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Role of fingerprint patterns in relationship to gender and blood group in Eastern U.P.

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Abstract

Background: Fingerprint pattern in blood group in male and female population .There are four type of fingerprint Arch, loop, whorl, and composite. Ridge pattern may be used to categorise and record fingerprints, creating a nearly fool proof identification system. **Material and methods:** We were taken fingerprint through ink pad on white paper and analyzed with the help of a powerful magnifying hand lens and recorded it in a prepared format. **Result**: In male and female of fingerprint pattern between right and left and blood group A,B,AB,O are not significant, accept finger print pattern between right and left hand in female of blood group B is significant. **Conclusion:** According to our study we can conclude that gender and blood group of a person may be possible with the study of FPP method which may help in victims.

Keywords: Fingerprints pattern, Blood Group, Gender

INTRODUCTION

For the purpose of identifying an individual based on their distinct genotypic and phenotypic traits, humans have recently been collecting various sorts of data in large amounts. Numerous personal, societal, and legal applications include unique identity. Anthropometry, dactyloscopy, DNA fingerprinting, cheiloscopy, and handwriting are only a few of the techniques used for unique identification.[1, 2] Fingerprints are temporary or permanent impressions of the curved lines of skin at the end of a finger that is left on a surface.[3] Researchers from India and other countries have tried to establish a connection between the fingerprint pattern and a number of genotypic and phenotypic features in the hope that fingerprints would help in reliable identification for medicolegal purposes.[4] Ridge pattern may be used to categorise and record fingerprints, creating a nearly fool proof identification system. [5]The relationship between physical characteristics and blood types was expressed by Blotegrel and Blotegrel. Blood groups and the distribution of fingerprint (Dermatographic) patterns have been discovered to be related. Loops and blood group A have a stronger link, but blood group AB has a stronger correlation with arches. [6] Identity is a collection of one's bodily traits, whether they are sick or normal, psychological or functional. Identity, often

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known as sameness, is defined as the characteristics that give anything meaning and recognition.[7] The ridges thus generated during foetal development remain in place throughout an individual's lifetime until they are eliminated by skin breakdown after death.[8] The fingerprint's are four types, the whorl may be winding, oval, circular, or any other variety of a loop, and it would account for around 30% of the fingerprint. Arches are the most common type to this point (approximately 5% rare). The fingerprint pattern features straight lines that go from one side to the other without bending. For a mixture of type examples that don't fall into any of the aforementioned descriptions, the word "composite" is used. [9] Four types of finger prints patterns observed in fingers are, Loops, Whorls, Arches, and mixed or Composites. [10]

Material and Methods:

QUALITATIVE ANALYSIS

The following parameters observed and compare between the cancer patients and control groups. Fingertip patterns under qualitative analysis: -Arches (A): Arches are the simplest and also rarest patterns. There are two types: plain and tented arches. Loops (L): Loop usually begins on one side of the finger and end on the same side. When this happens from ulnar side, it is called ulnar loop; if on radial side, then it is called radial. Whorls (W): This could be having multiple circular/ oval ridges, one around the other, or a single ridge, round in multiple rounds. There are two types of whorl- Spiral and Circular Composite(C) : It is a combination of more than one pattern, either a combination of arch, whorl or loop, or two different patterns- two whorls/ two arches/ two loops [2-8]

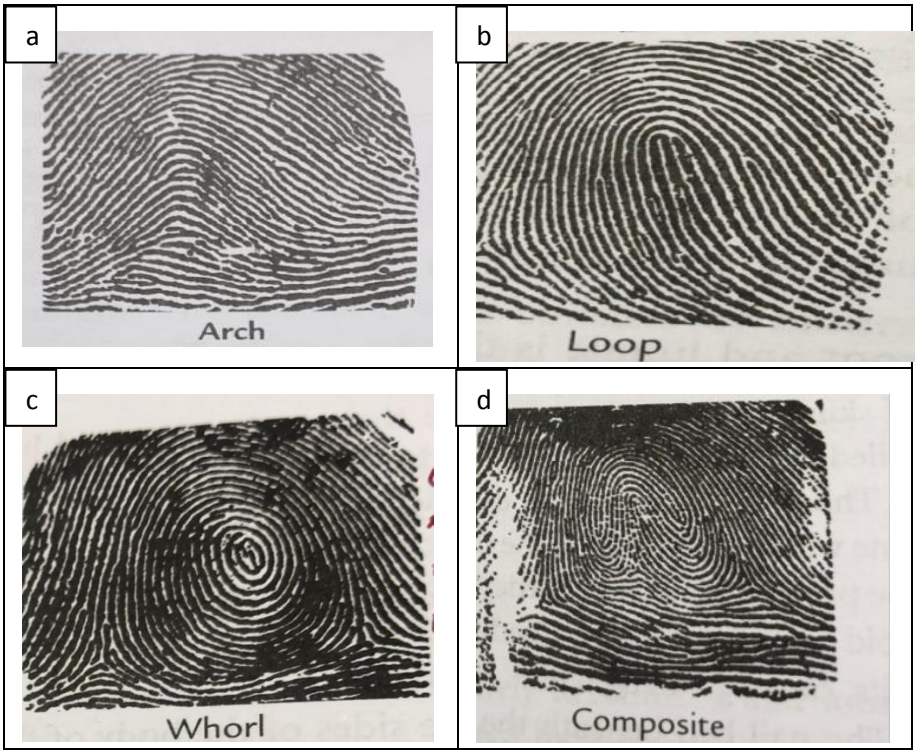

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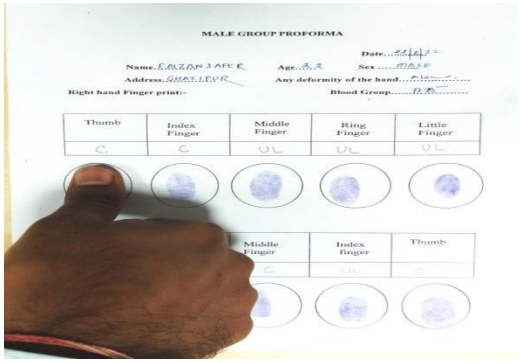
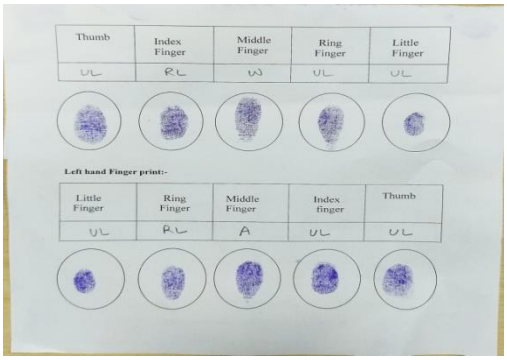
Figure : showing the finger pattern of the samples presenting (a) Arches pattern, (b) loop pattern, (c) Whorl pattern, (d) composite pattern.

Blood group:

There are two main therapeutically relevant blood categorization systems.[18,19] They are ABO Blood System and Rh System. Genetics governs the antigens (agglutinogens). The agglutinogens in the ABO system are "A" and "B." Each person has two chromosomes that carry one of each of the three allelomorphic genes responsible for the A, B, and O traits, one from each parent. [31]





The hand will wash with soap and water and humidity clean off with sprit. After drying the hands, ink pad use for the impression of fingerprint patterns. The plain white paper of A 4 size will be kept on the table .The subject will be ask to press their fingers on the blue colour ink pad and then the finger (palmer side) areas will be carefully and uniformly placed on the white sheet paper . The fingerprint pattern Loop, Arch, Whorl, composites) will be observing with the help of a powerful magnifying lens and recorded in a specially prepared format. In our study the digits will classified according to Henry's system.

INCLUSION CRITERIA:

1- Normal subject
2- Subjects have no scars on their fingers or thumbs no any birth deformities.

EXCLUSION CRITERIA:

3- Subjects with permanent scars on their fingers or thumbs with any hand deformities due to injury like burn were excluded from study.
4- Any systemic diseases of the skin such as Psoriasis, Leprosy involving fingertip patterns and Uncooperative patients.

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Stamp pad & Magnifying Lens , subject hand and glass plate.

RESULTS

Table 1- Blood Group distribution among males and females.

Blood group of males and females			
Blood Group	**Female**	**Male**	**Total**
A	98(32.7%)	86(28.7%)	184(30.7%)
AB	88(29.3%)	40(13.3%)	128(21.3%)
B	71(23.7%)	126(42%)	197(32.8%)
O	43(14.3%)	48(16%)	91(15.2%)
Total	300(100%)	300(100%)	600(100%)

Table 2- Comparisons of finger print patterns between right and left hand in males of blood group A.

blood group- A			
Finger print pattern	**Right hand**	**Left hand**	**p-value & statistical significance**
Arch	38(8.8%)	25(5.8%)	0.1252 (Not Significant)
Composite	32(7.4%)	43(10%)	
Loop	205(47.7%)	222(51.6%)	
Whorl	155(36%)	140(32.6%)	
Total	430(100%)	430(100%)	

Table 3- Comparisons of finger print patterns between right and left hand in males of blood group B.

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blood group-B			
Finger print pattern	**Right hand**	**Left Hand**	**p-value & statistical significance**
Arch	64(10.2%)	69(11%)	0.9672 (Not Significant)
Composite	37(5.9%)	38(6%)	
Loop	304(48.3%)	298(47.3%)	
Whorl	225(35.7%)	225(35.7%)	
Total	630(100%)	630(100%)	

Table 4- Comparisons of finger print patterns between right and left hand in males of blood O

Blood group-O			
Finger print pattern	**Right hand**	**Left hand**	**p-value & statistical significance**
Arch	31(12.9%)	30(12.5%)	0.9936 (Not Significant)
Composite	18(7.5%)	18(7.5%)	
Loop	94(39.2%)	97(40.4%)	
Whorl	97(40.4%)	95(39.6%)	
Total	240(100%)	240(100%)	

Table 5- Comparisons of finger print patterns between right and left hand in females of blood group A.

blood group-A			
Finger print pattern	**Right hand**	**Left hand**	**p-value & statistical significance**
Arch	15(3.1%)	22(4.5%)	0.5585 (Not Significant)
Composite	19(3.9%)	24(4.9%)	
Loop	281(57.3%)	273(55.7%)	
Whorl	175(35.7%)	171(34.9%)	
Total	490(100%)	490(100%)	

Table 6- Comparisons of finger print patterns between right and left hand in females of blood group AB.

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blood group-AB			
Finger print pattern	**Right hand**	**Left Hand**	**p-value and Statistical significance**
Arch	28(6.4%)	43(9.8%)	0.3005 (Not Significant)
Composite	33(7.5%)	30(6.8%)	
Loop	227(51.6%)	225(51.1%)	
Whorl	152(34.5%)	142(32.3%)	
Total	440(100%)	440(100%)	

Table 7- Comparisons of finger print patterns between right and left hand in females of blood group B

Blood group B			
Finger print pattern	**Right hand**	**Left Hand**	**p-value & statistical significance**
Arch	23(6.5%)	37(10.4%)	0.03302 (Significant)
Composite	11(3.1%)	23(6.5%)	
Loop	221(62.3%)	199(56.1%)	
Whorl	100(28.2%)	96(27%)	
Total	355(100%)	355(100%)	

Table 8- Comparisons of finger print patterns between right and left hand in females of blood

blood group-O			
Finger print pattern	**Right hand**	**Left hand**	**p-value & statistical significance**
Arch	10(4.7%)	15(7%)	0.2355 (Not Significant)
Composite	9(4.2%)	15(7%)	
Loop	110(51.2%)	115(53.5%)	
Whorl	86(40%)	70(32.6%)	
Total	215(100%)	215(100%)	

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DISCUSSION

The present study “Role of fingerprint patterns in relationship to gender and blood group in eastern u.p.” was conducted in “your Anatomy department”,. There were 300 male participants and 300 female participants with similar demographic characteristics such as age distribution, average age and blood group distribution. In our study the Loop was the most frequent finger print pattern in almost all the fingers of right hand and left hand of males from all the blood groups followed by whorl, and Composite and arch were the least finger prints patterns in both the hands of males from different blood group, Comparisons between right hand and left hand finger prints were found statistically insignificant in males of all the blood groups. Loop was the most frequent finger print pattern in almost all the fingers of right hand and left hand of females from all the blood groups followed by whorl. Composite and arch were the least finger prints patterns in both the hands of females from different blood group. And Comparisons between right hand and left hand finger prints were not statistically significant in males of all the blood groups except in the females of blood group-B. In this group, both the hands were significantly differing to each other on the basis of finger print patterns. And ‘B’197 (32.8%) Followed by ‘A’ (184) (30.7%), ‘AB’ (128) (21.3%), ’O’ (91) (15.27%) groups. According to the blood group, who found a correlation between the distribution of fingerprint patterns, gender, and blood groups, the percentage of loops was highest in blood group "B" (222) (51.6%) and lowest in blood group "O" (15.2%). Blood group B made up the majority of research participants (41.6%), followed by blood groups O and A (23.2% & 23.2%), and blood group AB (12%). According to Dr. Singh B and Jafar S et al. all 2016, the percentage of loops was highest in blood group 'B' (76.61%) and lowest in blood group 'AB' (15.28%), while the percentage of whorls was highest in blood group 'O' (65.76%). The percentage of arches was highest in blood group 'AB' (29.79%) and lowest in blood group 'O' (3.45%). [183]According to some who observed higher percentages of loop in the B and AB blood groups, respectively, whorls are bigger in the O blood type and lowest in the AB blood group, but the proportion of Arches is biggest in the AB blood group. having less "O" blood than the average. The same as Bhardwaja's research,[21] Blood types "A," "B," and "O" exhibit high frequencies of loops, moderate whorls, and low arches, according to Prateek, Gowada, and Rao. [22] In our investigation, the overall fingerprint distribution pattern revealed a significant frequency of loops in blood group 'B' in female 796 (63. 68%). compared to men, there were 448 (35.64%). Blood group 'O' whorls are greater in males 680 (54.4%) than females 324 (25.92%). Blood group 'A' & 'AB' in females 130(10.45%) and men 122(9.76%) is virtually equal. According to Table 4, whorl frequency is highest in blood type 'O' (65.76%) whereas loop frequency is highest in blood group 'B' (76.61%), which is consistent with research by Bharadwaja. [21] ,[23] and arches were more common in blood type "AB" (29.76%) and least common in blood group "O" (3.45%).The majority of study participants (39.3%) had blood group B, which was followed by blood groups "O" (87%) (29%),"A" (72%) and "AB" (23) (7.7%). We discovered that whorl frequency was highest in all individual blood groups of the ABO blood group system, followed by loop and arches, with the exception of the O blood group, where loops were more uniformly distributed across patients of all blood types. Furthermore, there was no clear connection between gender and fingerprint patterns.

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Furthermore, we could not discover any solid evidence linking fingerprint patterns to the ABO blood group. (184)

CONCLUSION:-

The present study "Role of fingerprint patterns in relationship to gender and blood group in eastern u. p."was conducted in '' Anatomy department", Malwanchal university

Loop was the most frequent finger print pattern in almost all the fingers of right hand and left hand of males from all the blood groups followed by whorl. Composite and arch were the least finger prints patterns in both the hands of males from different blood group. Comparisons between right hand and left hand finger prints were found statistically insignificant in males of all the blood groups. Loop was the most frequent finger print pattern in almost all the fingers of right hand and left hand of females from all the blood groups followed by whorl. Composite and arch were the least finger prints patterns in both the hands of females from different blood group. Comparisons between right hand and left hand finger prints were not statistically significant in males of all the blood groups except in the females of blood group-B. In this group, both the hands were significantly differing to each other on the basis of finger print patterns.

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