

Thumb and Middle Finger Attributes Gender Variation in Association with Blood Groups

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ABSTRACT

Aim: To intuit each attribute is unique, and try to deduce the thumb and middle finger gender variations of fingerprints in association with the blood groups in medical college students of Rai Medical College Sargodha

Study design: Observational Cross-sectional study

Place and duration of study: Rai Medical College Sargodha from 01-01-2019 to 30-03-2019.

Methods: Each hand attributes are unique and individual student provide their attributes after the verbal informed consent during the month 01 January 2019 to 30 March 2019 and a study was directed and executed after attainment of the ethical clearance from the institute. Sixty-three male and sixty-three female students and total of one hundred and twenty-six candidates features of fingerprints noted down using planed and rolled type of method with the stamp pads on white unglazed sheet of paper. Individual students' information about their roll numbers, age, ABO blood groups and gender have been documented.

Results: In comparison between the Thumb and middle finger attributes the commonest pattern is Loop and second most common is Whorl and third most common is Arch.

Conclusion: Uniqueness of individual fingerprint cannot be underestimated at every identification stage and predominant pattern of finger ridge pattern was Loop along with the whorl ridge of pattern.

Keywords: Dactylogram, attributes, Dactylography

INTRODUCTION

Identity of individual with modern technologies and gadgets it is easily and can be recognizable at any stage of life. Fourteen hundred years ago in Quran Allah tells us in a verse Yes indeed; We are Able to reconstruct his fingertips. The emphasis of this verse on fingerprints gives a very important clue about the identification of individual this is due to uniqueness of every one finger ridge pattern. Positive identification of Finger ridge attributes is extremely distinctive for everyone including the maimed or in rotten dead bodies¹. DNA finger print can helps in definite and comprehensive identity with the help of every nucleated material like blood, teeth hair, bone or from a minute sample of tissue. Federal bureau of investigations has over 30 million finger ridge patterns on their files and they are of the opinion that other individual features may be changed but the finger ridge pattern variation does not and its authenticity acceptable worldwide^{2,3,4}. Dactyloscopy identification is a sort of identification by using the imitations developed by the minute finger ridge formations or shapes found on the tip of the ball of the finger these sorts of papillary ridges remaining constant from its birth till its death and are not destroyed by the desquamation of surface epithelium or by abrasive actions of sand paper². In the womb of mother these ridges are formed during the second and third month of pregnancy^{5,6} and subsequently of this spell the evolution of these finger paradigm does not

change^{6,7}. The chances of two different persons having same identical finger paradigm is about one people in sixty-four thousand million peoples⁸. Finger ridges paradigm follows the rule of Quetelet's which elaborates the point that all forms of natural things having unlimited and infinite disparities⁹. Finger ridges paradigm first described by sir Henry Galton on the origin of categorization of individual papillary ridges which was mainly categorized into four paramount types of ridges including loop, Whorl, Arch, and Composite. apart from these four another paradigm called accidental variety also introduced when there is no any form particular ridge paradigm is available. To these four patterns a fifth one called "Accidental variety" is added, wherein no specific ridge pattern is available¹¹. In Pakistan there is no any detailed literature was available in which we predict which finger ridge paradigm is common in Pakistani population. Due to vacuum in such type of information we planned to do the study in Sargodha Pakistan because there is no any form of studies in this region has been conducted yet. We tried to intuit each attribute is unique, and deduce the thumb and middle finger gender discrepancies of fingerprints in association with the blood groups in medical college students of Rai Medical College Sargodha.

MATERIALS AND METHODS

Variation in hand finger ridge designs is a hallmark of its characteristic's peculiarities and each finger ridge motif is unique and to sort out this practice we have gathered the samples from medical students after gaining their informed

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verbal harmony during the month 01 January 2019 to 30 March 2019 and study was focused and executed after attainment of the ethical clearance from the institute. Our study is observational cross sectional. Sixty-three male and twenty-three female students and total of one hundred and twenty-six candidates of Rai Medical college Sargodha randomly selected on voluntarily basis for getting the imitations of fingerprints which was noted down using planed and rolled type of method with the help of stamp ink pads to get ink on their hands and produces the marks on white unglazed sheet of paper. For recognition of individual students' information about their roll numbers, age, ABO blood groups and gender have been documented. Age of various medical students was ranging from 20-24yrs. Evaluation of finger ridge marks were carried out with the help of hand lens examination. We have included the volunteer candidates in study of either male or female or any blood group pattern belonging to any ABO blood group or from any race or any ridge pattern and volunteer candidate must be a student of Rai Medical College. We have rejected those candidates from the study who have any ridge pattern abnormalities or any form of skin disease having more than six months like severe dermatitis or Hansen's disease or any sort of atopic dermatitis. Study was interpreted and analyzed on the SPSS ver 22 and Excel 2019.

RESULTS

Table-1 showed that the most prevalent form of ridge thumb finger pattern in females was Loop 36(57.1%) followed by Whorl ridge finger pattern 17(27%) and 3rd prevalent form of ridges was Composite form of pattern containing 8(12.7%) of students which was followed by very least numbers of Arch pattern only 2(3.2%). Table -2

showed in females most prevalent form of ridge finger pattern in middle finger was Loop 35(55.6%) followed by Whorl ridge finger pattern 22 (34.9%) and 3rd prevalent form of ridges was Arch form of pattern 6(9.5%) of students and there was no any composite form of finger print. In Table-3 the results we have found that female students containing the most commonly prevalent blood group form was B+ve 24(38.1%), and secondly prevalent blood group form followed by O+ve blood group 19 (30.2%) and third most common prevalent blood group in females was A+ve 8(12.7%). The least common blood group form in females was AB+ve 7(11.1%) which was followed by secondly least form of blood group B-ve and O-ve blood groups which was present in 2(3.2%) each ,and very least form of blood group was A-ve, which have only 1 (1.6%) students.

Table -4 showed that Among Thumb of males most prevalent form of ridge pattern was Loop 38(60.3%) followed by Whorl pattern 22(34.9%) and 3rd prevalent form was Composite ridge pattern 3(4.8%) Table -5 showed that in middle finger of males most prevalent form of ridge pattern was Loop 43(68.3%) followed by Whorl pattern 14(22.2%) and 3rd prevalent form was Arch ridge pattern 5(7.9%) followed by Composite ridge pattern which contained only 1(1.6%).

Table -6 showed that in males most commonly prevalent blood group form was B+ve 30(47.6%), and secondly blood group followed by A+ve blood group 11(17.5%) and third most common prevalent blood group was AB+ve 10(15.9%). The least common blood group form in males was O+ve 5(7.9%) which was secondly followed by the B-ve blood group 4(6.3%), and third least form of blood groups was A-ve, AB-ve, O-ve which have only 1(1.6%) students each.

Table -1 Female Thumb Patterns

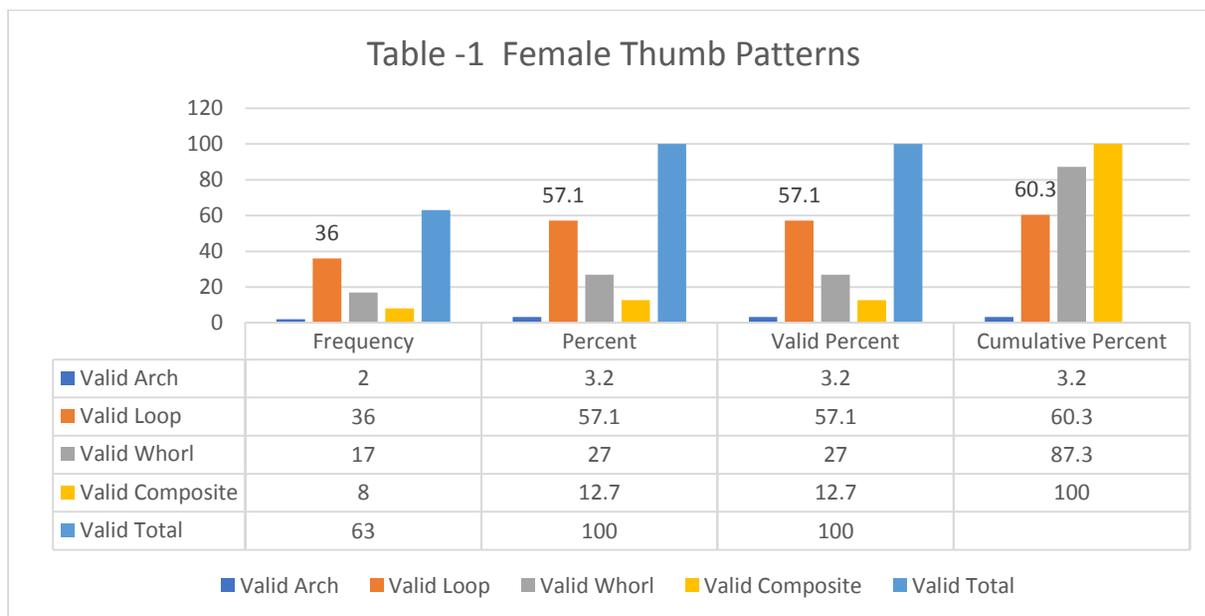
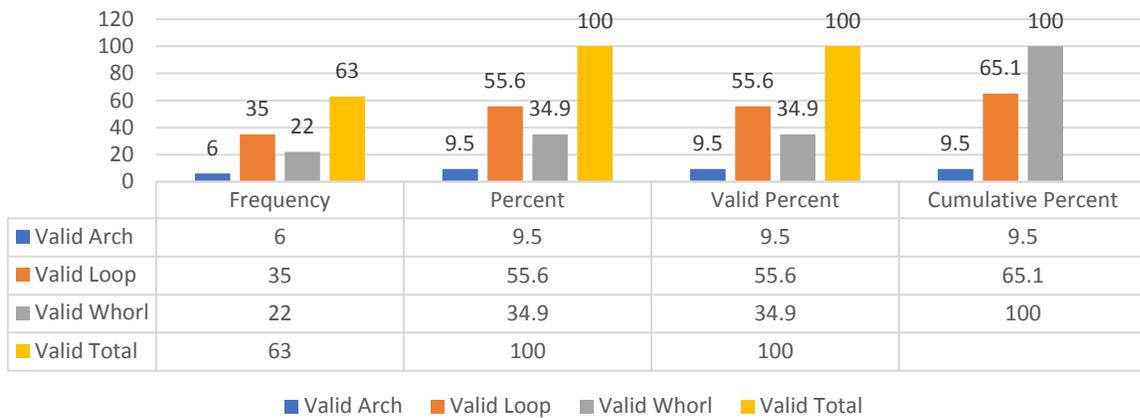
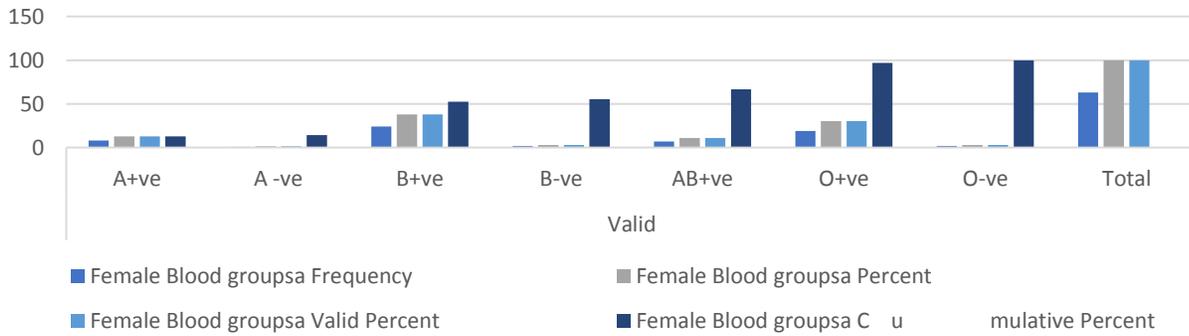


Table -2 Female Middle Finger Fingerprint Patterns^a



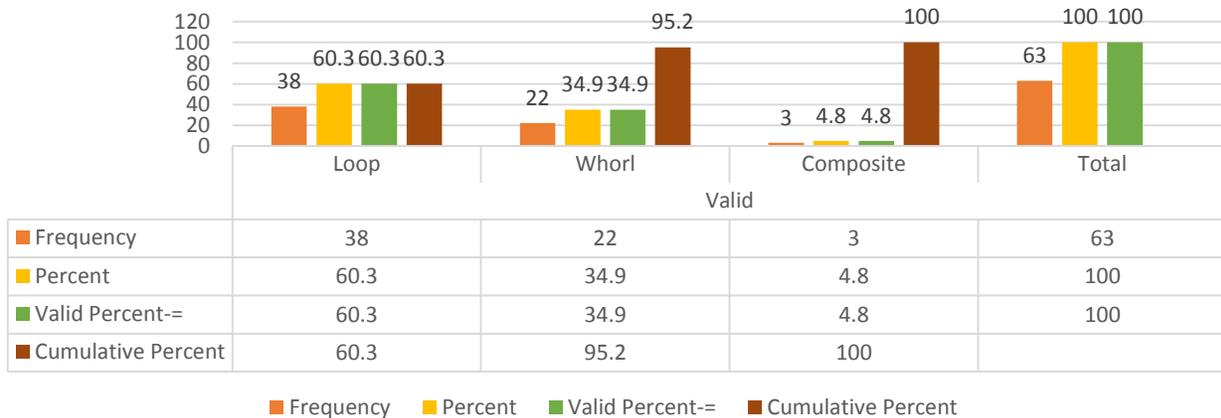
Valid Arch Valid Loop Valid Whorl Valid Total

table -3 Female Blood Group variations

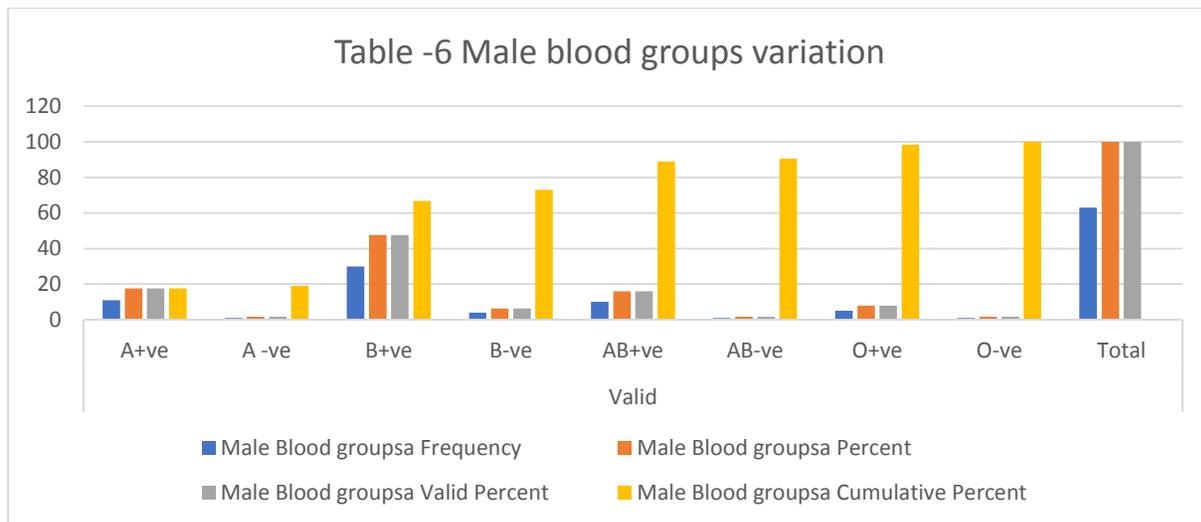
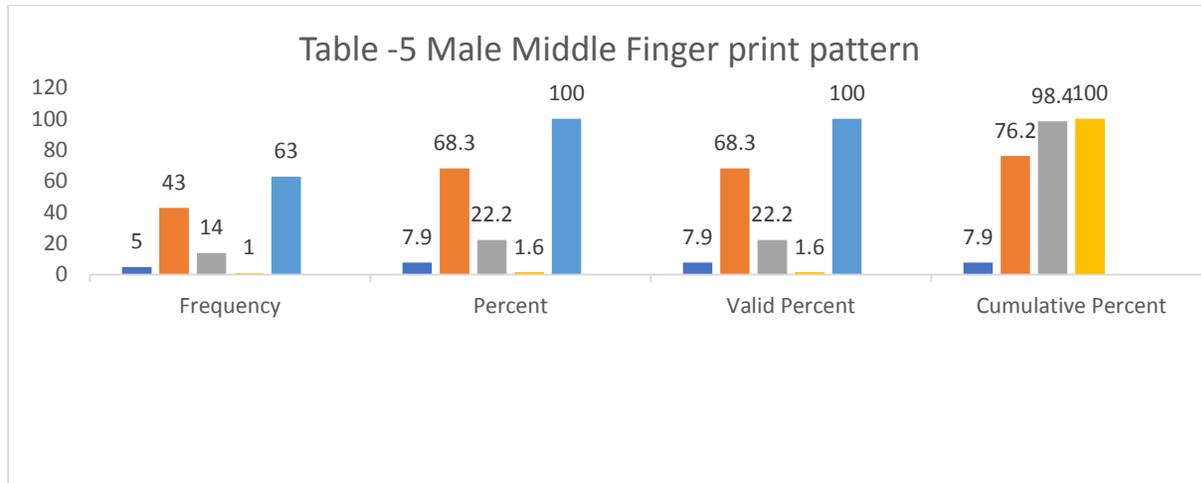


Female Blood groupsa Frequency Female Blood groupsa Percent
 Female Blood groupsa Valid Percent Female Blood groupsa C u mulative Percent

Table -4 Male thumb prints variations



Frequency Percent Valid Percent=- Cumulative Percent



DISCUSSION

Finger ridge paradigms are unique and can give a 100 percent authentic and accurate method in establishing the personal identity of individual. Finger ridge variation of two different individuals cannot be similar even in individuals of monozygus identical twins¹². Due to increasing rate of crime, criminals want to hide their identity by trying to destroy the finger ridge pattern by apply the corrosive agents and burns, but the finger ridges variations cannot be ruined perfectly. Radiation, electrical and Hansen's disease can permanently impair the finger paradigms¹.

In our results we found out that in females the prevalent form of finger ridge paradigm is loop in 57.1% in thumb and 55.6% in middle finger which was followed by whorl 2.7% in thumb and 22% in middle finger and third prevalent paradigm in thumb is composite 12.7% and in middle finger was Arch 9.5%. As compared with females in males the most prevalent paradigm was Loop 60.3% in thumb and 68.3% in middle finger which was followed by whorl pattern 34.9% in thumb and 22.2% in middle finger and third prevalent form was Composite in thumb 4.8% and in middle finger was Arch 7.9%. In comparison with the ABO blood groups we found in females prevalent ABO

blood groups are B+ve 38.1%, O+ve 30.2%, and A+ve12.7% and in males B+ve 47.6%, A+ve17.5% and AB+ve 15.9% blood groups dominated.

Literature showed the pattern of finger ridges results almost showing the same results has been previously documented at different area of Pakistan and India^{13,14,18}. Whereas another study in Karachi showed the Whorl paradigm is predominate followed by loop and Arch¹⁵. Another study of ZMC showed Loop ridges paradigm is dominated followed by Whorl and Arch and Blood group B followed by O blood antigen and A blood group antigens were found^{16,17}.

Such study results may be due to the oscillation of sample along with inadequate size of sample and both genetic variables pattern and blood groups are autonomous and may not affecting each other.

CONCLUSION

It was concluded that each and every individual finger ridge pattern is unique and cannot compromise the identity of individual , Loop pattern was predominate followed by the whorl paradigms and In ABO blood groups B+ve blood group was predominate followed by O+ve.

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