CHAPTER- I

INTRODUCTION

Lip prints are normal lines and fissures in the form of wrinkles and grooves present in the zone of transition of human lip, between the inner labial mucosa and outer skin, examination of which is known as Cheiloscopy. This is unique for individuals as fingerprints. The use of lip prints for human identification was first suggested in 1950 and researches were carried out in 1960 and early 1970s, resuming in the last few years. The present study was aimed to study the lip prints of different individual parts of the lip and find out the Incidence of any particular pattern in the given age group. Although lip prints identification has been utilized in the court in isolated cases, more researches need to be conducted in this field with regards to confirmation of uniqueness, and the collection and interpretation of evidence. Cheiloscopy is a forensic investigation technique that deals with identification of humans based on lip traces.

The lip prints being uniform throughout the life and characteristics of person can be used to verify the presence or absence of a person from the Crime provided there has been consumption of beverages, drinks, usage of cloth tissues or napkins etc at the crime scene. For crime investigation, person identification is significant. Fingerprint system was first used in India in 1858 by Sir William Herschel. Today, identity can be established by a combination of methods, which makes the identification process relatively flawless. Similar to fingerprints, the pattern of wrinkles on the lips also has individual characteristics. Lip prints are unique and do not change during the life of a person. Numerous elevations and depressions that form a characteristic pattern on the external surface of lip are referred to as lip prints. Lip prints are easily obtained at the crime scene from various materials such as clothing, cups, glasses, cigarettes, doors, etc. They also possess furrows that can be classified into various types for identification of an individual .In 1902, R. Fischer, an anthropologist, first described the biologicalphenomenon of systems of furrows on the red part of human lip. Use of lip

prints in personal identification and criminalization was first recommended by Edmond Locard.

The idea of using lip print for identification was suggested by Synder in 1950. He proved in an investigation that the characteristics of lips formed by lip grooves are as individually distinctive as the ridge characteristics of finger prints. Until 1950, however, anthropology merely mentioned the existence of the furrows on the lip prints. Cheiloscopy is analogous to fingerprint analysis and is genuine of forensic odontology. Lip prints bring added evidence to a crime scene that can be valuable, especially in cases lacking other evidence like fingerprints. Lip prints can be a factor in many different kinds of crimes, such as tape when a person has been bound or gagged, prints on a glass that a person drank from prints on a cigarette butt, and prints on a glass or window if they are pressed up against it.All of these are potential places were lip prints may be found and used in the investigation of a crime. The use of lip prints in criminal cases is limited because the credibility of lip prints has not been firmly established in the court system.[5]

Lip print patterns in a 200 subjects were distinct and none of the patterns were identical. This finding was compliance with results obtained in the similar studies conducted earlier by Tsuchihashi and Suzuki and various other authors. This proves that the lip print pattern is unique to each individual. Comparison of lip prints among family members and twins also showed different Individual patterns although a few similar grooves could be recognized suggesting a genetic inheritance. Lip patterns remain unchanged during an individual's life time and confirm the permanence of lip prints. Even if environmental factors and pathologies affecting the lips could bring about changes in lip patterns.[6]

History

In 1902, the biological phenomenon of systems of furrows on the red part of human lips was first noted by an anthropologist, R Fischer. Later, Edmond Locard in 1932, recommended the use of lip prints in crime investigation. In 1950, Le Moyne Snyder, a forensic expert suggested the concept of wrinkles in lips to identify people in his book

entitled “homicide investigation”. He stated that lip prints possess individual features as thumbprints. He is also called, ‘The Father of Cheiloscopy’. In his book, he reveals a very interesting case where

a woman was struck by an automobile striking her face on the left front fender of the car. The owner of the car denied the incident. On cheiloscopic examination from prints on the left front fender of the car it was concluded that the woman was hit by the alleged automobile. In 1960, Dr. Martins Santos proposed that lip characteristics could be used in personal identification and proposed a system for classifying lip prints. In Hungary 1961, lip traces found on a glass door at the scene of a murder led to lip print examination. At this time, the usefulness of the lip traces for criminal identification was proven. In the period 1968-1971, two Japanese scientists Yasuo Tsuchihashi and Kazuo Suzuki studied the lip grooves extensively. They called these lip grooves sulci laborium rubrorum. In 1971, they studied uniovular twins and concluded that no two lip prints manifested the same pattern. In the recent years, different aspects of the lip prints like, stability and various morphological patterns have been studied. Postmortem changes of lip prints were also analyzed to find out anthropometric measurements of the lip region before and after fixation. All these studies concluded that cheiloscopy can be effectively used as an additional tool for person identification in crime investigation.[7]

Classification

On the lips, the Klein’s zone is the mucosal area which is covered with wrinkles and grooves that form the characteristic lip pattern and lip prints. In 1967, Clauco Martin Santos, Professor of forensic dentistry at the Federal University of Rio de Janeiro, Brazil, first classified lip grooves into four groups as shown in Table 1. In 1970, Suzuki and Tsuchihashi proposed another classification of lip prints as shown in Table 2.

Table 1. Clauco Martin Santos lip print classification.

Simple types (formed by single element)	Composite types
Straight line	Bifurcated

Curved line	Trifurcated
Angled line	Irregular

Table 2. Suzuki and Tsuchihashi lip print classification

Type I	clear cut vertical grooves that run across the entire lips
Type I'	similar to type i but that do not run across the entire lip
Type II	branched groove (branched y pattern)
Type III	intersected grooves.
Type IV	reticular grooves
Type V	Undetermined

Lip print in court:

On May 12, 1999, an Illinois appellate court accepted, in people versus Davis, No 2-97-0725, the uncontroverted testimony of two state police expert (a finger print examiner and a questioned document examiner) that:

- Lip print identification is generally acceptable within the forensic science community as a means of positive identification because it appears in the literature.
- Lip print identification methodology, although seldom used is very similar to finger print comparison and is known and accepted form of scientific comparison.
- There is no dissent in the forensic science community with regards to either the methodology used or fact that lip prints provide a positive identification.
- The Federal Bureau of Investigation (FBI) and the Illinois state police consider that lip prints are unique like finger prints and are positive means of identification.

CHAPTER II

LITERATURE REVIEW

Anju Devi et.al (2007) studied inheritance analysis and evaluation of lip prints in individuals. The lip prints of 300 subjects including 25 families were obtained using lip stick. Out of these 300 individuals, 60 were selected for latent lip prints. In order to prevent any intra and inter observer variability single observer carried out all the observations. The lip prints were analysed using magnifying lens and were classified using the criteria given by Suzuki and Tsuchihashi. The determination of the pattern in each segment of the lip was based on the numerical superiority of properties of the lines on the fragment. In the present study, most predominant pattern in the study population among upper and lower lips considering both males and females was type III lip pattern. Hereditary resemblance was observed between parents and offspring in 37.66%. The latent prints were better visualized on microscopic glass slide when compared to stainless steel tumblers.

Fakir Mohan Debta et.al (2005) studied Heritability and correlation of lip print, palm print, fingerprint pattern and blood group in twin population. The study group comprised 30 twins and their parents 15 identical and 15 non identical twins. The age of twins ranged from 15 years to 40 years. The lip print, palm print, fingerprint and blood group were statistically analyzed. All the data were subjected to statistical analysis. The identical twins showed more percentage of similarities in comparison to the non-identical twins. The inheritance pattern was significant for twins in case of their lip prints while palm prints and fingerprints showed no such significance in inheritance pattern whereas there was significant association seen in case of blood groups of identical twins and their parents.

Vignesh AV et.al (2010) studied Heitability of lip prints and palm prints among parents and their offspring. The study group comprised of 35 families from India population. Participants belonging to the same family pedigree –Father, mother, of each family were selected. The predominant lip correlation with right palm pattern, but it is statistically

insignificant. Lip pattern showed neither positive correlation nor significant association with the left palm. This study results revealed significant association between lip print patterns. Among parents and children pattern in the entire study population was type-II. Lip pattern shows a positive.

Renjith George et.al (2013) studied inheritance pattern of lip print among Malay population: a pilot study. The lip prints of 124 individuals from 31 families consisting of father, mother, and two children's were recorded and classified based on Tsuchihashi classification. 58.06% positive resemblance was found between parents and biological offspring.The highest lip print shape was round lips.

Igor S. Veselinovic et.al (2016) studied variation in the population province in Serbia. Lip prints of 211 healthy individuals residents of Vojovodina province, Serbia, were analysed and classified using the Suzuki and Tsuchihashi classification. Results in the studied sample the most common in both upper and lower lip being predominant in 45.85% of the studied samples. It was followed by types III, I , and IV according for 31.28%, 15.28% and 4.62% respectively. The current study are in accordance with the results of previous studies of European populatons. The person chi-square test showed a statistically significant difference between the lip print pattern in males and females.

S Padmashree et.al (2019) studied most and least prevalent lip print pattern. Population can be divided into different ethno racial groups. In this study we aimed at finding the most and least prevalent lip print pattern in these groups and also to observe any similarities or differences that may exist in these groups in terms of lip print patterns. Brown and pink colored lip sticks, cellophane tape, and magnifying lens were used to record and study the lip prints.

Preethi Sharna, et. al (2009) studied Cheiloscopy the study of lip prints in sex identification. . The lip print is unique of an individual and also potential for identification purpose. Lip prints can be used to verify the presence or absence of a person at the crime scene. Fischer was the first anthropologist to describe the furrows on the red part of the human lips. The use of lips. In 195oyne synder mentions the

possible use of lip prints in the identification of individuals. In this method a dark coloured lip stick was applied on the lips and the subjects were asked to rub both the lips to spread the applied lip stick. After about 2 Minutes lip print impression was made on a strip of cellophane tape which was then stuck to a white bond paper. This was visualized with the use of magnifying lens. The number of lines and furrows present their length, branching and combinations were noted. Result gives in this study they labeled a particular pattern on the basis of numerical superiority of types of lines present that is vertical ,intersected, branched or testicular. If more than one pattern predominates it is undetermined. In present study Type 1 and type 1'patterns were found predominant in females while Type IV in males.

Mahkamesh Mosh feghi et. al (2016) studied Morphological pattern of lip print in an Iranian population. The lip prints are verified to be unique to an individuals and stable over time and they have potential for human identification purpose. Lip print refers to the imprint produced by the natural lines and wrinkles in the vermilion zone of the lips is known as cheiloscopy. According to him, the term cheiloscopy was first coined in 1902. Santos for the first time suggested a classification for the lip print followed by others including Renaud. However the classification by Suzuki and Tsuchihashi seems to be the most widely accepted classification. Suzuki and Tsuchihashi reported that although there are similarities between the lip prints of unknown twins, they are not exactly identical. In addition similarities have been noted between the lip prints of parents, children, and siblings. Many studies have suggested the possibility of presence of gender differences in lip prints. The aim of this study to access the variation in lip patterns of an Iranian population for the first time and evaluate the difference between sexes in this respect

Archana Alzapur et.al (2017) studied lip print :a study of its uniqueness among students of medical college. The cheiloscopy is technique that deals with lip prints. The pattern of fine creases on the lips are unique to the individual. They are similar to fingerprints and useful in crime investigation. The labial mucosa forms a characteristic pattern of skin creases or grooves called lip prints. Study of lip prints called cheiloscopy.

The application of lip prints are similar to fingerprints. Cheiloscopy can also be used as an additional tool for crime investigation. Cheiloscopy was first described by Fischer in 1902.Locard recommended usefulness of lip prints in criminal investigation and personal identification. Methodology used in this study the lips were cleaned and dark red colored lip stick was applied on the lips and asked to spread it evenly. . The bond paper was placed between the lips and to press their lips by applying pressure evenly. Then "unfolded "and the lip was divided in to four quadrant .The lip prints in all the quadrant were analyzed by using magnifying lens Result gives in this study was conducted to assess the uniqueness of lip prints and the gender wise predilection of its patterns.

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CHAPTER-III

AIM AND OBJECTIVES

Aim:

To determine the similarities of lip prints from family members.

Objectives:

1) To identify the similarities of lip print in each family.

2) To study the genetic differences between the family members.

CHAPTER- IV

MATERIALS AND METHODOLOGY

Materials Required

Materials used for this study

1) Lip stick (bright red color).

2) Transparent cellophane tape

3) Scissors.

4) White bond paper with questioner

5) Magnifying lens

Fig 1: Materials required

Methodology:

This study was conducted over a period of one month from the nuclear family having father mother and their children's. 30 lip prints from each family were collected. Written consents of the subjects were taken. Lipsticks were applied on the lips of the subject with a single stroke and it was lifted by using adhesive tape to get the proper lip prints, individual were asked to relax without stretching their lips 2-3 inches long adhesive tape was applied on the lips. At the center portion it was dabbed first, then left and right corner of lips was pressed applying uniform pressure, taking care to avoid sliding of lips to prevent smudging of lip print and instruction was also given that the lip should not be moved while lifting. Then the adhesive tape was removed slowly from one side and it was collected on a bond paper containing the details such as their name, sex, age, education, contact address and blood group. Each lip print was assigned with a serial number as family one, two, and three and then it is compared manually using magnifying lens to realize the uniqueness of lip prints.

Fig 2: collection of lip print

CHAPTER:-V

OBSERVATIONS

Table3:- sample 1

RELATION	AGE	SHAPE OF LIP
Father	52	Thin lip
Mother	46	Wide lip
Child 1	21	Full lip
Child 2	23	Round lip

Table 3:-sample 2

RELATION	AGE	SHAPE OF LIP
Father	60	Full lip
Mother	54	Thin lip
Child 1	25	Round lip
Child 2	20	Plump center lip

Table 4:-sample 3

RELATION	AGE	SHAPE OF LIP
Father	50	Goldilocks lip
Mother	45	Wide lip
Child 1	20	Thin lip

Table 5:-sample 4

Relation	Age	Shape of lip
Father	35	Wide lip
Mother	40	Round lip
Child 1	19	Round lip
Child 2	15	Wide lip

Table 6:-sample 5

Relation	Age	Shape of lip print
Father	65	Thin lip
Mother	58	Wide lip
Child 1	26	Round lip
Child 2	20	Full lip

Table 7:-sample 6

Relation	Age	Shape of lip print
Father	58	Thin lip
Mother	52	Wide lip
Child 1	20	Wide lip
Child 2	18	Thin lip

Table 8:-sample 7

Relation	Age	Shape of lip print
Father	49	Wide lip
Mother	43	Goldilock lip
Child 1	20	Thin lip
Child 2	18	Wide lip

Table 9:-sample 8

Relation	Age	Shape of lip print
Father	60	Thin lip
Mother	55	Wide lip
Child 1	23	Round lip
Child 2	20	Full lip

Table 10:-sample 9

Relation	Age	Shape of lip print
Father	58	Wide lip
Mother	53	Thin lip
Child 1	24	Wide lip
Child 2	21	Thin lip

Table 11:-sample 10

Relation	Age	Shape of lip print
Father	60	Plumb centre lip
Mother	52	Wide lip
Child 1	21	Thin lip
Child 2	19	Round lip

Table 12:-sample 11

Relation	Age	Shape of lip print
Father	38	Goldilock lip
Mother	32	Round lip
Child 1	18	Thin lip
Child 2	15	Wide lip

Table 13:-sample 12

Relation	Age	Shape of lip print
Father	45	Thin lip
Mother	41	Wide lip
Child 1	19	Goldilock lip
Child 2	17	Wide lip

Table 14:-sample 13

Relation	Age	Shape of lip print
Father	65	Plumb centre
Mother	59	Full lip
Child 1	25	Plumb centre
Child 2	22	Full lip

Table 15:-sample 14

Relation	Age	Shape of lip print
Father	40	Wide lip
Mother	36	Thin lip
Child 1	16	Thin lip
Child 2	12	Wide lip

Table 16:-sample 15

Relation	Age	Shape of lip print
Father	45	Round lip
Mother	41	Thin lip
Child 1	20	Wide lip
Child 2	15	Full lip

Table 17:-sample 16

Relation	Age	Shape of lip print
Father	68	Goldilock lip print
Mother	63	Wide lip
Child 1	27	Full lip
Child 2	24	Thin lip

Table 18:-sample 17

Relation	Age	Shape of lip print
Father	50	Wide lip
Mother	45	Thin lip
Child 1	20	Thin lip
Child 2	16	Wide lip

Table 19:-sample 18

Relation	Age	Shape of lip print
Father	55	Plumb centre
Mother	45	Round lip
Child 1	21	Wide lip
Child 2	12	Thin lip

Table 20:-sample 19

Relation	Age	Shape of lip print
Father	44	Round lip
Mother	39	Wide lip
Child 1	19	Round lip
Child 2	16	Wide lip

Table 21:-sample 20

Relation	Age	Shape of lip print
Father	58	Full lip
Mother	50	Round lip
Child 1	28	Full lip
Child 2	26	Wide lip

Table 22:-sample 21

Relation	Age	Shape of lip print
Father	48	Goldilock lip print
Mother	44	Thin lip
Child 1	24	Thin lip
Child 2	21	Goldilock lip print

Table 23:-sample 22

Relation	Age	Shape of lip print
Father	50	Round lip
Mother	44	Wide lip
Child 1	22	Thin lip
Child 2	20	Wide lip

Table 24:-sample 23

Relation	Age	Shape of lip print
Father	45	Wide lip
Mother	39	Thin lip
Child 1	20	Wide lip
Child 2	17	Thin lip

Table 25:-sample 24

Relation	Age	Shape of lip print
Father	52	Round lip
Mother	47	Wide lip
Child 1	28	Thin lip
Child 2	20	Full lip

Table 26:-sample 25

Relation	Age	Shape of lip print
Father	51	Thin lip
Mother	46	Wide lip
Child 1	24	plumb centre
Child 2	22	Round lip

Table 27:-sample 26

Relation	Age	Shape of lip print
Father	62	Wide lip
Mother	58	Thin lip
Child 1	25	Thin lip
Child 2	21	Wide lip

Table 28:-sample 27

Relation	Age	Shape of lip print
Father	56	Round lip
Mother	49	Thin lip
Child 1	24	Wide lip
Child 2	19	Plumb centre

Table 29:-sample 28

Relation	Age	Shape of lip print
Father	43	Goldilock lip
Mother	38	Round lip
Child 1	19	Round lip
Child 2	14	Goldilock lip

Table 30:-sample 29

Relation	Age	Shape of lip print
Father	67	Wide lip
Mother	58	Round lip
Child 1	24	Thin lip
Child 2	21	Wide lip

Table 31:-sample 30

Relation	Age	Shape of lip print
Father	42	Wide lip
Mother	38	Thin lip
Child 1	14	Round lip
Child 2	12	Thin lip

Table 32:-No of similar lip shape

No of family	Father to child 1	Father to child 2	Mother to child 1	Mother to child 2	Parents to child 1	Parents to child 2
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	1	1	1	1	1	1
4	0	1	1	0	1	1
5	0	0	0	0	0	0
6	0	1	1	0	1	1
7	0	1	1	0	1	1
8	0	0	0	0	0	0
10	1	0	0	1	1	1
11	0	0	0	0	0	0
12	1	0	0	0	1	0
13	1	0	0	1	1	1
14	0	1	1	1	1	1
15	0	0	0	0	0	0
16	0	0	0	0	0	0
17	0	1	1	0	1	1
18	0	0	0	0	0	1
19	1	0	0	1	1	1
20	1	0	0	1	1	0
21	0	1	1	0	1	1

22	0	0	0	0	0	0
23	1	0	0	1	1	1
24	0	0	0	0	0	0
25	0	1	1	0	1	1
26	1	1	1	1	1	1
27	0	0	0	0	0	0
28	0	1	1	0	1	1
29	0	1	0	0	0	1
30	0	0	0	0	0	0

CHAPTER VI

RESULT AND CONCLUSION

RESULT:

In the present study, In two families shape of the father's and mother's shape of the lip are matching with both the children. In twelve families the shape of the lips of mother and father are matching with either one child. In two families only the shape of father's lip are matching with either one child. In one family the shape of father's lips are matching with one child and shape of mother lips are matching with both the children. The remaining twelve families are not showing any similarity in between the parents and children.

CONCLUSION:

In the presence study it is found that there is no similarities between parents and children on the basis of shape of the lip.

The study needs most number of samples to find out the correlation of the shape of lips of children with parents.

CHAPTER VII

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