

Chapter - 1

INTRODUCTION

The labial mucosa forms a characteristic pattern of skin creases/grooves called lip prints". Study of lip prints is called Cheiloscropy. The applications of Lip prints are similar to those of fingerprints. As they are unique we can use lip prints for identification of suspects. In past there were different modalities used for identification like fingerprints, MN blood group system, and DNA finger printing; of these, finger printing is most widely used. cheiloscropy can also be used as an additional tool for crime investigation.

Cheiloscropy is a forensic investigation technique that deals with identification of humans based on lips traces. The pattern of wrinkles on the lips has individual characteristics as fingerprints. Since 1950, the Japanese have carried out extensive research in the matter of Cheiloscropy. Identification is a matter of paramount importance in any crime investigation. It means determination of the individuality of a person based on certain physical characteristics in living or dead persons, decomposed bodies, mutilated bodies and skeleton. Tsuchihashi in Japan studied Lip Print impressions. Based upon the research done by Suzuki and Tsuchihashi (1968 – 71), it was established that the arrangement of lines on the red part of human lips is individual and unique for each human being. This statement led to the conclusion that there is a possibility of using the arrangement of furrows on lips for the identification of a person. 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 napkin etc. at the crime scene. Although Lip Print identification may appear in the field of literature, there is very little science or research to support Suzuki's theory that Lip Prints are individual, or to support a methodology, for the collection and comparison of Lip Prints, which has become accepted within the forensic community. The lip crease pattern is on the vermilion border of the lip, which is quite mobile and Lip Prints may vary in appearance according to the pressure, direction and method used in making the print. If lip stick is used as a recording medium the amount applied may also affect the print. A traditional or conventional lipstick produces a print that is initially identifiable and can be seen with the naked eye. These are called as visible prints. However, the cosmetics industry has developed long-lasting Lip Prints that often do not leave visible prints and can thus be overlooked at the crime scene. Invisible prints are called latent prints. Collection of the Lip Prints with a suitable transferring and recording media is important. Various methods have been followed till today for recording the Lip Prints. The present article reviews various methods of collection or recording the Lip prints with an emphasis on development of the latent lip Prints.

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

1.1. 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.

1.2. 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 1.1 . In 1970, Suzuki and Tsuchihashi proposed another classification of lip prints as shown in Table 1.2. French scientist Renaud studied 4000 lip prints and classified them as shown in Table 1.3. In 1979, Afchar-Bayat lip prints classification was based on groove organization as shown in Table 1.4 . Kasprzak classified lip patterns into 23 types of individual features as shown in Table 1.5. Lip anatomy and the thickness and position of lips are also analyzed in cheiloscopy, and according to the thickness, lips are classified into four as shown in Table 1.6

Table 1.1. Clauco Martin Santos lip print classification.

Simple types (formed by single element)	Composite types
Straight line	Bifurcated
Curved line	Trifurcated
Angled line	Irregular
Sine shaped line	-----

Table 1.2. Suzuki and Tsuchihashi lip print classification

Types	Characteristics
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

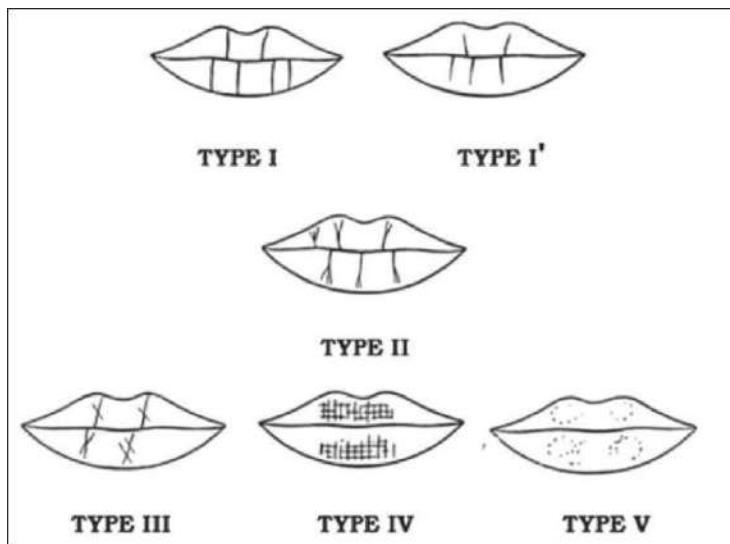


Table 1.3. Renaud lip print classification.

Types	Characteristics
Type a	complete vertical
Type b	incomplete vertical
Type c	complete bifurcated
Type e	incomplete bifurcated
Type f	incomplete intersecting
Type g	reticular
Type h	in the form of sword
Type i	horizontal
Type j	other types

Table 1.4. Afchar-Bayat lip print classification

A 1: Vertical and straight grooves, covering the whole lip
A 2: Like the former, but not covering the whole lip.
B 1: Straight branched grooves.
B 2: Angulated branched grooves.
C: Converging grooves.
D: Reticular pattern grooves.
E: Other grooves.

Table 1.5. Kasprzak classification on individual features of lip pattern on lips










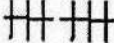



A Dot	•	A Pentagonal Arrangement	
A Rectangle-Like		A Branch-Like Top Bifurcation	
A Triangle-Like		A Star-Like Bifurcation	
A Group of Dots	••	A Fence	
A Simple Top Bifurcation		A Branch-Like Bottom Bifurcation	
A Simple Bottom Bifurcation		A Double Fence	
A Double Eye		A Hexagonal Arrangement	
Crossing Lines			

Table 1.6. Classification of lips based on thickness.

Thin lips (common in European Caucasian)
Medium lips (most common type)
Thick or very thick lips (seen in blacks)
Mix lips (usually seen in Orientals)

Chapter – 2

LITERATURE REVIEW

21. Preethi Sharna, et. al (2009) studied that on the topic :THE STUDY OF LIP PRINTS IN SEX DETERMINATION. They said that 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 1950 Lemoyne synder mentions the possible use of lip prints in the identification of individuals.

Methodology used 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 pattern was predominant in males.

Conclusion explains that the present study is able to convey that lip prints behold the potential of determination of sex. They said that

- 1) No two lip prints matched with each other and establish the uniqueness of the lip prints.
- 2) Type 1 and Type 1' was most commonly seen in females and Type IV was seen commonly in males.
- 3) In present study, 18 females correctly recognized as females and 17 males were identified as males on the basis of lip prints.

22. Yasuo Tsuchihashi et. al (1974) studied on the topic :STUDIES ON PERSONAL IDENTIFICATION BY MEANS OF LIP PRINTS. This study explains that traditional methods for personal identification include anthropometry, fingerprints, sex determination, estimation of age, measurement of height, identification of specific individual and differentiation of blood groups. These methods have proved successful in many cases. In particular odontology has been used extensively for personal identification. Suzuki et al made detailed investigation of the measurement of the lips, the use and color of rouge it's differentiation from a blood stain and method for its extraction. It was observed that lip print made by rouge varied from person to person. Synder pointed out that the normal lines and fissures in lips show individual variation

do fingerprints. Santos proposed a classification of the wrinkles and grooves in the lips that might be utilized in personal identification.

Methodology of this study is to photograph the materials were prepared by taking half size photographs of the lips with a medical Nikkor. Camera and enlarging to double size. In this procedure, the females were asked to wipe off the rouge well and it was ensured that the subjects were calm. Another methodology of this study is to use of finger printer. The roller method using special ink has been in general use for taking fingerprints. A finger printer developed by Hollister has become more popular because it can be used to take finger prints clearly simply without staining the fingers. This method is used to obtain lip print records. In this device, the special paper was applied directly to the lips to record the pattern of the lip print. The lip prints obtained by these methods were traced onto cellophane paper and examined with magnifying glass.

Result of this study explains the lip print patterns from 22 males and 42 female inhabitants of Yokohama were classified on the presuppositions that the aforementioned types of lip print appear singly in individuals with results.

Type I :6 males (27.3) 11 females (26.2) Type II: 4 males (18.2),10 females (23.8) Type III ::7 males (31.3) 14 females (33.3),Type IV:3 males (13.6), 5 females (11.9), Type V : 2 males (9.1),2 females (4.8).

23 Saraswathi TR et. al (2009)studied on the topic : STUDY OF LIP PRINTS. They studied that the external surface of lips has many elevations and depressions forming a characteristic pattern called lip prints, examination of which is known as cheiloscopy. The use of lip prints for human identification was first suggested in 1950 and researches were carried out in 1960s and early 1970s, resuming in the last few years. Research studies and information regarding the use of lip prints as evidence in personal identification and criminal investigation in dentistry, although age old are scanty. Although lip print identification has been utilized in the court in isolated cases, confirmation of uniqueness and the collection and interpretation of evidence.

Methodology used for this study the lips of the individuals were cleaned and dark coloured lip stick was applied on the lips. Over the lip stick the glued portion of cellophane tape strip was placed and gently press the center and then pressing it uniformly towards the corner of the lips. The cellophane strip was then stuck to the white chart paper for permanent record and then visualized by magnifying lens and recorded the details.

Result of this study a total of 100 individuals were included in the study comprising of 50 males and females each, in the age group of 18-30 years. In overall study, no individual had single type of lip print in all the four compartment and no two or more individual had similar type of lip print pattern. The overall pattern was evaluated among all the pattern it was found that intersecting pattern was most common in both males and females. And least common was the reticular pattern in both males and females.

2.4 Mahkamesh mosh feghi et. al (2016) studied on the topic : MORPHOLOGICAL PATTERNS OF LIP PRINTS IN AN IRANIAN POPULATION. They studied that 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. In addition to determine the reliability and validity of lip prints.

Methodology used for this study is the technique of selecting recording according to casta and caldas. Before taking the prints the lips were cleaned thoroughly by gently wiping a cotton roll dipped in solution. The lip stick was gently applied to the vermilion of both upper and lower lips. After two minutes put their lips in cellophane tape and pressed gently from the center to the corner of the lips. Then the tape was removed from the lips and stuck on to a white paper in order to provide a permanent record, which could be studied at any time. Then analyzing the lip prints divided into six sextants by drawing two lines, perpendicular to the transverse line, passing the two highest point of the philtrum including right upper lip, middle upper lip, left upper lip, left lower lip, middle lower lip and right lower lip. The analysis of the records was done using the classification proposed by Suzuki and Tsuchihashi to determine the individuality of the lip prints, lips showing the same lip patterns types in the same sextants were differentiated by comparing the lip length, angles and the branching pattern of the grooves

Result gives for this study is to no exactly identical lip prints patterns were observed in the subjects. .

2.5 John Tabakwot Ayuba et. al (2019) studied on the topic : SEXUAL DIMORPHISM IN THE LIP PRINT PATTERN AND SIZE AMONG UGANDAN, KENYAN AND SOMALI POPULATION. They studied that lip prints are essential identification tools in forensics .Lip prints are individually unique and it is used for personal identification. Lip prints are used to identify sex because they remain stable over time and they are unique to every person including twins. Lip print identification is used as a tool for crime investigation because of uniqueness of labial grooves. In compare with fingerprints lip prints is unique to all individuals. Recent studies said that the resemblance of lip print pattern of a child is closer to the mother than the father. Most investigators do not consider looking lip prints at the crime scene but it is essential good source of variation among persons. A mere lip print can help to draw the individual sex determination.

Methodology used for this study is to a plain white paper was placed gently on the lips. A small pressure was applied on the paper to hold it in place for about 3s. The paper was then

removed from the lips carefully. Two samples were collected from each participant to ensure quality prints. The length and width of each of the sample was measured in centimeters using a ruler to obtain the size of lip print for each participant. Their study followed classification of lip patterns according to Tsuchihashi

- 1) Type I : vertical grooves
- 2) Type I' : similar to type I
- 3) Type II : Branched grooves
- 4) Type III : intersected grooves
- 5) Type IV : reticular grooves

Result of this study was lip print type I and I' were dominant in a range of 60-100. In both males and females of all countries. Kenyans had more of type II (males 26, females 40) while Somalis exhibited more of type IV males 56, female 46. In Ugandans had the least number of type IV pattern 6.6 males and 13 females. There was no type V in all the participants. In the male subject Ugandans had wider lips (5.48cm, 0.50) while Kenyans had longer lips (5.48cm, 0.50) In the female group ugandans had wider lips (4.99cm, 0.59) while kenyan had longer lips (4.36cm, 0.71).

2.6 Janardhanan dineshshankar et. al (2013) studied on the topic: LIP PRINTS : ROLE IN FORENSIC ODONTOLOGY. They studied that the identification plays major role in any crime investigation. The pattern of wrinkles on the lips has individual characteristic like fingerprints. Cheiloscopy is a forensic investigation technique that deals with identification of human based on lip traces. The challenges faced by man in early days to provide the identity of an individual. In individuals fingerprint pattern are distinctive and permanent and hence considered as a tool for identification. The pattern of wrinkles on the lips has individual characteristics pattern called lip prints. 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 scene.

Methodology of this study is to apply lip stick, lip rouge or other suitable transfer medium to the lips and then having the individual press his or her lip to a piece of paper or cellophane tape or similar surface or photographing the suspects lips. Otherwise using a finger printer preferably a roller finger printer.

Conclusion explained that along with other traditional method cheiloscopy is also important tool in identification of a person. The uniqueness of lip print needed to be conformed and accepted. A standard procedure has to be developed for the collection, development and recording of lip print and ensuring comparison.

2.7 Archana Alzapur et. al (2017) studied on the topic of LIP PRINTS :A STUDY OF ITS UNIQUENESS AMONG STUDENTS OF MEDICAL COLLEGE. They studied that cheiloscropy 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 cheiloscropy. The application of lip prints are similar to fingerprints. Cheiloscropy can also be used as an additional tool for crime investigation. Cheiloscropy 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 coloured 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. The gender wise distribution of lip prints types was analyzed, Type I was found to be more common in the present study the analysis of lip print pattern revealed that no two lip prints were similar thus establishing the uniqueness of lip prints and also commonest pattern found in their study was Type 1.

Conclusion explained that the present study, lip prints of their study participants did not match with each other. Therefore, the result of our study validates that lip prints are unique as that of finger prints and therefore has forensic importance. Regional population variation of prevalence pattern merits further study, and hence in future could gain more anthropological significance. Even though there is no significant difference in lip patterns of males and Females was studied.

2.8 Dr. Annie. J. Varghese, et. al (2000) studied on the topic :A STUDY OF LIP PRINT TYPES AMONG THE PEOPLE OF KERALA. This study said that ,cheiloscropy is study of lip prints is an tool for the identification of persons. The lip print of every person is unique and can be used to fix personal identity .This study was taken up to determine the predominant lip print type in Kerala population. 50 male and 50 female subjects of Kerala origin were included in the study and the middle 1cm of the lower lip was taken as study area. In countries such as Poland and USA, cheiloscropy has been used to identify criminals. Yasuo Tsuchihashi in 1974 published a study on the lip print patterns of Japanese people.

Materials and methodology of this study, :

- 1) Lipstick of a bright red colour
- 2) Transparent cello phane tape
- 3) Scissors

4)white bond paper

The subjects were 50 males and 50 females whose family origins were from Kerala. The subjects were aged more than 25 years and less than 40 years. The methodology of this study to apply lip stick was applied in a single motion, evenly on the lips. A strip of cellophane tape, 10cm long. The cellophane tape was applied on the lower lip. It was held in place applying gentle and even pressure for a few seconds. Then the tape was carefully lifted from the lip from one end to the other. The strip of cellophane was stuck on to a piece of white bond paper.

Result gives for this study they found that In India, various studies have shown that the patterns formed reveal a population wise dominance, that is particular population will show dominance of a particular lip print type. This is a potentially useful tool for identification. In 2000 on their study on Mumbai, reported that type I was dominant in females in the lower lips and that males tended to have different patterns in all quadrants and that females tend to have different pattern in all quadrants and that females tended to have same patterns in all the quadrants. In this study they observed that type IV was the most frequently observed in both the sexes and both the quadrants .

Conclusion of this study was Indian and Chinese individuals found that incidence of type II was the highest among Indians. This study said that lip prints are unique to an individual and can be used to fix the identity of a person and they remain stable overtime and lip print show gender differences. In this study type I was the most frequent. Indo Dravidian population type III was predominant.

2.9 Gabriel M. Fonseca et. al (2018) studied on the topic :LIP PRINT IDENTIFICATION : CURRENT PERSPECTIVE. They explained that lip print identification has been proposed as an additional tool for crime investigation because of the supposed uniqueness of labial grooves, however, critics of the validity and reliability for methods and techniques redefined standards and requirement in order to consider this discipline a real forensic identification science. There is important historical background in the use of lip prints for human identification and this should at the very least be considered as a necessary discipline in forensic science known as "cheiloscropy ". Lip prints have been proposed as an additional tool in criminal investigation because labial pattern grooves are unique and there is a scope of applicability is similar to those of fingerprints.

Methodology used for this study a literature review was performed in specific search strategy ("lip And "print" And "identification) was implemented in the database that included only full texts. The "publication date" filter was activated with a range that covered three years (custom date range from 2014/08/19 to 2017/08/19. The search identified 25 articles and due to their characteristics all were considered research papers according to the categories established by the journal of forensic and legal medicine. The relevant information was extracted and analyzed according to specific categories (journal, country of authors, study, aims, outcomes, tool, sample ,inter rater reliability etc.).

Conclusion explains that lip print identification has an important back ground and undoubtedly is of singular interest in specific forensic communities. Although there was a clear after Suzuki and Tsuchihashi. It's importance was redefined after people v. Davis currently research from India aimed at demonstrating uniqueness from methodological assumptions has for the most part been insufficient to validate this type of evidence.

Chapter - 3

AIMS AND OBJECTIVES

3.1 AIM

To Study the Uniqueness, Prevalence and Gender Significance of Lip print patterns in Human Subjects.

3.2 OBJECTIVES

- Comparison of Male & Female Lip prints
- Study on characteristics of Lip prints in Male & Female

Chapter - 4

MATERIALS AND METHODOLOGY

4.1 MATERIALS REQUIRED

1. Lip-stick
2. Cellophane Tape
3. Scissors
4. Lip-Stick Remover
5. Questionnaire
6. Tissue paper

4.2 METHODOLOGY

This is a Cross sectional study conducted at KERALA POLICE ACEDAMY (THRISSUR, India) Subjects were recruited after taking written informed consent from them. A total of 60 subjects of both sex (30 from each gender) aged between 12 -17 years were recruited in the study.

Inclusion Criteria Young adults without any disease related to lips, with normal lip mucosa were included.

Exclusion Criteria Subjects having any gross congenital deformities of lips (e.g. cleft lip), and those with any inflammation, allergic to the lip stick, and with any kind of disease were excluded from our study.

All the participants were informed about the study, its method and objectives were explained in clear detail, and they were made comfortable. The lips were cleaned and a thin layer of light red colored lip-stick was applied on the lips, and they were asked to spread it evenly. “Hinged” portion of folded bond paper was placed between the lips and they were instructed to press their lips by applying pressure evenly. It was then “unfolded” after this cellophane tape was pasted on the collected lip prints so it can be preserved and another method was tape lifting as the above method a thin layer of light red colored lip-stick was applied on the lips and using cellophane tape gently pressed on the closed lips and carefully lifted without any damage, after lifting the lip print and it is directly pasted on the questionnaire (without any air bubbles) .The lip prints in all the individual were studied by an expert using a magnifying lens and double check was done before the data entry. Lip prints were classified by using Suzuki and Tsuchihashi classification

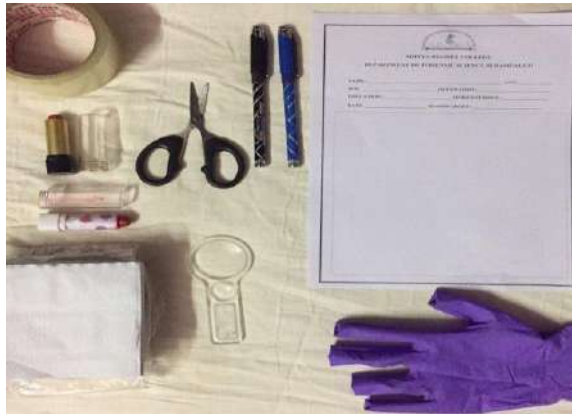


Figure 1. Material used



Figure 2 Application of Lipstick

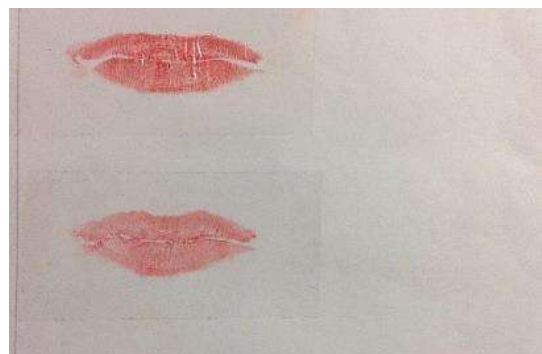


Figure 3 Collection Lip prints

Chapter - 5

RESULTS AND CONCLUSIONS

5.1 RESULT

No exactly identical lip print patterns were observed in the subjects. Specific patterns of branching and location of the lip grooves were evident even in cases showing the same lip pattern types in all the six compartments. In the current study, the distribution of different patterns of lip prints among the studied population is demonstrated in the graph.

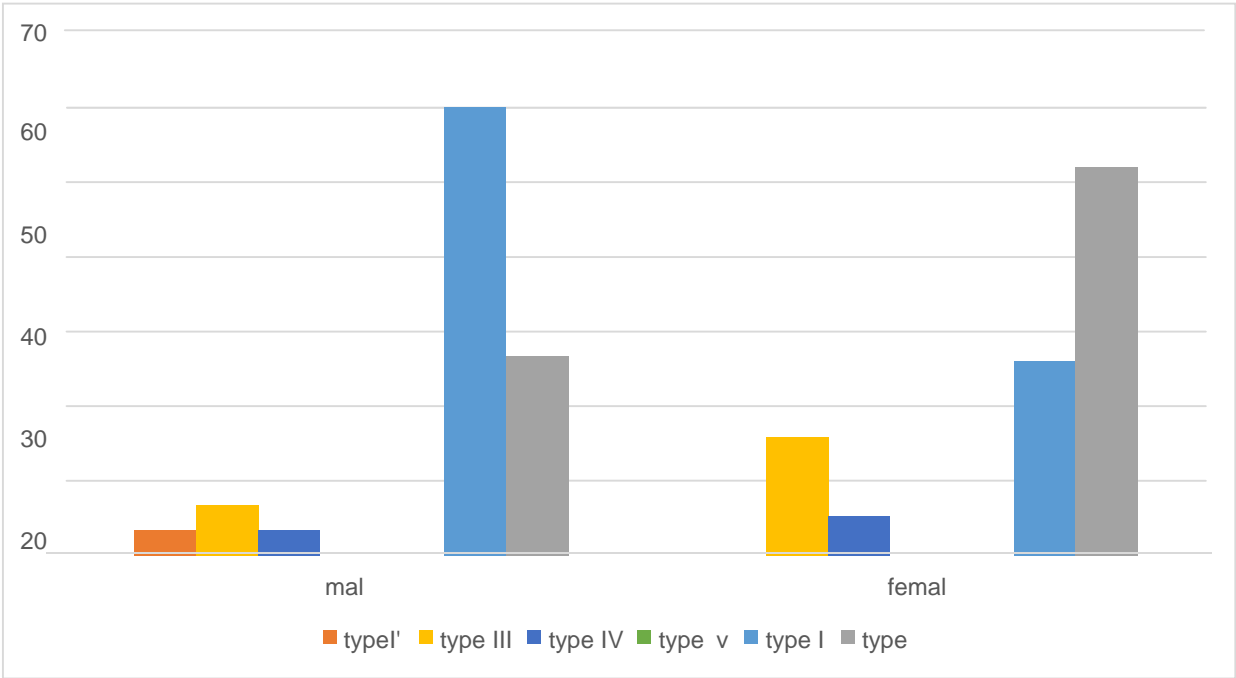
Among males, type I was the most common (60%), and type V was the least common (0.0%) pattern.

Among females, the same trend was also observed type II: (52.59%), type V: (0.0%), no significant difference was observed between the lip print patterns of males and females.

The lips in repose, exhibits well-defined grooves suitable for human identification studies .The amount and uniformity of the lipstick applied to the lips can affect the accuracy of the records as well. Thus, in the current study, the lipstick was applied by a trained individual and the subjects were asked not to remove or rub their lips during and after applying; thus, the uniformity and even the thickness of the applied lipstick were attempted to be appropriate.

The study which is conducted in the age group of 12 to 17 in Thrissur,(Kerala,India) given the result that

FEMALE			MALE		
SAMPLE NO	TYPES	AGE	SAMPLENO	TYPES	AGE
SMAPLE 1	TYPES II	17	SMAPLE 1	TYPES II	17
SAMPLE 2	TYPES II	16	SAMPLE 2	TYPES I'	15
SAMPLE 3	TYPES III	16	SAMPLE 3	TYPES I	15
SAMPLE 4	TYPES II	16	SAMPLE 4	TYPES I	14
SAMPLE 5	TYPES I	16	SAMPLE 5	TYPES II	13
SAMPLE 6	TYPES II	17	SAMPLE 6	TYPES I	17
SAMPLE 7	TYPES II	16	SAMPLE 7	TYPES I	15
SAMPLE 8	TYPES II	13	SAMPLE 8	TYPES III	12
SAMPLE 9	TYPES III	14	SAMPLE 9	TYPES II	17
SAMPLE 10	TYPES I	16	SAMPLE 10	TYPES IV	16
SAMPLE 11	TYPES II	16	SAMPLE 11	TYPES I	14
SAMPLE 12	TYPES II	17	SAMPLE 12	TYPES I	15
SAMPLE 13	TYPES I'	16	SAMPLE 13	TYPES I	15
SAMPLE 14	TYPES III	13	SAMPLE 14	TYPES I	12
SAMPLE 15	TYPES II	13	SAMPLE 15	TYPES I	13
SAMPLE 16	TYPES II	12	SAMPLE 16	TYPES I	13
SAMPLE 17	TYPES II	15	SAMPLE 17	TYPES I	16
SAMPLE 18	TYPES II	12	SAMPLE 18	TYPES I	15
SAMPLE 19	TYPES II	16	SAMPLE 19	TYPES I	16
SAMPLE 20	TYPES IV	16	SAMALE 20	TYPES I	16



5.2 CONCLUSION

The above study shows that it is able to convey that lip prints behold the potential of determination of sex, the result obtained by the present study does not prove to be an infallible method nevertheless it does seem to promise to go one step closer to the truth and lip prints of our study participant did not match with each other therefore the study validates that lip prints are unique as that of finger print and therefore has forensic importance. Even though there is no significant difference in lip pattern of male and female. Even though it is recommended that lip prints record should be maintained for every individual similar to finger prints

REFERENCES

- 6.1. Amith HV, Ankola AV, Nagesh L. Lip prints-can it aid in individual identification. *J Oral Health Comm Dent*. 2011;5:113–8[[Google Scholar](#)]
- 6.2. Reddy LV. Lip prints: An overview in forensic dentistry. *J Adv Dental Research*. 2011;2:17–20. [[Google Scholar](#)]
- 6.3. Bajpai M, Mishra N, Yadav P, Kumar S. Efficacy of lip prints for determination of sex and inter observer variability. *Euro J Exp Bio*. 2011;1:81–6. [[Google Scholar](#)]
- 6.4. Prabhu RV, Dinkar AD, Prabhu VD, Rao PK. Cheiloscopy: Revisited. *J Forensic Dent Sci*. 2012;4:47–52. [[PMC free article](#)] [[PubMed](#)] [[Google Scholar](#)]
- 6.5. Kautilya DV, Bodkha P, Rajamohan N. Efficacy of cheiloscopy in determination of sex among South Indians. *J Clin Diagn Res*. 2013;7:2193–6. [[PMC free article](#)] [[PubMed](#)] [[Google Scholar](#)]
- 6.6 Dongarwar GR, Bhowate RR, Degwekar SS. Cheiloscopy-method of person identification and sex determination. *Open Access Sci Rep*. 2013;2:1–4. [[Google Scholar](#)]
- 6.7. Sharma P, Saxena S, Rathod V. Comparative reliability of cheiloscopy and palatoscopy in human identification. *Indian J Dent Res*. 2009;20:453–7. [[PubMed](#)] [[Google Scholar](#)]
- 6.8. Ghimire N, Nepal P, Upadhyay S, Budhathoki SS, Subba A, Kharel B. Lip print pattern: An identification tool. *Health Renaissance*. 2013;11:229–33. [[Google Scholar](#)]
- 6.9. Malik R, Goel S. Cheiloscopy: A deterministic aid for forensic sex determination. *J Indian Acad Oral Med Radiol*. 2011;23:17–9. [[Google Scholar](#)]
- 6.10. Arif M, Chaudhary MK, Maqsood M. Cheiloscopy as an aid to personal identification and its variation according to gender. *J Fatima Jinnah Med Coll*. 2013;7:26–30. [[Google Scholar](#)]
- 6.11. Sheetal M, Sakarde S, Sur J, Singh A, Khan F, Jain S, et al. Cheiloscopy and Palatoscopy: A Novel Tool for Sex Identification. *Chettinad Health City Med J*. 2013:146–50. [[Google Scholar](#)]
- 6.12. Kapoor N, Tiwari P. Study of lip prints among the population of Marathi community. *Int J Sci Res Publ*. 2013;3:1–8. [[Google Scholar](#)]
- 6.13. Hamzah NH, Osman K, Xu NX, Hamzah SP. Lip prints in sex and race determination. *J Sains Kesihatan Malaysia*. 2012;10:29–33. [[Google Scholar](#)]

6.14. Gondivkar SM, Indurka RA, Degwekar S, Bhowate R. Cheiloscopy for sex determination. *J Forensic Dental Sci.* 2009;1:56–60. [Google Scholar]

6.15. Vergheese AJ, Somasekar M, UmeshBabu R. A study on lip prints types among the people of Kerala. *J Indian Acad Forensic Med.* 2010;32:6–7. [Google Scholar]