Study of Correlation between different fingerprint Patterns and Emotional intelligence in Medical Students

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Abstract

Background: Dermatoglyphics is a field of study that focuses on the patterns of ridges on the skin's surface found on the palms of hands, fingers, and soles of the feet. During development, various creases develop on the brain and are reflected on fingerprints representing various regions of the brain and are commonly being used in dermatoglyphics mental intelligence test. It has been suggested that there is a relationship between dermatoglyphic patterns and various types of intelligence in humans. This study aims to investigate the potential correlation between intelligence level in young individual and dermal ridge pattern.

Materials and methods: This study was conducted in the Department of Anatomy, Chattagram Maa-O-Shishu Hospital Medical College from November 2021 to May 2022. Sample were collected from Chattagram Maa O Shishu Hospital Medical College. Self-evaluating questionnaire was applied on 95 M.B.B.S. students of Phase I. The subjects were categorized into two groups- Category A including subjects with EQ>120 and Category B including subjects with EQ<120. Then the responses had entered as data into the Statistical Package for Social Science (SPSS) version 20 and data was analyzed using chi square test.

Results: The Loop pattern has the highest incidence with a count of (n= 51). Additionally, it appears that students with the Loop pattern tend to score high on EQ (Emotional Quotient) tests, specifically scoring above 120. On the other hand, the Arch pattern has the lowest incidence rate with (n=21) and tends to have the lowest EQ scores, scoring below 120. The data is said to bear no statistical significance except L3 and L5 fingers with p-values (0.02) in both that are statistically significant. 17% of total population scored EQ>120 and 83% population scored EQ <120 out of 150 total score.

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Conclusion The findings presented indicate a correlation between fingerprint patterns and emotional intelligence. This suggests that dermatoglyphics can be utilized as a tool to identify students who may have lower emotional intelligence and tailor teaching and counseling strategies accordingly. Some parents have started analyzing their children' fingerprints in early age to understand their innate characters and learning potential in terms of personal, educational, or for preference in any other enterprise.

Key words: ARCH; Emotional quotient EQ; Fingerprint; LOOP; WHORL.

Introduction

Throughout the history, humans have been captivated by the intricate patterns of skin ridges and carvings, such as fingerprints, palm prints and footprints. The precise shape and arrangements of these patterns have always been a source of wonder and curiosity, yet their origins remain shrouded in mystery.[1] Dermatoglyphics is the study of the characteristic ridge patterns on the volar surfaces of the skin. This is a unique pattern on a person's fingers and palms, do not change throughout their lifetime, except for unique patterns increases proportionally with persons overall growth.[2,4] However, certain conditions such as fetal Rubella, Thalidomide poisoning, chromosomal abnormalities and maternal stress during pregnancy can disrupt these patterns.[2]

Fingerprint patterns are categorized into three primary types: whorls, loops and arches.[5,6] Loops can either be radial loop (When the loop opens toward the thumb) and ulnar loop (When the loop opens toward the small finger).

Emotional Intelligence (EI) is a critical component of a wide range of skills that empower individuals to create value for themselves and others. According to developmental biologists, fingerprints are prenatal, developed in mothers' womb during 13th to 18th week of pregnancy, they are largely influenced genetically[1,3]. According to medical science, the ridge growth takes place in synchronization with Neocortex. The Neocortex, which is a learning system, is primarily brain's center of intelligence. Its

structural makeup has much to contribute towards an individual's ability to perceive, learn and react to an input[1]. MindTech revealed the congenital links between one's fingers and intrinsic qualities and talents. Since 1823, scientists have discovered that fingerprint patterns and inner intelligence are related to each other.[7] From then onwards, scientists incorporated dermatoglyphics with the theory of multiple intelligences. With the help of these, a person's personality and hidden talents can be evaluated and classified consequently.

The human brain is composed of two cerebral hemispheres that are morphologically symmetrical: the left and right hemisphere. However, their capabilities differ. The left hemisphere manages logical and computational abilities, while the right hemisphere controls aspects of human experience related to emotions, passion, creativity, and intuition through its neural circuits.[8]

In the medical and healthcare fields, there is growing recognition of the importance of EI for promoting mental health and enhancing professional practice. EI is also instrumental in developing stronger relationships, excelling at work, and attaining personal and career objectives.[9,10] Daniel Goleman proposes that Emotional intelligence matters more than IQ In determining success in career, relationships, leadership etc.[10,5] One's own emotional intelligence can be enhanced by developing self-awareness, practice mindfulness techniques such as meditation, deep breathing, cultivate empathy by actively listening and trying to understand others' perspectives, engaging in reading books, attending workshops or taking different courses on emotional intelligence etc.

Emotional Intelligence (EI) measured as Emotional Quotient (EQ), has been determined in this study, by a standardized questionnaire by Emily. A. Sterrett, which evaluates the six domains of Emotional Intelligence- Self Confidence, Self-awareness, Social competency, Empathy, Motivation and Self Control.[10,6] This study aims to investigate the potential correlation between intelligence level in young individual and dermal ridge pattern. Pervious research has suggested that each finger is associated with a specific brain lobe and a particular type of intelligence, and that each type of fingerprint is linked to a specific learning style. For example- Whorl- cognitive learning, Loop-affective learning and critical thinking, Arch-enthusiastic and reflective learning.[11]

Materials and methods

This study was conducted in the Department of Anatomy, Chattagram Maa-O-Shishu Hospital Medical College from November 2021 to May 2022. Sample were collected from Chattagram Maa-O-Shishu Hospital Medical College. Selfevaluating questionnaire was applied on 95 M.B.B.S students of phase I. The subjects were categorized into two groups- Category A including subjects with EQ>120 and Category B including subjects with EQ<120. Dermatoglyphic prints were collected by INK AND PAPER method where in both hands of the subjects were cleaned with alcohol, then a mixture of glycerin and ink was applied over the fingers, and the impressions were collected on the writing paper by carefully rolling the fingers from radial side to ulnar side. The above method was selected as it is a simple, inexpensive, non-traumatic procedure with clarity of prints.

Then the responses had entered as data into the Statistical Package for Social Science (SPSS) version 20 and the data was analyzed using chi square test.

This research was conducted after getting ethical clearance from the CMOSHMC Review Board (IRB).
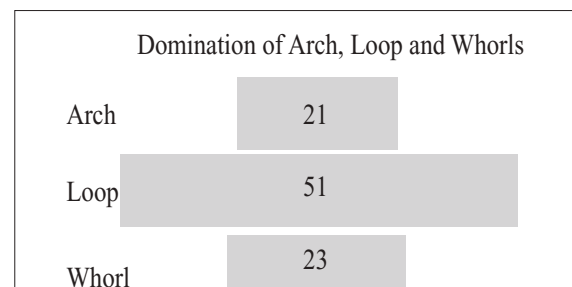
Results

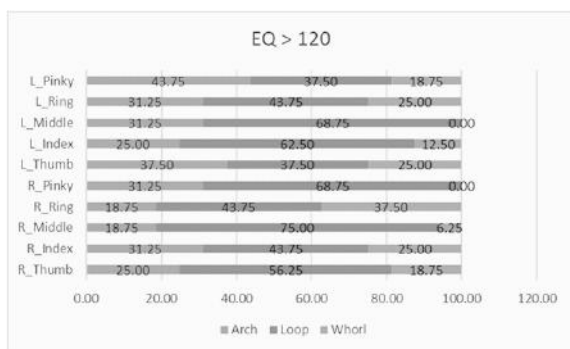**Figure 1** Domination of Arches, Loops and Whorls in medical students

Figure 2 Graph showing percentage incidence of each type of fingerprint pattern. Loop fingerprint shows higher EQ for maximum fingers. Category A (EQ >120)
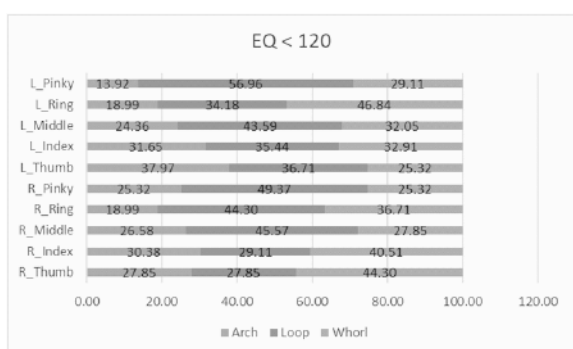

Figure 3 Graph showing percentage incidence of each type of fingerprint pattern. Arch type fingerprint shows lowest EQ in maximum fingers. Category B (EQ <120)

Table I Incidence of different types of fingerprint pattern in each digit in both Category A and Category B

Finger	EQ	Arch	Loop	Whorl	Total	p-value
L-1						
Left Thumb	>120	6	6	4	16	0.10
	<120	30	29	20	79	
	Total	36	35	24	95	
L-2						
Left Index	>120	4	10	2	16	0.10
	<120	25	28	26	79	
	Total	29	38	28	95	
L-3						
Left middle	>120	5	11	0	16	0.03 (S)*
	<120	19	35	25	79	
	Total	24	45	25	94	
L-4						
Left Ring	>120	5	7	4	16	0.25
	<120	15	27	37	79	
	Total	20	34	41	95	
L-5						
Left pinky	>120	7	6	3	16	0.02 (S)*
	<120	11	45	23	79	
	Total	18	51	26	95	

Finger	EQ	Arch	Loop	Whorl	Total	p-value
R-1						
Right thumb	>120	4	9	3	16	0.06
	<120	22	22	35	79	
	Total	26	31	38	95	
R-2						
Right Index	>120	5	7	4	16	0.42
	<120	24	23	32	79	
	Total	29	30	36	95	
R-3						
Right middle	>120	3	12	1	16	0.08
	<120	21	36	22	79	
	Total	24	48	23	95	
R-4						
Right Ring	>120	3	7	6	16	0.10
	<120	15	35	29	79	
	Total	18	42	35	95	
R-5						
Right Pinky	>120	5	11	0	16	0.08
	<120	20	39	20	79	
	Total	25	50	20	95	

*S = Significant, only L-3 and L-5 fingers show statistical significance.

Total EQ Scores of 95 subjects were calculated and categorized as mentioned above. Fingerprints were categorized into Arches, Loops and Whorls. The most common fingerprint pattern found among the students was the loop pattern (n = 51), followed by the whorl (n = 23) and arch (n = 21) that is shown in (Figure 1, Table I).

The observations were then tabulated in Table I and constructed in Figure 2, Figure 3.

In Category A (>120) as seen from Table I and figure 2, the most recurring fingerprint pattern is LOOP in all the digits with the exception of L5 (Pinky) in which Arch is the most recurring type of finger print with the incidence of 7 (43.75%). In this table whorl pattern shows the least incidence in all fingers except R-4 where Arch has the lowest incidence of 3 with percentage of 18.75%.

In Category B (<120) as seen from Table I and figure 3, the most recurring fingerprint pattern is LOOP in maximum digits with the exception of R-1, R-2 and L-4 in which whorl pattern is the most recurring fingerprint pattern with the percent incidence of (35) 44.30%. (32) 40.51% and (37) 46.84% respectively. In L-1 finger Arch pattern is the most recurring fingerprint pattern with the percentage incidence of (30) 31.65%.

For inferential statistics, chi-square test of significance was applied for each digit, for associating dermatoglyphics patterns and EQ. "p"-value of less than 0.05 was considered statistically significant.

In Table I chi-square test of significance were done, and p-values were calculated. The data is said to bear no statistical significance except L-3 and L5 fingers with pvalues (0.02) in both that were statistically significant.

Discussion

Dermatoglyphic patterns, or fingerprints, are distinct for each individual and remain consistent throughout their lifetime. These patterns are classified into three main types: loops, whorls, and arches. Loops account for the majority of fingerprint patterns at 60-65%, followed by whorls at 30-35%, and arches at 5%. This distribution of fingerprint patterns is observed globally and is consistent with findings from previous studies.[12] In the present study conducted among medical students, similar frequencies of different fingerprint patterns were observed, further corroborating previous research.

Various studies have been conducted in the recent past to determine Emotional Quotient of medical students by

Smrithi Shetty C et al, Abhijeet Faye et al & Kavana G et al.[13-15] The ulnar loop was found to be the most prevalent type of fingerprint pattern, which is consistent with the findings of two previously published studies on the distribution of fingerprint patterns among medical students by Tanuj Kanchan et al & Amit A. Mehta et al. in 2015.[16,12] Both studies reported loops as the most frequent fingerprint pattern among medical students. This may explain why the ulnar loop is the most common fingerprint pattern observed in both categories A and B in the present study.

In present study, on R-1, R-2 and on L-4 finger, whorl is the most recurring finger print pattern in category B (<120) which is partially similar to the study conducted by Rachana Suresh.[9]

A similar finding was reported in a study by Dr. K. Lakshmi Kumari et al. which investigated the correlation between dermatoglyphics and IQ among medical students (Assumed to have higher IQ based on a common competitive exam) and medical lab technician students (Assumed to have lower IQ). The study found that medical lab technician students had a greater number of whorls in their fingerprints compared to medical students.[7]

Limitation

The sample size were also relatively small and from a single centre, which may not represent the exact scenario of the whole population.

Conclusion

Good EQ includes ability to understand and control emotions, to be empathetic and socially competent and   so on. These qualities in turn improve an overall communication skill which adds on to the performance.

in medical training. This study reports that 17% of total students having >120 EQ and 83% of the population have <120 EQ.The findings suggest a significant need for enhancing Emotional Intelligence (EI) among the population under study. This is particularly crucial for medical students who should ideally possess strong EI skills. Here Loop is the most common finger print pattern among medical students with good EQ score i,e EQ>120. It indicates they have good interpersonal skills with their patients and their families and they are also good at affective learning and critical thinking. In this study the most recurring fingerprint pattern with low EQ score that requires improvement is Whorl.

Recommendation

More studies on the relationship between dermatoglyphics and Emotional Intelligence with larger sample size should still be embarked on, to unravel different associations.

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Contribution of authors

RC-Conception, design, acquisition of data, data analysis, drafting and final approval.
AB- Data analysis, drafting and final approval
AM- Data analysis, interpretation of data, drafing and final approval.
PKB-Data analysis, critical revision and final approval.

Disclosure

All the authors declared no competing interests.

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