



Short Communication

Comparison of fingerprint patterns of the left-hand thumb among different human blood groups

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Abstract

It has been created after many years of studies and study that the papillary ridges on the hands ' fingers and palms and the sole of the feet's toes stay true to the mould in which they were formed by nature throughout their lives, unless their symmetry is permanently interrupted by some deep seated injury. These ridges created during the first few months of fetal life not only stay unchanged during lifetime, but after death appear to have the unique property of out lasting any other identifiable body characteristic. Due to the enormous potential of fingerprints as an efficient identification tool, an attempt was made to examine the association with an individual's blood group. In this research paper, fingerprints from a total of 250 learners from Karnatak Science College, campus Dharwad, have gathered 125 male topics and 125 female subjects with distinct A B AB O blood groups belong to distinct age groups, the blood group is another biological record that remains unchanged throughout the lifetime of a person. Determining the blood group of a suspect from the crime scene discussions helps to identify an individual. In the blood group scheme A B AB O, Landsteiner classified blood groups .It is suggested to research the correlation between blood groups and fingerprint patterns on a larger sample, particularly demographic groups.

Keywords: Fingerprint, patterns, blood group, impressions, left hand thumb.

Introduction

For more than one hundred years, fingerprints have been the gold standard for private identification within the forensic society, developing fresh visualization methods to acquire pictures of latent fingerprints for identification purposes is continuing. In ancient Babylonian, Greek, Chinese and Roman culture, fingerprints have been discovered. Fingerprints are regarded as the earliest impressions of friction ridge skin discovered to date. Fingerprints are created by the sweat glands in the friction skin of hands depositing suddenness and fatty matter, associated with any dirt that occurs to be on the tips of the finger¹. Fingerprint means the reproduction, in whatever manner, of the ridge formation on the surface of the finger's outer or nail joint, whether reproduced in ink, blood or by the greasy substance emitted through the outlets by the sweat glands. Which are situated in the summit or top of the ridges². The skin, It covers the human hand's anterior layer and the plant's foot surface, appears to be distinct from the skin, which includes the remainder of the body. Fingerprint is the pattern or design formed by the ridges on the side of the first joint of a finger or thumb. The pattern or design is made up of fine lines which are known as ridges and the spaces in between them are known as furrows³. The ridges form the basis of the science of fingerprints. The presence of ridges enables a person to hold an object. The ridge characteristics' do not undergo any change in the life of a person and persists till the body is destroyed⁴.

For the first time from the twelve to sixteen weeks of embryonic development, the latest dermal sculptures or fingerprints on human fingers, palms, soles and toes and their creation will be completed by the fourteen week, i.e. around the fetus' six-month period. The ridges thus formed during the fetal period do not change their direction or alignment during the life of an individual until they are destroyed by skin decomposition after death⁵. Or until burning, chemicals, cuts and skin illnesses have damaged the skin. Genetically determined finger print patterns stay unchanged from birth to death. Two people with the same fingerprints are approximately one in 64,000 million⁶.

Blood group systems were found by 'Karl Landsteiner' back in 1900. Total 19 main groups were recognized that differ in the frequency of the spread of different races of humanity. Both classes of 'ABO' and 'Rhesus' are medically of great importance. The 'ABO' schemes are further differentiated by the presence of respective plasma antigen from the forms of A, B, AB, O blood group⁷. Another biological record is the blood group which remains unchanged throughout the lifetime of a person. Determining a person's blood group from the topics at the crime site helps recognize a person. Under the ABO blood group system, Landsteiner categorized blood group⁸.

Materials and methods

In this research article, I gathered fingerprints from a total of 250 learners from Karnatak Science College, Campus Dharwad,

125 male subjects and 125 female subjects were recognized by simple random sampling during the 2019-2020 academic year. All participants below the age of 20 years voluntarily agreed to engage in this research study. Following the approval of the topics, the fingerprints of the left thumb were drawn on a pre-designed proforma containing names, age, race, blood groups. Each subject was explained the procedure for blood collection and fingerprints, and the common grievances of the participant were also recorded. The array of fingerprints was analyzed using heavy magnifying lens, black ink tube, glass slab and white fingerprint slip. All topics are told to swab their left hands carefully and then tap their left thumb fingertips on the ink glass slab and then roll the fingerprint to the paper.

Gender and age of all topics was observed and with the assistance of a magnifying lens, based on the presence of ridge lines, fingerprint patterns are recognized as loops, whorls, arches and composites. Depending on their main pattern, the fingerprints the classification system suggested by Galton were used^{9,10}. Blood subjects were collected after washing it with methylated spirit by puncturing the finger with a sterile lancet. On a pure tile, a fall in blood was consistent with anti-serum A; anti-serum B and anti-serum D for each subject. Blood groups have been settled based on the presence or lack of adherence¹¹.

Results and discussion

During the academic term of 2019-2020, a thorough and detailed fingerprint analysis with correct technique was conducted in subjects from Karnatak Science College, Campus Dharwad. The total number of 250 subjects comprises 125 males and 125 females in the same amount.

Table-1 demonstrates how the target blood groups are distributed by race. Most blood group O subjects were 35.6% (89), followed by blood group B 32.8% (82), blood group A 20.4% (51), and blood group AB 11.2% (28). Blood group O

had the highest frequency in both males and females, followed by blood groups B A AB.

Table-1: Sex Wise Blood Groups Distribution.

Blood Type/Gender	Male	Female	Total
A	28 (22.4%)	23(18.4%)	51(20.4%)
B	39(31.2%)	43(34.4%)	82(32.8%)
AB	13(10.4%)	15(12%)	28(11.2%)
O	45(36%)	44(35.2%)	89(35.6%)
Total	125(100%)	125(100%)	250(100%)

Table-2: Distribution of fingerprint patterns of the left hand thumb together with Gender Wise.

F P Patterns/ Gender	Male	Female	Total
Arch	13(10.4%)	11(8.8%)	24(9.6%)
Loop	55(44%)	59(47.2%)	114(45.6%)
Whorl	35(28%)	37(29.6%)	72(28.8%)
Composite	22(17.6%)	18(14.4%)	40(16%)
Total	125(100%)	125(100%)	250(100%)

Table-2 displays gender-specific fingerprint pattern distribution. Loops frequencies in females (59) were found to be 47.2 percent higher than in males (55). Whorls were 29.6% higher in females than 28% in males (35) and arches were 10.4% higher in males compared to 8.8% in females (11). Variations in both genders were shown in composite patterns.

Table-3: Distribution of Left Hand Thumb Finger Print Patterns along with Gender Wise and Blood Group.

F P Patterns /Gender	Male				Female				Total
	A	B	AB	O	A	B	AB	O	
Arch	02	04	01	06	01	04	01	05	24
Percentage (%)	7.15	10.26	7.69	13.34	4.35	9.31	6.66	11.37	9.6
Loop	12	15	05	23	12	19	07	21	114
Percentage (%)	42.85	38.47	38.46	51.11	52.17	44.18	46.66	47.72	45.6
Whorl	10	12	04	09	07	13	05	12	72
Percentage (%)	35.71	30.76	30.76	20	30.43	30.23	33.34	27.27	28.8
Composite	04	08	03	07	03	07	02	06	40
Percentage (%)	14.29	20.51	23.07	15.55	13.05	16.28	13.34	13.64	16
Total	28	39	13	45	23	43	15	44	250

Table-3 appearances fingerprint patterns of the left-hand thumb with gender wise and blood group. Frequencies of loops were found to be high in O blood males (23,51.11%) group compared with those females (21,47.72%). Whorls were found to be higher in females of the O blood (12,27.27%) group were found to be compared to that of males (09,20%). Frequencies of Arch were found to be higher in males of the O blood (06,13.34%) group were found to be compared to that of females (05,11.37%). Loops were found to be higher in females of the B blood (19, 44.18%) Group was found to be compared to those males (15,38.47%). Whorls were found to be higher in females of the B blood (13,30.23%) Group was found to be compared to those males (12,30.76%).

Conclusion

This research study of fingerprint patterns in the left-hand thumb can help predict a person's gender and blood type. Most subjects were found to be larger in men in blood group O, followed by blood group B to be larger in women. Most of the topics belonged to Loop patterns in women were discovered to be greater. Whorls were seen higher in women compared to men and lower in men compared to women were seen in Arches. Frequencies of Loops in O blood group men were discovered to be greater than in women. In women of the O blood group, Whorls were discovered to be greater than in men. In women of the B blood group, Loops were discovered to be greater than those men. It was discovered that Whorls were greater in B-group women compared to those men. The current research of left-hand thumb patterns Loops and Whorls was more in women.

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