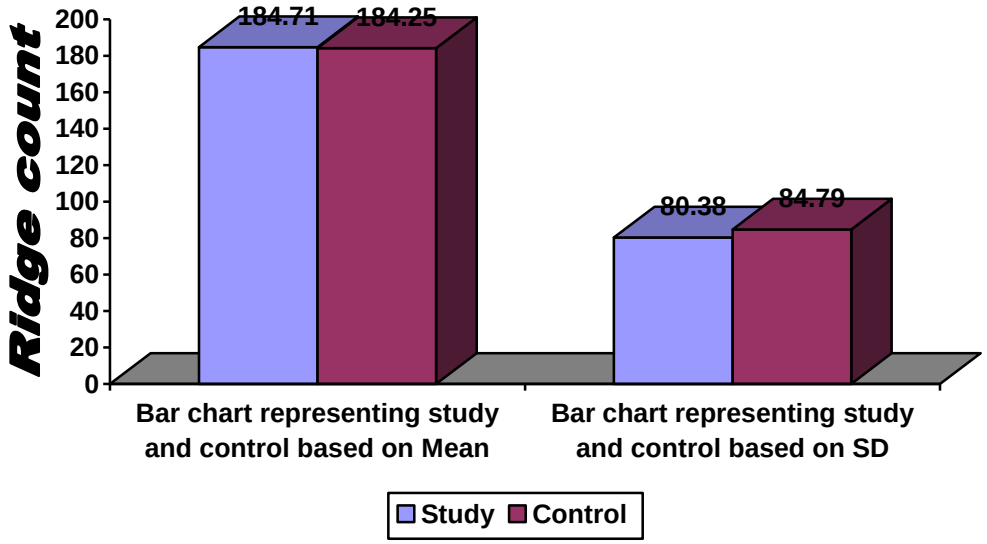

TABLE NO.22

MEAN 'atd' ANGLE IN MALES

Hands	Study Group Mean (SD)	Control Group Mean (SD)	Z-Test	P-Value	Inference
Right	42 (4.83)	40 (4.25)	2.99	P < 0.0001	Highly Significant
Left	42 (4.52)	41 (5.00)	1.43	P < 0.154	NS

Table no.22 shows that the Mean 'atd' angle in right hand of male patients (42^0) was more than that of controls (40^0). It was more in left hand of patients (42^0) than that of controls (41^0).In Right hand this difference was statistically highly significant (P<0.0001). This indicates that the triradius was displaced distally in right hand of patients than in controls.

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GRAPH-14

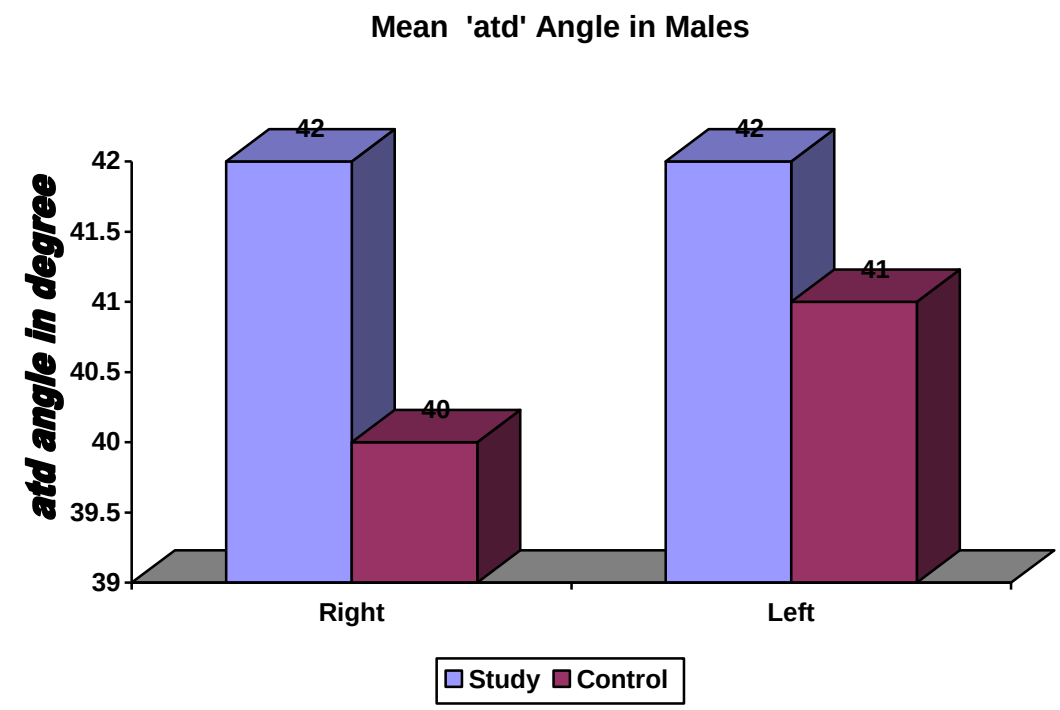

Mean 'atd' Angle in Males
atd angle in degree
42
41.5
41
40.5
40
39.5
39
42
40
42
41
Right
Left
Study
Control

TABLE NO.23

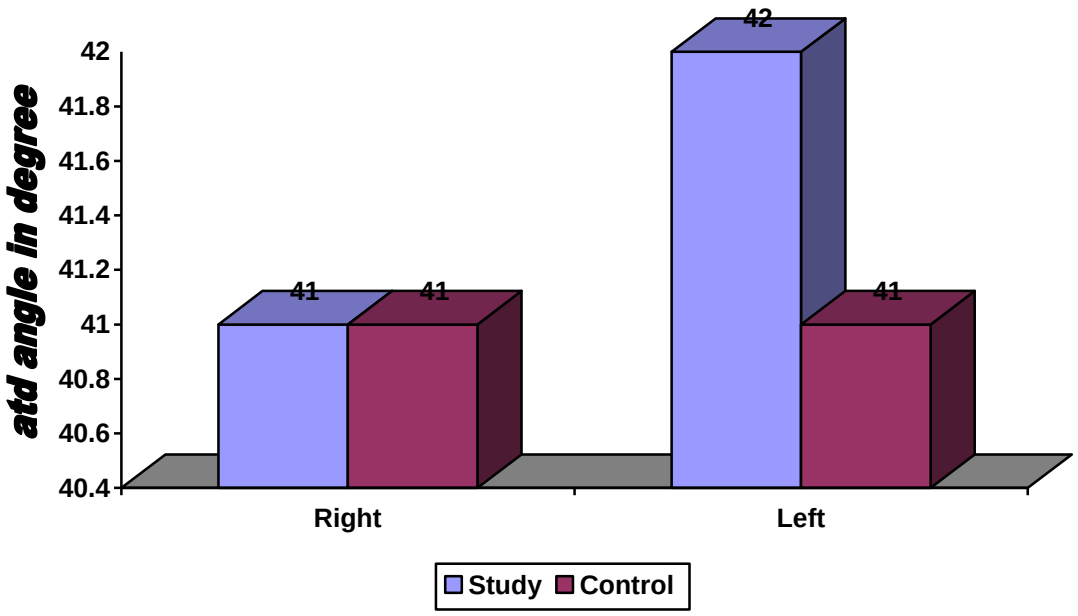
MEAN 'atd' ANGLE IN FEMALES

Hands	Study Group Mean (SD)	Control Group Mean (SD)	Z-Test	P-Value	Inference
Right	41 (4.83)	41 (5.23)	0	P < 1	NS
Left	42 (4.35)	41 (4.95)	1.46	P < 0.146	NS

Table no.23 shows that the Mean 'atd' angle in right hand of female patients (41^0) was same as that of controls (41^0.) Similarly it was more in left hand of patients (42^0) than that of controls (41^0). This difference was not statistically significant (P>.05). This indicates that the triradius was displaced distally in patients than in controls in left hand.

GRAPH-15

Mean 'atd' Angle in Females



DISCUSSION

In present study, we tried to determine significant palmar dermatoglyphic parameters in case of eczema in age group between 20-50 years and whether the parameters can be used for screening purpose.

The study included 220 cases (133 males and 87 females) of eczema and 150 controls (75 males and 75 females) in age group between 20-50 years.

The parameters observed among the study group and controls were

I) Qualitative Analysis:

Arches: Frequency of arches found in right hand of male study group is 6.77% and in left hand is 5.11% while in right and left hand of controls is 6.67% and 5.33% respectively. In female study group, the frequency of arches in right hand and left hand are 4.61% and 3.68% respectively while in control group, the frequency of arches in right hand and left hand are 7.2 % and 7.47 % respectively. Furthermore the right hand and left hand both combined hands of the male and female study group showed less number of arches than controls.

Pour –Jafari H studied dermatoglyphics of eczema patients and found that arches were very much reduced in the study group (6.46%).[36]

Radial loops: Frequency of Radial loops found in right hand is 1.8% and left hand of male study group is 3.31% while in right hand and left hand of controls is 2.4% and 2.93%. In female study group, the frequency of Radial loops in right hand and left hand are 2.30% and 1.84% respectively while in control group, the frequency of Radial loops in right hand and left hand are 1.07% and 2.40% respectively. Furthermore the right hand and left hand of the female study group showed more

number of Radial loops than controls while in males control group showed more number of Radial loops than study group.

Pour –Jafari H found radial loops as least common pattern i.e. in 2.25 % of the patients with eczema.[36]

Ulnar loops: Frequency of Ulnar loops found in right hand of male study group is 50.38% and in left hand is 54.44% while in right hand and left hand of controls is 46.40% and 49.33 % respectively. In female study group, the frequency of Ulnar loops in right hand and left hand are 65.67% and 67.13% respectively while in control group, the frequency of Ulnar loops in right hand and left hand are 52.53% and 53.87% respectively. The right hand and left hand of the female study group showed more number of Ulnar loops than control group and also in males, study group showed more number of Ulnar loops than control group.

Pour –Jafari H found ulnar loops as most common pattern i.e. in 51.95% of the patients with eczema. [36]

Whorls: Frequency of Whorls found in right hand of male study group is 41.05% and in left hand is 37.14% while in right hand and left hand of controls is 44.53% and 42.40% respectively. In female study group, the frequency of Whorls in right hand and left hand are 27.42% and 27.36% respectively while in control group, the frequency of Whorls in right hand and left hand are 39.20% and 36.27% respectively. Furthermore the right hand and left hand of the female control group showed more number of Whorls than study and also in males, control group showed more number of Whorls as compared to study group.

Pour –Jafari H found that whorls were second most common in the study group i.e.31.84%.[36]

Frequency of fingertip patterns in right and left hand separately:

In right hand of male study group, there is increase in arches, and ulnar loops while there is decrease in radial loops and whorls as compared to controls. This difference is not statistically significant.

In left hand of male study group, there is increase in ulnar loops and radial loops while there is decrease in Arches and whorls as compared to controls. This difference is also not statistically significant.

In right hand of female study group, there is increase in radial loops and ulnar loops whorls while there is decrease in whorls and arches as compared to controls. This difference is not statistically significant.

In left hand of female study group, there is increase in ulnar loops while there is decrease in whorls, radial loops, and arches as compared to controls. This difference is also not statistically significant.

Frequency of fingertip patterns in both hands combined :

In male study group, there is increase in ulnar loops while there is decrease in radial loops, Arches and whorls as compared to controls. This difference is not statistically significant.

In Female study group, there is increase in radial loops and ulnar loops while there is decrease in whorls and arches as compared to controls. This difference is not statistically significant.

In study group (both male and female), Ulnar loops and Radial loops were more compared to controls. Whorls and Arches were less in study group. This difference is not statistically significant.

Pour –Jafari H study correlated with our study in type of finger prints in each hand.

Sydney Line: Only 2 cases had Sydney line in male and 2 in female study group. [36] There were 10 male controls with Sydney line and 7 in female controls. This presence of Sydney line is statistically significant in males.

Simian Line: The Simian line was seen in 1 Female patient and 1male patient. 2 of male controls had Simian line. This difference was not statistically significant.

II) Quantitative Analysis: These were additional tests done to analyse the difference between cases and controls as seen in other diseases**.** But we did not find other studies done in Eczema to correlate our findings in the available Literature.

Mean The Total Finger Ridge Count (TFRC): The Mean the Total Finger Ridge Count (TFRC) in Male patients was lower 140 with S.D. of 46.79 as compared to male control group which had TFRC 158 with S.D. of 48.23. This difference was statistically significant (P<.008). The Mean the Total Finger Ridge Count (TFRC) in female patients was higher 141 with S.D. of 40.90 as compared to female control group which had TFRC 113 with S.D. of 37.72. This difference was statistically highly significant (P<.0001). The Mean Total Finger Ridge Count (TFRC) in study group (both male and female patients) was higher i.e. 140.5 with S.D. of 43.82 as compared to control group which had TFRC of 135.5 with S.D. of 42.6. This difference was statistically not significant (P>.05).

Mean Absolute Finger Ridge Count (AFRC): The Mean Absolute Finger Ridge Count (AFRC) in Male patients was lower 187 with S.D. of 81.18 as compared to male control group which had AFRC 221 with S.D. of 89.16. This difference was statistically significant (P<.006). The Mean Absolute Finger Ridge Count (AFRC) in female patients was higher 181 with S.D. of 79.49 as compared to female control group which had AFRC 148 with S.D of 61.63.This difference was statistically highly

significant (P<.0001**).** The Mean Absolute Finger Ridge Count (AFRC) in study group (both male and female patients) was higher with 184.71 S.D .of 80.38 as compared to control group which had AFRC 184.25 with S.D .of. 84.79. This difference was not statistically significant (P>.05).

Mean 'atd' Angle: The Mean 'atd' angle in right hand of male patients (42^0) was more than that of controls (40^0). It was more in left hand of patients (42^0) than that of controls (41^0).This difference was statistically significant (P<.0001). This indicates that the triradius was placed distally in patients than in controls in both hands.

The Mean 'atd' angle in right hand of female patients (41^0) was same as that of controls (41^0). It was more in left hand of patients (42^0) than that of controls (41^0). This difference was not statistically significant (P>.05). This indicates that the triradius was placed distally in left hand in patients than in controls.

CONCLUSIONS

In ancient India, palmistry, an art of fortune telling by reading the pattern of friction ridges and palmar lines dates from about 2000 B.C.

Dermatoglyphics has been studied extensively in chromosomal disorders, single gene disorders and those disorders whose genetic basis is not clear. Dermatoglyphic studies have proved quite useful at least in three fields medico-legal, anthropological and clinical.

Dermatoglyphics is a growing discipline and its easy and ready applicability renders it as a useful tool to the clinician. The relevance of dermatoglyphics is not to diagnose, but to prevent by predicting a disease; not for defining an existing disease, but to identify people with genetic predisposition to develop certain diseases.

Heredity plays an important role in the formation of dermatoglyphics patterns. The inheritance of dermatoglyphic traits was initially studied by Galton in 1892, Wilder in 1902, Penrose in 1954 and Holt in 1968.

Eczema is not a hereditary disease, however twin studies indicate that susceptibility is an important risk factor. Susceptibility to eczema has been related to multiple foci linked on chromosomes such as, 1q21,3p24-22,3q21,3q14,4p15,5q,13q14. A number of candidate genes have been implicated in eczema. They fall in two groups. Those related to physical epidermal barrier formation/homeostasis, named as Filaggrin, Stratum corneum chymotropic enzyme, serine protease inhibitor,Cystatin A, Collagen XX1X alpha 1. Second type are genes mainly related to immune signaling,such as Toll-like receptor 2,Cytotoxic T Lymphocyte associated-4 Interleukin -4,Interleukin-18.

In present study, we tried to determine significant palmar dermatoglyphic parameters in case of eczema in age group between 20-50 years and whether these parameters can be used for screening purpose i.e. to identify people with genetic predisposition to develop eczema.

The analysis revealed the following findings:

Significant findings in qualitative and quantitative analysis of eczema in age group between 20-50 years were:

1. The mean 'atd' angle was higher in study group in males in right hand only. This means the tri-radius was more distal in right hand of male patients as compared to controls.
2. The Mean Absolute Finger Ridge Count (AFRC) in female study group was higher as compared to control group.
3. The Mean Total Finger Ridge Count (TFRC) in study group in females was higher as compared to control group.

No Significant difference was noted in following parameters:

1. Ulnar loops were the predominant pattern in study group as compared to controls.
2. No Significant difference was noted in Simian line

The present study indicates that there are some genetic factors which are involved in the causation of eczema and it is possible to certain extent to predict from dermatoglyphics individual's chance of acquiring eczema. Like clinical history, examination and investigations, the dermatoglyphics will play an important role revealing the genetic susceptibility to eczema.

At present there are very few studies on palmar dermatoglyphics in eczema . The findings of previous studies are many ways similar to our present study. But still the number of studies is limited. Since this is an interesting subject, more number of studies are expected. This was a small study consisting of 220 patients Hence its findings can't be generalized. So further large case controls are needed to establish the exact relation between eczema and dermatoglyphics and utility of dermatoglyphics in prediction of susceptibility to eczema .

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SUMMARY

In present study, we tried to determine significant palmar dermatoglyphic parameters in case of eczema in the age group between 20-50 years and whether these parameters can be used for screening purpose i.e. to identify people with genetic predisposition to develop eczema.

The study included 220 cases (133 males and 87 females) of eczema and 150 controls (75 males and 75 females) in age group between 20-50 years.

The following significant parameters have been found in the present study of palmar dermatoglyphics in patients with eczema in the age group between 20-50 years:

1. Higher mean 'atd' angle in right hand of male study group.
2. Higher Mean Absolute Finger Ridge Count (AFRC) in Females.
3. Higher Mean Total Finger Ridge Count (TFRC) in Females

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BLDE UNIVERSITY'S

SHRI B M PATIL MEDICAL COLLEGE, HOSPITAL, AND RESEARCH CENTRE. BIJAPUR

PROFORMA

FOR QUALITATIVE AND QUANTITATIVE ANALYSIS OF PALM AND FINGER PRINTS

NAME: ADDRESS :

AGE and SEX:

OCCUPATION:

OPD NO:

Signs of Eczema.

II FINGER PRINT PATTERN:

		R1	R2	R3	R4	R5	L1	L2	L3	L4	L5
1	Arch										
2	Radial Loop										
3	Ulnar Loop										
4	Whorl										
	Total	Right Hand					Left Hand				

PALM PRINT PATTERN :

		Right Hand	**Left Hand**
5	'atd' angle		
6	Simian line		
7	Sydney line		

FINGER RIDGE COUNT OF BOTH HANDS :

		Number	Total Ridge
1	Arch		
2	Radial Loop		
3	Ulnar Loop		
4	Whorl		
5	TFRC AFRC		

Signature of Subject Signature of P.G Signature of Guide

DERMATOGLYPHIC PATTERNS IN MALE CONTROLS

S NO	NAME	AGE	R1	R2	R3	R4	R5	L1	L2	L3	L4	L5	TFRC	AFRC	atd		SIMIAN LINE		SYDNEY LINE	
															R	L	R	L	R	L
1	FG	46y	W	W	LU	W	LU	W	LR	A	LU	LU	213	258	45°	47°	N	N	N	N
2	BS	25y	LU	LU	LU	W	LU	LU	LU	LU	LU	LU	175	180	40°	40°	N	N	N	N
3	LD	45y	LU	LU	W	W	LU	LU	A	LU	LU	LU	174	202	38°	42°	N	N	N	N
4	SS	28y	LU	LR	LU	W	LU	LU	W	W	W	LU	191	266	51°	45°	N	N	N	N
5	BSP	42y	LU	W	LU	LU	LU	LU	LR	LU	LU	LU	172	194	36°	37°	N	N	N	N
6	MSP	50y	LU	LU	LU	W	LU	W	W	W	W	W	219	343	43°	40°	N	N	N	N
7	SB	26y	LU	LU	LU	LU	A	LU	A	LU	W	LU	89	101	33°	36°	N	N	Y	N
8	SMM	25y	LU	LU	LU	W	LU	LU	W	W	W	LU	173	225	42°	43°	N	N	N	N
9	VBT	40y	LU	LU	LU	LU	W	LU	LU	LU	LU	LU	64	76	40°	41°	N	N	N	N
10	SVB	45y	LU	W	LU	W	LU	LU	W	W	W	LU	161	272	36°	35°	N	N	N	N
11	SSB	22y	LU	W	A	W	LU	LU	W	LU	W	LU	195	268	48°	40°	N	N	N	N
12	MM	49y	A	A	A	A	LU	A	A	A	LU	LU	25	25	41°	37°	Y	N	N	N
13	SP	35y	LU	LU	LU	LU	LU	LU	LU	LU	LU	LU	129	129	40°	35°	N	N	N	N
14	AS	21y	W	W	LU	LU	LU	W	W	LU	W	LU	201	295	45°	45°	N	N	N	Y
15	S	45y	A	W	W	W	LU	W	W	LU	W	LU	161	232	42°	38°	N	N	N	N
16	SL	35y	W	W	W	W	W	W	W	W	W	LU	214	385	38°	36°	N	N	N	N
17	TR	28y	LU	W	LU	LU	LU	W	W	LU	LU	LU	173	228	45°	41°	N	N	N	N
18	RA	20y	LU	LU	LU	LU	LU	LU	LU	LU	LU	LU	107	107	45°	40°	N	N	N	N
19	MK	50y	LU	A	LU	LU	LR	LU	LR	LU	A	LU	97	97	40°	41°	N	N	N	N
20	H	25y	W	LR	LU	W	LU	W	LR	LU	W	W	148	226	38°	43°	N	N	N	N
21	BG	41y	LU	LU	LU	LU	LU	LU	W	LU	LU	LU	188	198	38°	38°	N	N	N	N
22	VR	25y	LU	W	W	W	W	W	W	W	W	W	166	265	30°	30°	N	N	N	N
23	BS	30y	LU	LU	LU	LU	LU	W	W	W	W	LU	183	248	43°	40°	N	N	N	N
24	S	25y	W	W	W	W	W	W	W	W	W	W	204	369	30°	33°	N	N	N	N
25	RB	35y	A	LU	LU	LU	LU	A	W	LU	LU	LU	160	174	36°	36°	N	N	N	N
26	PRA	20Y	W	W	W	W	W	W	W	W	W	W	195	343	38°	47°	N	N	N	N
27	SHA	20Y	LU	A	A	LU	LU	LU	A	A	LU	LU	51	51	49°	54°	N	N	N	N
28	ARI	25Y	LU	LU	LU	W	LU	LU	W	W	W	W	118	173	42°	47°	N	Y	N	Y
29	ANA	35Y	W	W	W	W	LU	W	W	W	W	LU	207	369	48°	50°	N	N	N	N
30	ASN	20Y	LU	A	A	LU	LU	LU	LU	LU	A	LU	56	56	33°	51°	N	N	N	N

31	ANA	50Y	W	W	LU	W	LU	W	W	W	W	LU	198	299	38°	36°	N	N	Y	N
32	AYT	50Y	W	A	LU	LU	LU	W	LU	LU	LU	LU	123	165	43°	38°	N	N	N	N
33	ABU	22Y	W	LU	LU	W	W	LU	LU	W	W	LU	114	198	40°	42°	N	N	N	Y
34	AUN	45Y	W	W	W	LU	LU	W	W	W	LU	LU	192	294	38°	38°	N	N	Y	N
35	UDA	47Y	A	LU	LU	W	LU	A	LU	LU	LR	W	125	141	38°	43°	N	N	Y	Y
36	MUK	36Y	LU	W	LU	LU	LU	LU	LU	LU	LU	LU	130	138	45°	43°	N	N	N	Y
37	VAI	20Y	W	LR	W	W	LU	LU	W	W	W	LU	143	207	39°	36°	N	N	N	N
38	VIJ	21Y	W	W	LU	W	LU	W	LU	W	W	LU	180	258	43°	40°	N	N	N	N
39	MAN	28Y	LU	W	LU	W	LU	W	W	W	W	LU	122	178	38°	38°	N	N	N	N
40	MAN	20Y	W	RL	LU	W	LU	W	LR	LU	W	LU	204	258	40°	43°	N	N	N	N
41	PAR	40Y	W	RL	LU	W	LU	W	W	LU	LU	LU	156	216	47°	40°	N	N	N	N
42	RAZ	27Y	LU	LU	W	W	LU	LU	LR	LU	LU	LU	112	122	44°	47°	N	N	N	N
43	RBP	40Y	LU	W	W	W	LU	W	W	W	W	LU	188	284	43°	38°	N	N	N	N
44	BHA	36Y	W	W	LU	W	LU	W	LU	LU	LU	LU	162	227	40°	45°	N	N	N	N
45	PEE	46Y	W	W	W	W	W	W	W	W	W	W	162	284	41°	44°	N	N	Y	N
46	KAT	40Y	W	W	W	W	W	W	W	W	W	W	194	334	45°	43°	N	N	N	N
47	MEL	42Y	W	LU	LU	W	W	LU	LU	LU	W	LU	135	169	35°	37°	N	N	N	N
48	HAD	28Y	W	W	W	W	W	LU	W	W	W	W	169	282	37°	45°	N	N	N	N
49	ISH	30Y	LU	A	A	LU	LU	W	A	A	LU	LU	67	76	42°	40°	N	N	N	N
50	SHE	50Y	W	W	W	W	W	LU	W	W	W	LU	163	284	43°	47°	N	N	N	N
51	UPA	43Y	W	W	W	W	LU	W	W	W	W	W	213	338	40°	50°	N	N	N	N
52	SAW	50Y	W	W	W	W	W	LU	W	W	W	LU	185	330	43°	42°	N	N	N	N
53	DRB	37Y	LU	W	LU	W	LU	W	W	W	LU	A	204	288	42°	42°	N	N	N	N
54	KAM	29Y	LU	LU	LU	W	LU	LU	LU	LU	A	LU	85	90	42°	45°	N	N	N	N
55	RAV	38Y	W	W	LU	W	W	LU	LU	LU	W	LU	133	185	44°	45°	N	N	N	N
56	DSH	42Y	W	W	LU	W	W	W	LU	LU	LU	LU	206	291	36°	40°	N	N	N	N
57	SHH	25Y	LU	LU	LU	LU	LU	LU	LU	LU	LU	LU	150	150	43°	37°	N	N	N	N
58	DBM	32Y	LU	A	LU	W	LU	LU	A	LU	LU	LU	100	112	49°	52°	N	N	N	N
59	MSUR	33Y	W	LU	LU	W	LU	W	W	W	LU	LU	206	294	39°	42°	N	N	N	N
60	MAL	22Y	W	W	LU	LU	LU	LU	W	LU	LU	LU	170	198	38°	28°	N	N	N	N
61	MMA	39Y	W	LR	LU	W	LU	LU	LU	W	LU	LU	188	229	35°	33°	N	N	N	N
62	ASH	42Y	W	A	LU	W	W	LU	LU	LU	W	LU	197	273	40°	40°	N	N	N	N
63	SWA	35Y	W	W	LU	W	W	W	W	W	W	W	218	356	36°	35°	N	N	N	N

64	SHI	50Y	W	W	LU	W	W	A	W	LU	W	W	113	181	37°	37°	N	N	N	N
65	SHI	35Y	LU	A	LU	W	LU	LU	W	LU	W	LU	103	131	40°	42°	N	N	N	N
66	MAN	32Y	LU	LU	W	W	W	LU	LU	W	W	W	211	304	36°	37°	N	N	N	N
67	BSB	37Y	W	A	LU	A	LU	LU	A	LU	LU	LU	89	108	42°	36°	N	N	N	N
68	LAX	41Y	W	W	W	W	W	W	W	W	W	LU	214	356	37°	33°	N	N	N	N
69	AJA	22Y	LU	A	LU	LU	LU	LU	LR	LU	LU	LU	152	152	36°	38°	N	N	N	N
70	RAJ	29Y	W	W	W	W	W	W	W	W	W	LU	204	340	43°	45°	N	N	N	N
71	ALA	20Y	A	A	LU	LU	LU	A	LR	LU	LU	LU	63	63	43°	40°	N	N	N	N
72	ABH	23Y	LU	W	W	W	W	LU	W	W	W	LU	214	276	36°	38°	N	N	N	N
73	RAH	25Y	W	W	W	W	W	LU	LU	W	W	W	218	320	35°	33°	N	N	N	N
74	ANI	20Y	W	LR	LU	LU	W	LU	LR	LU	W	LR	185	220	42°	40°	N	N	N	N
75	AAK	22Y	W	LR	LU	LU	LU	W	LU	LU	LU	LU	198	216	43°	41°	N	N	N	N

DERMATOGLYPHIC PATTERNS IN FEMALE CONTROLS

S NO	NAME	AGE	R1	R2	R3	R4	R5	L1	L2	L3	L4	L5	TFRC	AFRC	atd		SIMIAN LINE		SYDNEY LINE	
															R	L	R	L	R	L
1	RMK	25Y	W	W	W	W	LU	LU	LR	W	W	LU	105	159	42°	43°	N	N	N	N
2	KR	27Y	LU	W	LU	LU	LU	LU	LU	LU	W	LU	165	194	42°	48°	N	N	N	N
3	SB	37Y	LU	LU	LU	LU	LU	LU	LU	LU	LU	LU	86	86	44°	45°	N	N	N	N
4	RS	39Y	LU	A	LU	LU	LU	LU	LU	LU	A	LU	67	67	43°	46°	N	N	N	N
5	ZH	21Y	W	W	LU	W	W	W	W	W	W	LU	199	226	40°	40°	N	N	N	N
6	GV	31Y	LU	LU	LU	LU	LU	LU	LU	LU	W	W	125	152	43°	40°	N	N	N	N
7	BGK	49Y	LU	LU	LU	LU	LU	LU	LU	LU	LU	LU	93	93	45°	44°	N	N	N	N
8	BH	31Y	W	W	LU	W	LU	LU	LU	LU	LU	W	144	190	43°	43°	N	N	N	N
9	KR	23Y	LU	LU	LU	W	LU	LU	W	LU	W	LU	181	196	42°	44°	N	N	N	N
10	E	46Y	LR	W	LU	W	LU	LU	LU	LU	LU	LU	137	183	38°	44°	N	N	N	N
11	KM	44Y	LU	W	LU	W	LU	LU	LU	LU	LU	A	84	104	36°	44°	N	N	N	N
12	VR	27Y	LU	A	LU	W	LU	LU	LU	LU	LU	W	111	134	50°	49°	N	N	N	N
13	SKU	33Y	LU	W	LU	W	W	LU	W	LU	W	LU	149	198	49°	48°	N	N	N	N
14	M	29Y	LU	LU	LU	LU	LU	LU	LU	LU	LR	LU	165	165	44°	46°	N	N	N	N
15	BBK	38Y	LU	LU	LU	W	LU	W	W	LU	W	LU	80	101	45°	46°	N	N	N	N
16	SV	22Y	LU	W	W	W	LU	W	W	W	W	A	124	218	36°	39°	N	N	N	N

17	JC	21Y	LU	W	W	W	LU	LU	LU	LU	W	W	183	249	44°	46°	N	N	N	N
18	LB	35Y	LU	A	LU	W	LU	LU	W	LU	LU	A	74	94	41°	44°	N	N	N	N
19	B	41Y	W	LU	LU	W	W	LU	W	LU	LU	W	197	226	45°	42°	N	N	N	N
20	G	47Y	W	W	W	W	W	LU	W	LU	W	W	90	245	37°	39°	N	N	N	N
21	RD	37Y	W	W	W	W	W	W	LU	LU	W	LU	164	192	25°	51°	N	N	N	N
22	S	31Y	A	A	LU	W	LU	LU	W	LU	W	LU	108	138	46°	44°	N	N	N	N
23	KS	26Y	LU	LU	LU	LU	LU	LU	W	LU	LU	LU	87	92	46°	45°	N	N	N	N
24	RB	29Y	LU	W	LU	LU	LU	LU	W	W	W	LU	140	186	28	44°	N	N	N	N
25	GC	40Y	W	W	LU	W	LU	W	W	W	W	W	149	235	26°	36°	N	N	N	N
26	VIJ	34Y	W	A	A	LU	LU	W	A	A	LR	W	85	114	42°	28°	N	N	N	N
27	JAN	37Y	W	W	W	W	W	W	W	W	W	W	156	281	43°	38°	N	N	N	N
28	POO	30Y	W	LU	W	LU	LU	LU	LU	LU	LU	LU	87	98	42°	44°	N	N	N	N
29	SNE	20Y	A	A	A	LU	LU	A	A	A	LU	LU	36	36	44°	46°	N	N	N	N
30	MEE	32Y	W	A	A	W	W	LU	A	A	A	LU	51	75	38°	38°	N	N	N	N
31	REK	30Y	LU	LU	LU	LU	LU	LU	LU	LU	LU	LU	116	116	43°	43°	N	N	N	N
32	PAR	50Y	W	W	W	LU	LU	LU	LR	W	W	LU	145	201	41°	42°	N	N	N	N
33	KAL	50Y	W	W	W	W	LU	W	W	W	W	LU	148	242	52°	50°	N	N	N	N
34	RAN	31Y	LU	A	LU	LU	LU	LU	A	LU	LU	LU	109	109	36°	48°	N	N	N	N
35	ARC	48Y	LU	LU	LU	LU	LU	LU	LU	LU	LU	LU	89	89	33°	39°	N	N	N	N
36	REN	32Y	A	A	A	W	LU	A	A	LU	LU	LU	62	68	45°	39°	N	N	N	N
37	MAD	33Y	A	A	LU	LU	LU	LU	A	A	LU	LU	42	42	44°	34°	N	N	N	N
38	USH	50Y	W	W	LU	W	W	W	W	W	W	W	126	302	47°	48°	N	N	N	N
39	SNE	20Y	W	W	LU	W	LU	W	W	LU	LU	LU	167	206	35°	31°	N	N	N	N
40	SAV	41Y	W	LU	LU	LU	LU	LU	LU	LU	LU	LU	139	155	33°	45°	N	N	N	y
41	RAN	23Y	W	A	LU	W	LU	LU	A	LU	LU	LU	122	141	40°	29°	N	N	N	N
42	LAT	42Y	W	W	W	W	LU	LU	LU	W	W	LU	175	239	45°	39°	N	N	N	y
43	SHA	45Y	A	LU	LU	W	LU	LU	LU	LU	LU	LU	120	152	43°	40°	N	N	N	N
44	ROH	31Y	W	W	LU	W	LU	W	W	LU	LU	LU	169	203	42°	32°	N	N	N	N
45	SHY	50Y	W	W	LU	W	W	W	W	W	W	W	131	219	38°	46°	N	N	N	y
46	USH	43Y	LU	A	LU	LU	LU	LU	A	LU	LU	LU	63	63	34°	38°	N	N	N	N
47	SHR	29Y	LU	W	LU	LU	LU	LU	LR	LU	LU	W	101	115	41°	35°	N	N	N	y
48	ASH	26Y	W	A	LU	W	LU	W	W	LU	W	W	90	135	46°	46°	N	N	N	N
49	PRE	28Y	W	W	LU	LU	LU	W	W	W	W	LU	130	198	46°	49°	N	N	N	N

50	REK	26Y	W	W	LU	W	LU	LU	LU	LU	LU	LU	107	130	42°	41°	N	N	N	y
51	NEE	45Y	W	W	LU	W	W	LR	A	LU	LU	LU	151	115	44°	36°	N	N	N	N
52	BAS	38Y	W	W	W	W	W	W	W	W	W	W	122	213	43°	41°	N	N	N	y
53	LAX	31Y	LU	LU	LU	LU	LU	LU	LU	LU	LU	LU	74	74	40°	32°	N	N	N	N
54	SMI	31Y	LU	LU	LU	W	W	W	W	LU	W	LU	87	109	39°	40°	N	N	N	y
55	SMI	46Y	LU	LU	LU	W	W	W	LU	LU	W	LU	124	146	43°	43°	N	N	N	N
56	SHEN	35Y	LU	LU	W	LU	LU	W	W	W	W	W	96	136	39°	39°	N	N	N	N
57	SHY	27Y	LU	LU	A	LU	LU	LU	W	LU	LU	LU	65	70	44°	45°	N	N	N	N
58	BHA	22Y	A	LU	LU	A	A	A	A	LU	W	W	49	54	44°	42°	N	N	N	N
59	SON	25Y	LU	A	LU	LU	LU	LU	A	A	LU	LU	59	59	40°	41°	N	N	N	N
60	ARC	30Y	LU	LU	W	W	W	LU	W	W	W	W	95	133	45°	40°	N	N	N	N
61	POO	20Y	W	W	LU	W	LU	W	W	W	W	W	132	215	26°	36°	N	N	N	N
62	NI	33Y	W	W	W	LU	LU	LU	LR	A	LU	LU	98	125	43°	41°	N	N	N	N
63	RAM	23Y	LU	LU	LU	LU	LU	W	LR	LU	LU	LU	90	99	42°	39°	N	N	N	N
64	TEJ	33Y	LU	LU	LU	W	LU	LU	A	LU	W	LU	65	74	40°	44°	N	N	N	N
65	DIV	27Y	W	W	LU	W	LU	W	LU	LU	LU	LU	109	146	42°	40°	N	N	N	N
66	GEE	28Y	W	LU	LU	W	W	LU	W	LU	W	LU	75	95	39°	44°	N	N	N	N
67	SUS	41Y	W	W	LU	W	W	LU	W	W	W	W	123	184	40°	39°	N	N	N	N
68	HAR	33Y	W	W	W	W	W	W	W	W	W	W	104	192	40°	39°	N	N	N	N
69	ISH	22Y	W	W	W	W	W	W	W	W	W	W	123	223	49°	38°	N	N	N	N
70	KAM	23Y	LU	LU	LU	LU	W	LU	A	A	LU	W	66	78	38°	34°	N	N	N	N
71	MRI	27Y	W	LU	LU	LU	LU	W	LR	LU	LU	LU	132	141	36°	34°	N	N	N	N
72	ANU	50Y	W	W	W	W	LU	W	W	W	W	LU	119	177	45°	44°	N	N	N	N
73	ANJ	20Y	LU	LR	LU	LU	LU	LU	LU	LU	W	LU	99	99	36°	38°	N	N	N	N
74	ANA	20Y	W	LU	LU	LU	LU	W	W	LU	LU	LU	127	149	44°	36°	N	N	N	N
75	AHA	20Y	LR	LR	LU	LU	LU	LU	LU	LU	LU	LU	109	109	35°	45°	N	N	N	N

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INSTITUTIONAL ETHICAL COMMITTEE

Dr.Vijay.Ganjoo,
Chairperson. I.E.C.
B.L.D.E.University's
Sri.B.M.Patil Medical College,
BIJAPUR-586 103

Ethical Committee BIJAPUR-586103 OUT WARD No 66109 Date 27/10/09 Sri B. M. PATIL Medical College

INSTITUTIONAL ETHICAL CLEARANCE CERTIFICATE

The Ethical Committee of this college met on 26-10-2009 at 03-15pm to scrutinize the Synopsis/Research projects of post graduate student/undergraduate student/Faculty members of this college from ethical clearance point of view. After scrutiny the following original/corrected & revised version Synopsis of the Thesis/Research project has been accorded Ethical Clearance.

Title Study of palmar dermatoglyphics in patients with ECZEMA in age group between 20-50 years in both sexes.

Name of P.G /U.G. student/ Faculty member. Dr. Sulabha. H. Deshpande Dept of Anatomy.

Name of Guide. Dr. V. N. Kulkarni, Prof

Dr.Vijay Ganjoo,
Chairperson,
Institutional Ethical Committee

Date:

Following documents were placed before E.C. for securitization:
1) Copy of Synopsis/Research Project.
2) Copy of informed consent form.
3) Any other relevant document/s