# Review Paper on Application of Dermatoglyphics in Health, Career, Academic, and Forensic Setup

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# Review Paper on Application of Dermatoglyphics in Health, Career, Academic, and Forensic Setup

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## Abstract

*Dermatoglyphic is the scientific study of fingerprints pattern. Fingerprints patterns are unique by nature, remain unchanged from cradle to grave. It has become the subject of study for many researchers from various fields in the area of mental health, disorders, medicine, the peculiarities of fingerprints and palm prints and their correlation with specific types of illnesses are being studied like diabetes hypertension, and oral diseases. Forensic Investigators are also taking interest in Dermatoglyphics to solve their crime mystery & search activities known as Forensic Dermatoglyphics. Dermatoglyphics claimed that through fingerprint patterns inborn potential of a person can be known because regions of our brain are reflected by our fingerprints and show their functionality. DMIT helps us to understand the inborn potential and improvement area in our personality & ability. It also provides information regarding our learning style and our thinking pattern. The aim of the present study is to review the application of Dermatoglyphics in different fields.*

**Keywords**: Dermatoglyphics, Dentistry, DMIT, Mental Health, Clinical& Forensic Psychology

## Introduction of Dermatoglyphics

Dermatoglyphic is known as the scientific study of fingerprints pattern. Every person has a unique fingerprint pattern that is why it is known as a unique identification tool. Our Aadhaar card has our fingerprints on it because it cannot be similar to others. It gives us a unique Identity. We, as a human being has different fingerprint patterns like loop pattern, arch pattern, whorl pattern, and its sub-division: ulnar loop, radial loop, accidental whorl and many more. The lines that are visible in our fingertips are called Ridges. Every individual has a different count of Ridges and patterns that have different interpretations. One thing is very fascinating about Ridges, it is the only area that decomposes the last after a person dies that is why it becomes helpful to identify the person's body even if he is dead. Through ridges, patterns and ATD angles genetic abnormalities, inborn potential, personality characteristics can be identified because our fingers are directly related to our brain lobes and fingerprint patterns tell our brain functionality through lobes and ultimately, give lots of information regarding health and potentials.

### Brain Lobes

Bain lobes are the division of the cerebral cortex, divided into 5 parts that are related to our different senses.

1.  The **Pre-Frontal lobe** is located at the very front of the brain & associated with executive, cognitive function & personality development. Damage to this part may lead to changes in the development of personality. Pre-frontal is connected to Thumb.

2.  The **Frontal lobe** located at the front of the brain & associated with logical thinking, imagination, and movement coordination. It is connected to our index finger.

3.  The **Parietal lobe** is located at the mid of the brain and has a role in Kinesthetic. It is connected to the Middle finger.

4.  The **Temporal lobe** is located bottom of the brain, near the ears, and plays important role in sound and speech processing. It is connected to our Ring finger.

5.  The **Occipital lobe** located at the back portion of the brain lobe performs visual functioning, observation,

reading & Interpretation. It is connected to a little finger.

The types of fingerprint patterns and associated brain lobe give lots of information about a person's personality.

**Types of Fingerprints Pattern**

There are main three types of fingerprint patterns i.e **Loop, Whorl & Arch**. These three patterns are further divided into many types.

1. **Loop pattern**: Most of the population falls under this pattern around 60 -65%.

   It is very common patterns have seen in people. It has two type's i.e Ulnar loop and Radial loop. The ulnar loop is very common whereas Radial is rare.

   People with **the ulnar loop** are very good at adjusting to a different environment. They possess good communication skills. If a person has an ulnar loop in both the thumb depicts that they have leadership qualities and good in management. They are generally very open-minded and flexible.

   People with **the Radial loop** are goal-oriented and self-indulged. They are having difficulty to accept other's ideas easily. They are adventurous by nature, so they get bored easily in the monotonous job.

2. **Whorl Pattern**: Around 25 to 35 % population falls under this category. This pattern is associated with high Intelligence. It is further divided into 7 parts.

   **Spiral Whorl**: People with this pattern have good learning power and they are very determined by nature but emotional at the same time.

   **Concentric Whorl:** They are having sharp minds, are goal-oriented, and very aggressive in achieving their goal.

   **Elongated Whorl**: They are multi-tasking and good analytic power. They are also very ambitious.

   **Imploding Whorl**: it is a rare fingerprint pattern. They have dual mindedness but good in finish the two tasks together very efficiently.

   **Composite whorl/ double loop**: It is also a very rare pattern around 10-15 % of people may have this type of pattern. People with this type of pattern are good counselors. They respect other's cultures and very much show interest in knowing others' cultures and values.

   **Peacock's eye whorl**: People with this pattern have a high skill of observation, have artistic abilities.

   **Accidental Whorl/ Variant**: It consists of a mix of the above-discussed pattern.

3. **Arch pattern**: Very rare people falls in this category around 5 -10 %. It is divided into 2 parts.

   **Plain Arch**: People having this pattern is tend to be rigid and sometimes show impulsivity. If this arch is present on the index finger, persons shown a high level of intelligence.

   **Tented Arch**: People having this pattern shown instability and get easily manipulated by emotions. They love to spend time alone and found of reading books &novels.

   Interpretation differs according to the pattern and finger type.

**Application of Dermatoglyphics in Dentistry**

Fingerprints patterns are unique by nature, remain unchanged from cradle to grave. It is being used in medicine to identify prenatal detection of disorders because these unique fingerprints pattern formed in the early weeks of fetal life and remain unaffected throughout life. Studies show a strong relationship between dermatoglyphics and dental caries. It is found that people who suffer from dental caries problem have increased frequency of whorls and people who don't have dental caries having an increase in the ulnar and radial loop. For instance, in patients with Periodontal disease (gum disease), an inflammatory condition affecting the tissue surrounding the teeth showed increased concentric whorls and transverse/radial loops & decreased twinned and transverse/double loop patterns frequency (Atasu,2005). Another study reported that in Down Syndrome there is an increasing number of ulnar loops and the presence of a Simian crease and wider ATD angles (Fogle,1990). Many other studies also highlight the connection of fingerprints patterns with dental problems (Rajangam,1995; Balgir,1993)

**Application of Dermatoglyphics in Mental Health Setup**

Studies showed that prenatal stress affects the fetal & its fingerprint development. Fingerprints Asymmetry has seen in children whose mother had high stress during pregnancy (walker,2009). In regards to mental disorder, Researches shows that Radial loop frequency is high in bipolar mood disorder (Chakraborty, et al, 2001). A similar study showed the significant predominance of ridge dissociation (RD), abnormal features (AF) in bipolar cases (Gutierrez et al 1998). Many pieces of research show significant differences between autism and normal children. There are significant differences in the Distribution of fingerprints pattern and ridges in Autism (Hartin,1979). Autism Spectrum disorder (ASD) is a neurodevelopment disorder that can be caused by environmental factors or due to hereditary. People who suffer from this disorder face problem in communication and social interaction and shows the restricted and repetitive pattern of behavior. Autism children showed a higher number of arches and a lower number of whorls and ridge counts of total hands. Moreover, there is the complete absence of transverse crease in the taken sample (Kazim,2017). A similar study also confirms that there is a disruption in dermal pattern and ridgelines but there are no significant differences in total ridges count in Autism and normal children (Hartin,1979). In other result autism, people have a higher frequency of loops and a significant decrease in ridge count on both the thumbs & little fingers (2015). A similar study compared the consistency of ATD angles, double loops, and whorl between autism and normal people and found no significant difference (Wolmam,1990).

From the above studies, it is clear that somewhere dermatoglyphics and various mental disorders and dental problems have significant correlations and dermatoglyphics can be a useful tool for diagnosis the disorder beforehand and can give valuable insight. More standardization equipment is required for a more accurate result.

**Application of Dermatoglyphics in Criminal & Forensic Psychology**

Forensic Investigators are also taking interest in Dermatoglyphics to solve their crime mystery & search activities known as Forensic Dermatoglyphics. Forensic Dermatoglyphics used to be considered as a pseudoscience because there were no evidence and proper research to prove that through Dermatoglyphics criminal behavior can be known but now researches have progressed in a way that there are many shreds of evidence that proves that fingerprints pattern can be helpful in criminal justice especially in measuring the chance of Recidivism. In some studies, it has been found that there was a greater number of arch patterns in the criminal sample compared to the control group. In general, arches are found in 5- 10% of the total population. People with arches were found to be very rigid & practical. They don't plan much ahead in time and tend to live in the moment and this makes them unable to visualize the consequence of events. They are not open-minded and less ambitious (Singh 2015). All these characteristic changes accordingly in which finger arch pattern appears. This information gives hint about the characteristics of a person and tells about the personality. In other studies, the total ridge count (TRC) was found to be significantly less in the male criminals. Moreover, there was a significantly higher occurrence of whorls and a decrease of ulnar loops when compared to both the male and female control groups(Matas 1999). Many factors can become the cause of criminal behavior which is not in our hands but overcoming the recidivism is possible through the prior knowledge of probability. Now we can say that Forensic Dermatoglyphics is no more considered pseudoscience.

**Criminologist View Point Regarding Crime Factors**

Many Criminologists explained the causes of crime through theories that gave significant insight into individual behavior. Cesare Lombroso known as the father of criminology gave the concept of "Atavist" & said criminals are born, not made. He was the first person who said that criminals are hereditary. EnciroFerri challenged the opinion of Lombroso and said that only biological factors are not sufficient for crime others factors also responsible for the criminal behavior like emotional, social & geographical. Raffado Garofalo rejected the theories of Lombroso &Ferri and classified criminals into Endemic, Violent, lustful & criminal lacking in sentiments of probity. Later on, many other criminologists defined the causes from other perspectives like social learning, social control, and many more.

Many studies show that Biological and environmental factor has a significant effect on criminal behavior. Here dermatoglyphics is a good tool to handle this problem. There are genetic differences that can be seen in dermatoglyphic features.

The criminality of an individual could not be determined from any particular dermatoglyphic or genetic trait. Only in combination with the other factors that affect behavior can we begin to understand the causes of crime. In the future, researchers can use the previous study in the dermatoglyphics area and can discover new facts about patterns

and characteristics of fingerprints that would be helpful in many areas. It can become the primary means of assessing prenatal detection of disorders which can help the parents to seek appropriate medical care and services for affected children in advance. However, discrepancies in these traits suggest the need for further research in this regard to validating the use of dermatoglyphics as a diagnostic tool.

**Dermatoglyphics Multiple Intelligence Test (DMIT)**

Dermatoglyphics claimed that through fingerprint patterns inborn potential of a person can be known. With age physical characteristics of a person change like the Thickness and size of a person's fingerprints but pattern and shape never change, only severe injury can change the pattern. DMIT works based on Multiple Intelligence Theory by Howard Garner. It is the most popular theory among all the theories regarding Intelligence. It defined human abilities & potential in categories. Garner divided intelligence into 8 parts and explained how a person can be better in one category and another person in another category. He ignores seeing intelligence as dominated part by a single ability.

Every region of our brain has different functions that are reflected by our fingerprints and DMIT helps us to understand the inborn potential and improvement area in our personality & ability. It also provides information regarding our learning style and our thinking pattern.

A comparison study between fingerprint pattern and multiple intelligence test result revealed that there is a correlation between ulnar loop pattern in the second finger of both the hands, it indicates a high level of logic Intelligence. Similarly, the arch pattern in the Index finger is the indication of high musical intelligence (Adekoya 2013). Researches show that our left-hand fingerprints pattern is different from our right-hand pattern, even monozygotic twins have different types of fingerprints pattern. There are different interpretation for different fingers that makes Dermatoglyphics complex. For a reliable outcome, each part of the fingerprint, its TRFC, angles, deltas, cores need to be measured carefully. Through DMIT inborn potentials are determined by the regions of the brain which include Auditory, Visual & Kinesthetic. The information of inborn potential can help the person to know his strengths as well as weak area which he can utilize in his life towards progress.

**Conclusion**

The application of Dermatoglyphics is not only limited to dental problems & mental health. It has become the subject of study for many researchers from various fields in the area of mental health, disorders, medicine, the peculiarities of fingerprints and palm prints and their correlation with specific types of illnesses are being studied like diabetes hypertension, and oral diseases. Moreover, In India where parents focus only popular jobs for their children without knowing their inner potential. Here, Dermatoglyphics plays an important role, with the help of DMIT parents can know that in which field their child is better and can use their inborn potential for making their successful career.

**Conflict of Interest:** *None*

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