

A STUDY OF FINGER PRINTING PATTERN IN KANCHIPURAM DISTRICT INHABITANTS

G. Venkat Kumar^{*a}, V. Sasikala^a, T. Pratheep^a, J. Thulasidhasan^b

^aDepartment of Biotechnology, Ponnaiyah Ramajayam Institute of Science and Technology, Kanchipuram, Tamil Nadu, India.

^bDepartment of Chemistry, Ponnaiyah Ramajayam Institute of Science and Technology, Kanchipuram, Tamil Nadu, India.

Abstract:

In the present examination, an endeavor has been made to study the fingerprint patterns in Kanchipuram district population. Fingerprint patterns were studied in 300 participants, 150 males and 150 females among the age group 20-60. The present study was conducted at the department of biotechnology, Ponnaiyah Ramajayam Institute of Science and Technology, Manamai, Kanchipuram district during the year 2018. Fingerprint patterns were studied in both hands among males & females and evaluated. The outcome demonstrated that the predominant pattern among both male and female was the loop, trailed by whorl and arches.

Keywords: Finger prints, Kanchipuram population, Ink method, Gender difference.

Introduction:

The investigation of fingerprints as a strategy for distinguishing proof is otherwise called Dactylography and as of now it is otherwise called the Henry-Galton arrangement of distinguishing proof [1]. Dr. Henry Faulds, in 1872 perceived the significance of fingerprints, and published an article in Nature in 1880, however the main mentionable investigation on unique mark was finished by Sir Francis Galton, an English anthropologist in 1892 [2][3]. According to Henry's classification the dermatoglyphic patterns can be mainly documented in to three patterns, those are named as loops, whorl and arches. The loops are divided into five types such as ulnar, radial, twinned, central pocket and lateral pocket. The arches are divided into two type's plain arch and tented arch [4].

Unique finger impression acknowledgment is extremely prominent in biometric framework as finger impression stays unaltered for the duration of the life of a man. Fingerprints are one of a kind in nature and fingerprints of one individual are unique in relation to someone else's fingerprints. It tends to be utilized in get to control instrument and for participation framework [5]. The application areas of finger print recognition are voter registration and identification, border control via passport verification by using biological parameters, population census by using biometrics, driver's license and professional ID card verification with biometric identifiers. Apart from these fingerprints plays a major role in forensic science as the fingerprints gathered at a crime scene can be used to identify the the person behind the crime, victims and other persons who involved in the crime scene.

In the present study, finger prints pattern among Kanchipuram district (Tamil Nadu, South India) were studied in 300 participants, 150 males and 150 females, among the age group of 20-60 years. Finger prints of the right and left were taken using the ink method. Distribution of finger print patterns were studied in both hands among males & females and compared.

Materials and Methods:

The present investigation was directed during the year 2018 at department of biotechnology, Ponnaiyah Ramajayam Institute of Science and Technology, Manamai, Kanchipuram district. Ethical clearance was taken from Ponnaiyah Ramajayam Institute of medical sciences institutional ethical committee. Finger prints were studied in 300 participants, 150 males and 150 females, among the age group of 20-60 years. All healthy participants with no history of genetic disorder were included in the study. Participants with permanent scars on their fingers, birth imperfection or malady, with any finger deformities due to injury, those having worn fingerprints, additional or webbed, were avoided from the investigation. Glass slab-inking roller strategy was utilized to consider the finger print. Kores duplicating ink, glass plate, ink roller, magnifying lens and paper were used. Each subject was requested to wash their hands with cleanser water and dehydrated. The finger print was taken by rolling the finger on white paper to obtain an impression of entire tip. Informed written consent was acquired preceding taking the fingerprints with legitimate methodology disclosed to the participants.

Results and Discussions

Finger prints were studied in 300 participants, 150 males and 150 females, among the age group of 20-60 years. Table 1 shows the Percentage distribution of finger print pattern among males & females (right and left hand) in Kanchipuram district population. Among the total population the loops were predominant with 44.3 %, followed by whorls 40.8 % and arches 15.4 %. In 50 % of total male population the loops were predominant with 44.2 %, followed by whorls 40.7 % and arches 15.05 %. In 50 % of total female population the loops were predominant with 44.4 % loops, followed by whorls 40.9 % and arches 14.7 %. The result showed that left hand digits of males had higher percentage 45 % of loops to the right hand digits 43 %. Whereas, in females right hand digits had a higher percentage 44.8 % of loops to the right hand digits 44 %. Whorls were dominant in right hand of both males and females. Arches were dominant in left hand of both males and females. Comparing all the digits loops was predominant in thumb, index, middle and little finger. Whereas, in male and female whorls was predominant in the ring finger. Similar studies from other part of India showing different distribution patterns. Anil et al studied the finger print distribution pattern among the Kerala and Manipuri population. Their results showed that loops were predominant in Kerala population with 51 %, trailed by whorls 44 % and arches 5 %. In Manipuri population also loops were predominant with 55 %, trailed by whorls 37 % and arches 8 % [6]. Roshani et al studied the north Indian

population residing in Lucknow. Their results suggest that the most common pattern in both genders were loops with average of 63 %, followed by whorls with average of 27 % and arches with average of 10 % [7]. Nithin et al., studied the South Indian population from Mysore reported that in males, the most common type of composite pattern was twinned loop (63%), followed by lateral pocket loop (27.4%) and accidental pattern (9.6%). In females, the most common type was lateral pocket loop (42.6%), followed by twinned loop (33.3%), accidental pattern (16.7%) and central pocket loop (7.4%) [8]. Other studies reported from India also demonstrated that loops are more common with 52.2% trailed by whorls with 41.8% and arches with 6.0 % [9][10][11].

Table 1. Percentage distribution of finger print pattern among males & females (right and left hand) in Kanchipuram district population.

| Digit | Gender | Loops (%) | | Whorls (%) | | Arches (%) | |
|------------|--------|-----------|------|------------|------|------------|------|
| | | Right | Left | Right | Left | Right | Left |
| Thumb | Male | 45 | 47 | 30 | 29 | 25 | 24 |
| | Female | 43 | 42 | 35 | 36 | 22 | 22 |
| Index | Male | 50 | 49 | 45 | 43 | 5 | 8 |
| | Female | 45 | 47 | 40 | 39 | 15 | 14 |
| Middle | Male | 46 | 45 | 40 | 39 | 14 | 16 |
| | Female | 60 | 55 | 30 | 33 | 10 | 12 |
| Ring | Male | 30 | 32 | 50 | 49 | 20 | 19 |
| | Female | 29 | 31 | 55 | 50 | 16 | 19 |
| Little | Male | 48 | 46 | 45 | 43 | 7 | 11 |
| | Female | 47 | 45 | 49 | 42 | 4 | 13 |
| All digits | Male | 43.8 | 45 | 42 | 39.4 | 14.2 | 15.6 |
| | Female | 44.8 | 44 | 41.8 | 40 | 13.4 | 16 |

Conclusion:

Finally, our study demonstrated that the most widespread type of finger print pattern observed in Kanchipuram district population was loops followed by whorls & arches in both males and females. Furthermore large-scale studies with finger print pattern among Kanchipuram populations were under study.

Acknowledgement:

Authors honestly thank all the participants of this study who have helped in completing the study.

Reference:

1. Schaumann B, Alter M. Dermatoglyphics in Medical Disorders. New York: Springer Verlag; Berlin. 1976; 27-871.
2. Basu R. Fundamentals of Forensic Medicine and Toxicology. 1st ed. Books and Allied (P) Ltd; 2003:40-44. 8.
3. Mant AK. Taylor's Principles and Practice of Medical Jurisprudence. 13th ed. B I Churchill Livingstone; 1994: 176-177.
4. Galton F. Finger Prints. London: Macmillan and Co. 1892.
5. Pillay VV. Text Book of Forensic Medicine & Toxicology. 15th ed. Hyderabad: Paras Medical Publishers; 2009. p. 53-94.
6. Anila K, Kaveri H, Ganesh SN, Rekha K, Prabhu S, Niranjana KC. Assessment and comparison of fingerprints between Kerala and Manipuri populations of India: A forensic study. J Adv Clin Res Insights. 2014;2:42-45.
7. Roshani S, Prabhakar S, Fida H, Manoj S, Bezbaruah NK, Amita S. Study of dermatoglyphic patterns in north indian adult population. World journal of pharmacy and pharmaceutical sciences. 2016;5(9):2129-2136.
8. Nithin MD, Balaraj BM, Manjunatha B, Mestri SC. Study of fingerprint classification and their gender distribution among South Indian population. J Forensic Leg Med. 2009;16(8): 460-63.
9. Pakhale SV, Borole BS, Doshi MA, More VP. Study of the Fingertip Pattern as a Tool for the Identification of the Dermatoglyphic Trait in Bronchial Asthma. J Clin Diagn Res. 2012;6(8):1397-400.
10. Ismail E, Razak SA, Selamat L, Gurusamy R, Zariman H, Shahrizan M, et al. Dermatoglyphics: comparison between Negritos Orang Asli and the Malays, Chinese and Indian. Sains Malaysiana. 2009;38(6):947-52.
11. Banik SD, Pal P, Mukherjee DP. Finger Dermatoglyphic variations in Rengma Nagas of Nagaland, India. Coll Antropol. 2009;33(1):31-35.