

CHAPTER 1: INTRODUCTION

Identification plays a vital role in the crime scene investigation. Human identification is the mainstay of the civilization and identification of the individuals has always been paramount importance to the society. Identification of the individual living or dead is based on the theory that all the individuals are unique. One such feature is lip prints; it remains same throughout life and uninfluenced by injuries, diseases or environmental changes. For the purpose of personal identification anthropometry, sex determination, DNA profiling, dactylography, odontology, differentiation by blood grouping etc. are the methods which have been used traditionally. The pattern of wrinkles on the lips has individual characteristics as like fingerprints. On the basis of lip traces, it is really helpful in forensic investigation for personal identification.

Although lip print identification may be appear in the field literature there is very little science or research to support the theory, lip prints are showing individual character. For the collection and comparison of lip prints which has accepted within the forensic community. Lip print deal with the study of lip lines and fissures present in the zone of transition of human lips, technically it is called as Cheiloscopy. The term which is derived from the word 'Cheilos' which means lips and 'scopy' means to see. Cheiloscopy is a fast emerging tool in human identification because of its uniqueness and permanence. Lip prints was first described by Fischer in 1902, However it was recommended to be used for the personal identification and criminalization was given in 1932 by Edmond Locard.

Twins are the two off springs which are developing from one zygote that will split and form two embryos. Twins are classified as monozygotic (identical) and dizygotic (fraternal) and they are the siblings carried in the womb at the same time. Twins are similar in many ways owing to the genetical and environmental factors. However, still, there are certain things that are not similar among them, and this is the scope for personal identification among the twins. ^[5]

Blood is the most important bodily fluid, which is responsible for the circulation of important nutrients, enzymes and other hormones across the whole body, besides the most critical substance oxygen. The human blood contains red blood cell, white blood cells and platelets. Blood grouping is also been utilized in genetic research, anthropology and tracing of ancestral relation to human being as like it will be similar to the twins whether they are fraternal or identical. Blood is having prominent significance in forensic science through which we can determine the complete personal identification by DNA analysis.^[6]

Lip prints and blood group are important parameter in forensic science for the individual identification. Lip print pattern and blood samples taken from the crime scene constitute the important aid in the crime detection. These are the most common evidence which are usually left in the crime scene and can provide direct link to the suspect. Lip prints can be found on the surfaces such as glass, clothings, cutlery or cigarette butts. The vermilion border of the lips has minor salivary and sebaceous gland which, together with the moisturizing done by the tongue leads to the possibility of existence of latent lip prints. So, when searching for lip prints one must always consider the presence of latent lip prints the study of lip print pattern in twins could be greater important.

Uni ovular twins share same protein, same genetic information, same blood group, but having different finger prints .So any major comparison found in the lip print patterns and blood group of the twins would be of greater discovery. It is a method of identification of a person based on the characteristic arrangement of lines appearing on the red part of the lips. Cheiloscopy in its present stage of development has surpassed the limits of a method and has become a means of criminalistics identification. Lipstick smears can lead to indirect proof of a relationship or contact between a victim and a suspect or a suspect and a crime scene.

Inter commissural distance (ICD) in relaxed state is measured between the corners of the mouth. It corresponds to the width of maxillary anterior teeth and can be used as a guide for the selection of maxillary dental prosthesis. ICD could be Utilized in forensic odontology for the identification of a person, if he/she was a denture wearer. The inter labial gap during relaxed state, can be used to assess the

lip competency. The lip competency records in human beings could be matched with past facial profile photographs or lateral cephalogram records for identification in mass disaster.

Employing the dental formula generally used, the lip was divided into four quadrants and the type of pattern was recorded based on classification as follow.

1-Right upper lateral

6- Right lower medial

2-Right upper medial

7- Left lower medial

3-Left upper medial

8- Left lower lateral

4-Left upper lateral

5- Right lower lateral

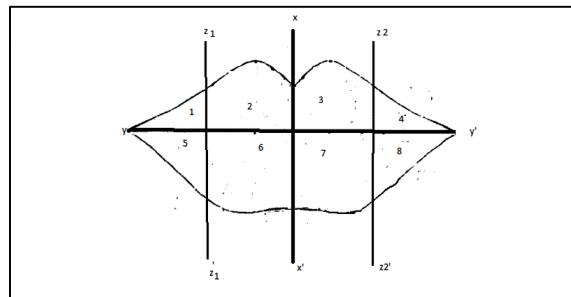


Figure 1: Formation of 8 quadrants by division of lips from horizontal and vertical lines

Thus a dental surgeon has to actively play his role in personal identification and criminal investigation, as his evidence would be very much useful in law and justice. The pattern of lip prints were studied by applying Suzuki's classification.

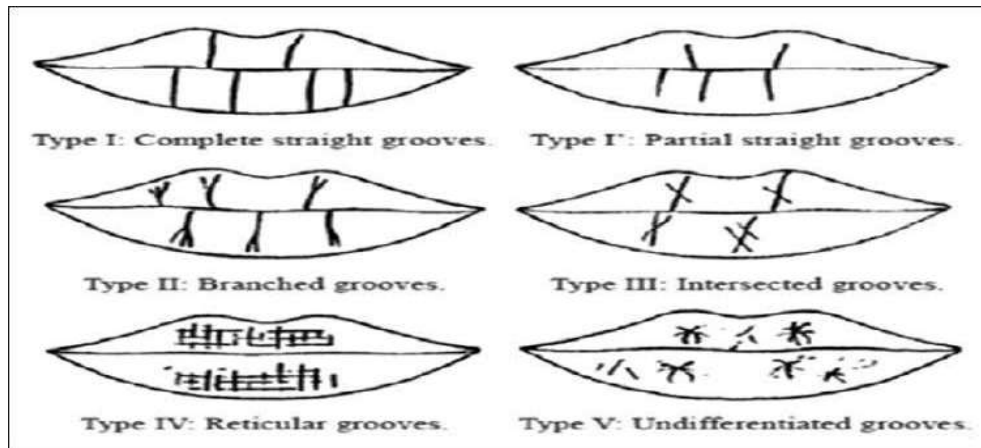


Figure 2: Suzuki's classification of lip prints pattern

The current study was performed to assess the intra pair differences and similarities in the lip print of twins with blood group and to determine the theory uniqueness hold in twins. The present study was conducted on 30 pair of twins .Each lip print was assessed with a good magnifying lens for the comparison of lip prints by Suzuki's classification.

CHAPTER 2: LITERATURE REVIEW

Kazuo Suzuki and Yusav Tsuchihashi (1970) studied that they compared lip prints of 18 uniovular twin aged 12-13 years of Gage .The lip print of these twins were extremely alike and their characteristics were inherited either from mother on father. No lip prints manifested the same pattern in 280 individuals (age 6-57 years).

Sailesh M Govindvikar et.al in (2009) studied on “certificates of death and for personal, social and legal reasons”, on the term of uniqueness. This study has done to check that any peculiar Lip prints which is in relation to the sex of individual and determine the most common lip patterns in the Indian population. This study which was conducted on 140 subjects, which includes 70 males and 70 females in the age group of 0-70 years. And it was analysed then they finished it up with the conclusion that along with other traditional methods, cheiloscopy can also serve as very important tools for the personal identification based on the characteristics arrangement of lines appearing on lips.

Suman Jaishankar et.al (2010) studied about “lip print in personal identification”. In this study it is very evident that, they are clearly mentioning that for the personal identification lip print is important in criminal investigation. Cheiloscopy is a forensic investigation technique that deals with the identification based on lip traces. In this research they are establishing to assess the distribution of pattern of lip prints among males, females, and twins and evaluating the uniqueness of lip prints on 180 individuals which include 10 pairs of twins. They have collected the lip print using lipstick and adhesive tape and transferred to a pro format sheet for analysis. And they are concluded with a result that since the lip prints are unique and the lip print analysis which can be used for the personal identification.

Neethu Telagi et.al (2011) studied on the topic “cheiloscopy and its pattern in comparison with ABO blood groups”. Their aim is to determine the distribution of different lip print pattern among subjects having different ABO and Rh blood groups and to determine the correlation between their characters of blood groups. This

Present study has done on 150 individuals who were randomly selected and blood groups of these subjects were analysed and the result revealed that no association between distributions of lip print pattern and ABO blood groups. Lip print pattern does not show any correlation between blood groups.

Vahanwala Sonal et.al (2012) studied on the topic “Evaluation of lip prints in identical twins”. The study was basically done on the twins because of particular individuals of twins is a mammoth task because of tremendous resemblance both physically and genetically. This current study was conducted to access the intra-pair differences and variations of lip prints in identical twins and to determine the theory of uniqueness hold true for identification in 25 pairs of identical twins, and analysed by magnifying lens for intra pair and differences using Suzuki’s classification and this study was concluded by, discrimination between a pairs of identical twins can be made easy if the lip prints are assessed systematically and thoroughly.

Virginia A costa et.al (2012) studied about “Morphologic pattern of lip prints in a Portuguese population: A preliminary analysis”. In this study the lip prints are thought to have the ability to distinguish individuals and hence have a potential use in human identification purpose. However they remained regarding on sex determination. This study aimed to classify lip print for different individuals in a Portuguese population and to determine whether sex differences exist. For this they have collected 25 females and 25 male, by using lip sticks and cello tapes. Lip prints was analysed using magnifying lens and classified on the basis of Suzuki classification. This study corroborates the hypothesis that lip prints are able to distinguish individuals and will be useful in sex determination.

Bhawma Thakur, Ravi Kant Sharma et.al (2017) “Comparative study of lip prints in monozygotic and dizygotic twins”. In this article they have conducted study in 40 pairs of twins and their families to evaluate the possibility of variation in that they considered twins as a primary and their family as secondary subject. They excluded the lips which is having congenital lip deformity and any inflammations. The print was studied on adobe Photoshop 7.0 software and the protocol under Tshuchihashi

classification. It is concluded as like the lip print is unique to each Individual and among the revealed that they are similar but not identical and their characteristics resembles either parent. Since the analysis is ended up by concluding that lip print can be considered for personal identification.

Gabriel M Fonseca et.al (2018) worked on “ lip prints identification-current perspective” it has been proposed as an additional tool for crime investigation because of the supposed uniqueness of labial groove ; however ,critics of the validity and reliability for methods and techniques redefined standards and requirements in order to consider this discipline a real forensic identification science. Lip print identifications has an important background and undoubtedly is of singular interest in specific forensic communities. In contrast, Poland has developed a largely technical profile with apparent support and collaboration from criminal investigation agencies, yet with very few reports available to the scientific community, making it difficult to verify or reproduce these methodologies.

Dr. Annie Veronese et.al worked on “The study on lip print types among the people of Kerala” .This study was taken up to determine the predominant lip print type in Kerala population .50 males and 50 females subjects of Kerala origin were included in the study and the middle 1 cm of the lower lip was taken as the study area. The lip Prints was recorded by applying lipstick on the lips, the Cellophane tape was applied on the lips. The present study revealed that the middle portion of the lower lip shows type IV (reticular) as the predominant type. Work on this subject has already elicited useful information such as that lip prints are unique to an individual and can be used to fix the Identity of a person; that they remain stable over time and that prints show gender differences.

Akansha Mishra et.al (2017) studied correlation amongst 500 individuals. In this article they are introducing about the external surface of lips that are having many elevations and depressions which forms many characteristic's that are calling as lip prints and its study is called as cheiloscropy .and the lip prints are unique and distinguishable for every individuals like fingerprints. The use of lip prints for

human identification which was suggested in 1950 and researches were carried out in 1960s and early 1970s, resuming in the last few years. The present study was aimed to study the lip prints of different individuals in different parts of lips and find out the incidence of any particular pattern in given age group. Although lip print identification has been used in the court in isolation cases, more researches need to be conducted in this field with regards to confirmation of uniqueness and the collection and interpretation of evidence.

CHAPTER 3: AIM AND OBJECTIVES

AIM:

To study the relation in between the lip prints and ABO blood group of twins.

OBJECTIVES:

- To establish the relationship between the lip prints of twins.
- To study the lip print patterns in between the twins.

CHAPTER 4: MATERIALS REQUIRED

MATERIALS

1. Adhesive tape
2. Dark colour lipstick (Huda beauty)
3. Cotton
4. Deep cleanser makeup remover (Bee one)
5. Hand gloves
6. Consent forms
7. Bond paper
8. Magnifying lens

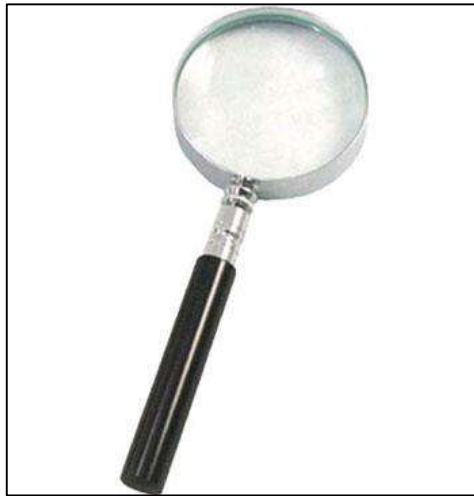


Figure 3: Magnifying lens

METHODOLOGY

This study was conducted over a period of one month. From the twins in the age between 10 to 30 years. 30 lip prints from twins 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 relaxed without stretching their lips.2-3 inches length adhesive tape

was applied on the lips. At the centre 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 the lip prints and instruction was also given that the lip should not be moved while lifting.

Then the adhesive tape were 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 prints was assigned a serial number to avoid the chance of exchange of twinning pairs and each twin is named as A and B, then it is compared manually using magnifying lens to realise the uniqueness of lip prints.



Figure 4: Collection of lip print by adhesive tape on the upper and lower lip



Figure 5: Collection of lip print by lifting the tape carefully from the lips

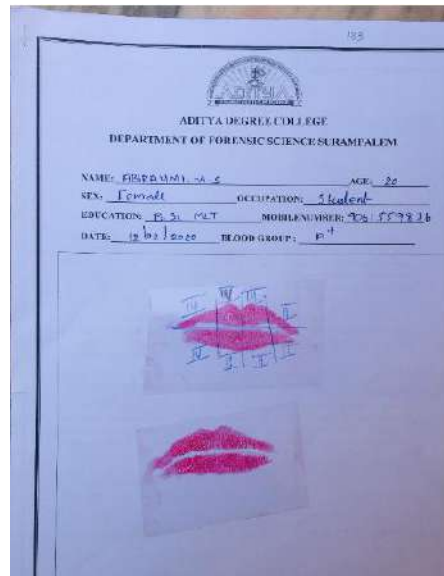


Figure 6: Collected lip prints in the bond paper.

CHAPTER 4: OBSERVATIONS

Sr. No.	Samples	Blood Group of Twin A	Lip Print of Twin A	Blood Group of Twin B	Lip Print of Twin B
1	Pair 1	A+	$\begin{array}{c c} \text{I}' & \text{III} \\ \hline \text{II} & \text{I}' \\ \hline \end{array}$	A+	$\begin{array}{c c} \text{I} & \text{IV} \\ \hline \text{I} & \text{IV} \\ \hline \end{array}$
2	Pair 2	A+	$\begin{array}{c c} \text{V} & \text{IV} \\ \hline \text{IV} & \text{I} \\ \hline \end{array}$	A+	$\begin{array}{c c} \text{V} & \text{IV} \\ \hline \text{IV} & \text{I} \\ \hline \end{array}$
3	Pair 3	A+	$\begin{array}{c c} \text{IV} & \text{IV} \\ \hline \text{IV} & \text{II} \\ \hline \end{array}$	A+	$\begin{array}{c c} \text{I} & \text{III} \\ \hline \text{I} & \text{II} \\ \hline \end{array}$
4	Pair 4	A+	$\begin{array}{c c} \text{IV} & \text{III} \\ \hline \text{IV} & \text{III} \\ \hline \end{array}$	A+	$\begin{array}{c c} \text{V} & \text{III} \\ \hline \text{IV} & \text{IV} \\ \hline \end{array}$
5	Pair 5	A+	$\begin{array}{c c} \text{I} & \text{II} \\ \hline \text{I} & \text{I} \\ \hline \end{array}$	A+	$\begin{array}{c c} \text{V} & \text{V} \\ \hline \text{I} & \text{I} \\ \hline \end{array}$
6	Pair 6	A-	$\begin{array}{c c} \text{I}' & \text{III} \\ \hline \text{II} & \text{III} \\ \hline \end{array}$	A-	$\begin{array}{c c} \text{I} & \text{III} \\ \hline \text{II} & \text{I} \\ \hline \end{array}$

Sr. No.	Samples	Blood Group of Twin A	Lip Print of Twin A	Blood Group of Twin B	Lip Print of Twin B
7	Pair 7	A+	$\begin{array}{c c} \text{II} & \text{II} \\ \hline \text{I} & \text{I} \end{array}$	A+	$\begin{array}{c c} \text{I} & \text{I} \\ \hline \text{II} & \text{II} \end{array}$
8	Pair 8	A+	$\begin{array}{c c} \text{II} & \text{III} \\ \hline \text{I} & \text{I} \end{array}$	A+	$\begin{array}{c c} \text{I}' & \text{II} \\ \hline \text{III} & \text{II} \end{array}$
9	Pair 9	A+	$\begin{array}{c c} \text{IV} & \text{I}' \\ \hline \text{II} & \text{III} \end{array}$	A+	$\begin{array}{c c} \text{IV} & \text{II} \\ \hline \text{III} & \text{II} \end{array}$
10	Pair 10	A+	$\begin{array}{c c} \text{II} & \text{I} \\ \hline \text{III} & \text{II} \end{array}$	A+	$\begin{array}{c c} \text{II} & \text{II} \\ \hline \text{III} & \text{I}' \end{array}$
11	Pair 11	B+	$\begin{array}{c c} \text{I} & \text{V} \\ \hline \text{I}' & \text{II} \end{array}$	B+	$\begin{array}{c c} \text{II} & \text{IV} \\ \hline \text{III} & \text{IV} \end{array}$
12	Pair 12	B+	$\begin{array}{c c} \text{II} & \text{III} \\ \hline \text{II} & \text{IV} \end{array}$	B+	$\begin{array}{c c} \text{I} & \text{II} \\ \hline \text{III} & \text{IV} \end{array}$
13	Pair 13	B+	$\begin{array}{c c} \text{I} & \text{IV} \\ \hline \text{II} & \text{V} \end{array}$	B+	$\begin{array}{c c} \text{I} & \text{V} \\ \hline \text{I} & \text{III} \end{array}$

Sr. No.	Samples	Blood Group of Twin A	Lip Print of Twin A	Blood Group of Twin B	Lip Print of Twin B
14	Pair 14	B+	$\begin{array}{c c} \text{III IV} & \text{III II} \\ \hline \text{II III} & \text{III II} \end{array}$	B+	$\begin{array}{c c} \text{III III} & \text{II III} \\ \hline \text{II III} & \text{III II} \end{array}$
15	Pair 15	B+	$\begin{array}{c c} \text{I III} & \text{III I} \\ \hline \text{I' V} & \text{I' I} \end{array}$	B+	$\begin{array}{c c} \text{I III} & \text{II I} \\ \hline \text{I II} & \text{III I} \end{array}$
16	Pair 16	B+	$\begin{array}{c c} \text{I' I} & \text{I I} \\ \hline \text{II I} & \text{I II} \end{array}$	B+	$\begin{array}{c c} \text{I III} & \text{IV I} \\ \hline \text{II I} & \text{I I} \end{array}$
17	Pair 17	B+	$\begin{array}{c c} \text{IV II} & \text{I' II} \\ \hline \text{IV III} & \text{II I} \end{array}$	B+	$\begin{array}{c c} \text{II II} & \text{I' III} \\ \hline \text{II III} & \text{I II} \end{array}$
18	Pair 18	B+	$\begin{array}{c c} \text{V I} & \text{I II} \\ \hline \text{IV II} & \text{II II} \end{array}$	B+	$\begin{array}{c c} \text{II I} & \text{II I} \\ \hline \text{IV I} & \text{I I'} $
19	Pair 19	B+	$\begin{array}{c c} \text{IV II} & \text{II IV} \\ \hline \text{II III} & \text{II I'} $	B+	$\begin{array}{c c} \text{IV II} & \text{I IV} \\ \hline \text{II II} & \text{II III} \end{array}$
20	Pair 20	O+	$\begin{array}{c c} \text{III II} & \text{II IV} \\ \hline \text{IV I} & \text{II III} \end{array}$	O+	$\begin{array}{c c} \text{I IV} & \text{II I} \\ \hline \text{IV IV} & \text{I IV} \end{array}$

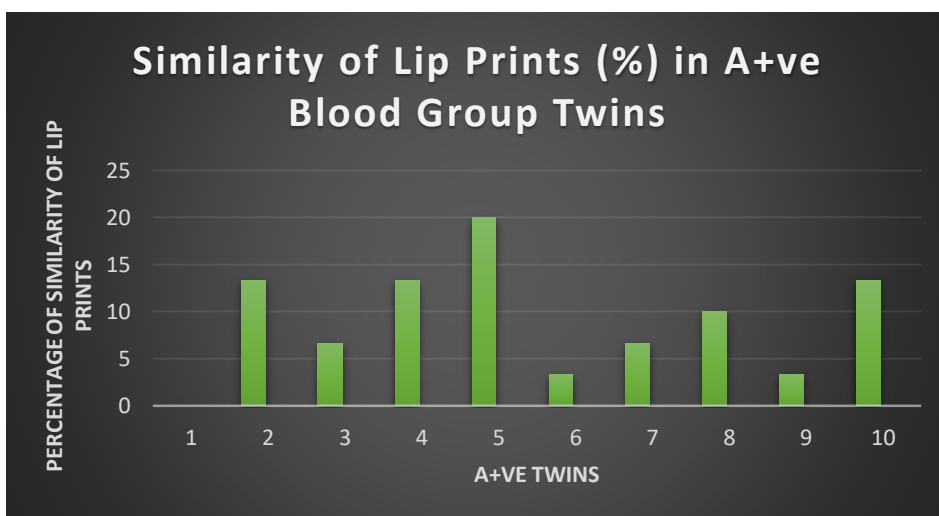
Sr. No.	Samples	Blood Group of Twin A	Lip Print of Twin A	Blood Group of Twin B	Lip Print of Twin B
21	Pair 21	O+	$\begin{array}{c c} \text{I' II} & \text{III I} \\ \hline \text{I' IV} & \text{IV III} \end{array}$	O+	$\begin{array}{c c} \text{II II} & \text{IV I} \\ \hline \text{II III} & \text{III II} \end{array}$
22	Pair 22	O+	$\begin{array}{c c} \text{I II} & \text{II I} \\ \hline \text{IV I} & \text{I' I} \end{array}$	O+	$\begin{array}{c c} \text{II II} & \text{II II} \\ \hline \text{I I} & \text{I II} \end{array}$
23	Pair 23	O+	$\begin{array}{c c} \text{I II} & \text{IV I'} \\ \hline \text{II II} & \text{III I} \end{array}$	O+	$\begin{array}{c c} \text{I II} & \text{I IV} \\ \hline \text{I II} & \text{I IV} \end{array}$
24	Pair 24	O+	$\begin{array}{c c} \text{I II} & \text{II I} \\ \hline \text{I IV} & \text{IV I'} \end{array}$	O+	$\begin{array}{c c} \text{II I} & \text{I I'} \\ \hline \text{II III} & \text{II IV} \end{array}$
25	Pair 25	O+	$\begin{array}{c c} \text{V IV} & \text{IV V} \\ \hline \text{II I} & \text{IV V} \end{array}$	O+	$\begin{array}{c c} \text{I IV} & \text{II III} \\ \hline \text{I V} & \text{V II} \end{array}$
26	Pair 26	O+	$\begin{array}{c c} \text{I II} & \text{II IV} \\ \hline \text{I I'} & \text{III II} \end{array}$	O+	$\begin{array}{c c} \text{I' II} & \text{III I'} \\ \hline \text{IV V} & \text{V II} \end{array}$
27	Pair 27	O+	$\begin{array}{c c} \text{I II} & \text{I I} \\ \hline \text{IV I} & \text{II II} \end{array}$	O+	$\begin{array}{c c} \text{I I} & \text{I I} \\ \hline \text{II II} & \text{I II} \end{array}$

Sr. No.	Samples	Blood Group of Twin A	Lip Print of Twin A	Blood Group of Twin B	Lip Print of Twin B
28	Pair 28	O-	$\begin{array}{c c} \text{II} & \text{IV} \\ \hline \text{I} & \text{I} \end{array} \quad \begin{array}{c c} \text{IV} & \text{V} \\ \hline \text{V} & \text{I}' \end{array}$	O-	$\begin{array}{c c} \text{II} & \text{IV} \\ \hline \text{III} & \text{IV} \end{array} \quad \begin{array}{c c} \text{III} & \text{V} \\ \hline \text{IV} & \text{III} \end{array}$
29	Pair 29	O+	$\begin{array}{c c} \text{I} & \text{V} \\ \hline \text{I}' & \text{II} \end{array} \quad \begin{array}{c c} \text{III} & \text{V} \\ \hline \text{III} & \text{I}' \end{array}$	O+	$\begin{array}{c c} \text{II} & \text{II}' \\ \hline \text{I}' & \text{I}' \end{array} \quad \begin{array}{c c} \text{II} & \text{I}' \\ \hline \text{III} & \text{II} \end{array}$
30	Pair 30	O+	$\begin{array}{c c} \text{II} & \text{II} \\ \hline \text{II} & \text{III} \end{array} \quad \begin{array}{c c} \text{I}' & \text{III} \\ \hline \text{I} & \text{III} \end{array}$	O+	$\begin{array}{c c} \text{II} & \text{II} \\ \hline \text{III} & \text{II} \end{array} \quad \begin{array}{c c} \text{I} & \text{IV} \\ \hline \text{III} & \text{I}' \end{array}$

Table 1: Suzuki Classification of lip prints and blood group of twins

Blood Group	Similar Lip Print Pattern In Twins	Percentage	Average similarity
A+	0	0%	9.0%
	4	13.33%	
	2	6.66%	
	4	13.33%	
	6	20%	
	1	3.33%	
	2	6.66%	
	3	10%	
	1	3.33%	
	4	13.33%	

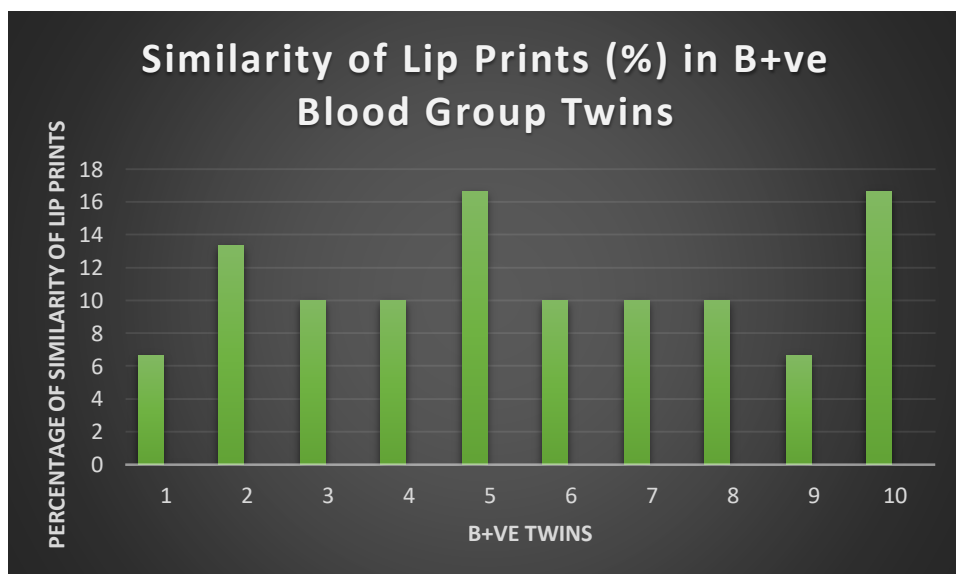
Table 2: Similarity Of Lip Print In A+ve Blood Group



Graph 1: Similarity of Lip Print in A+ve Blood Group

Blood Group	Similar Lip Prints In Twins	Percentage%	Average Similarity
B+	2	6.66%	10.99%
	4	13.33%	
	3	10%	
	3	10%	
	5	16.6%	
	3	10%	
	3	10%	
	3	10%	
	2	6.66%	
	5	16.6%	

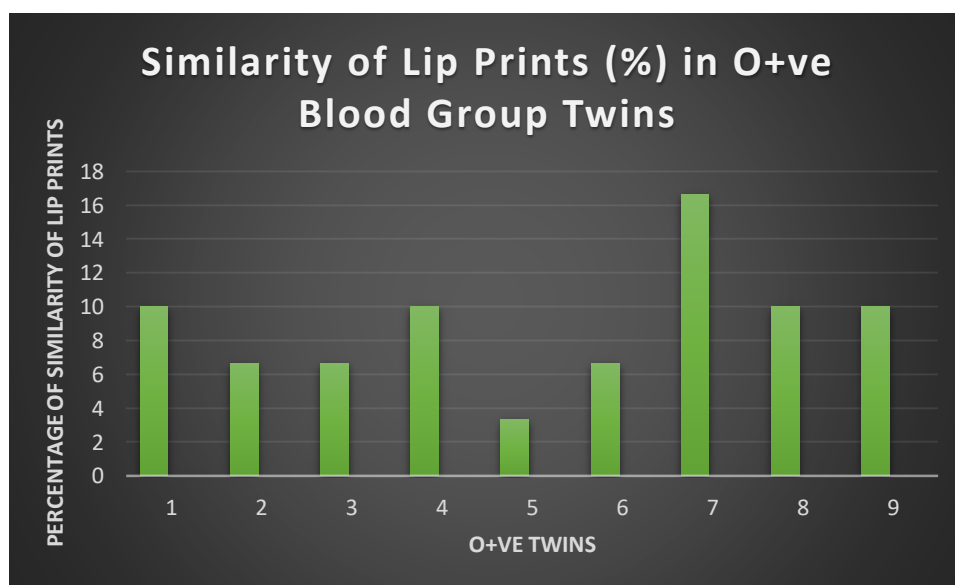
Table 3 : similarity of lip print in O+ ve blood group



Graph 2: Similarity Of Lip Print In B+ve Blood Group

Blood Group	Similar Lip Print Pattern In Twins	Percentage	Average
O+	3	10%	8.88%
	2	6.66%	
	2	6.66%	
	3	10%	
	1	3.33%	
	2	6.66%	
	5	16.66%	
	3	10%	
	3	10%	

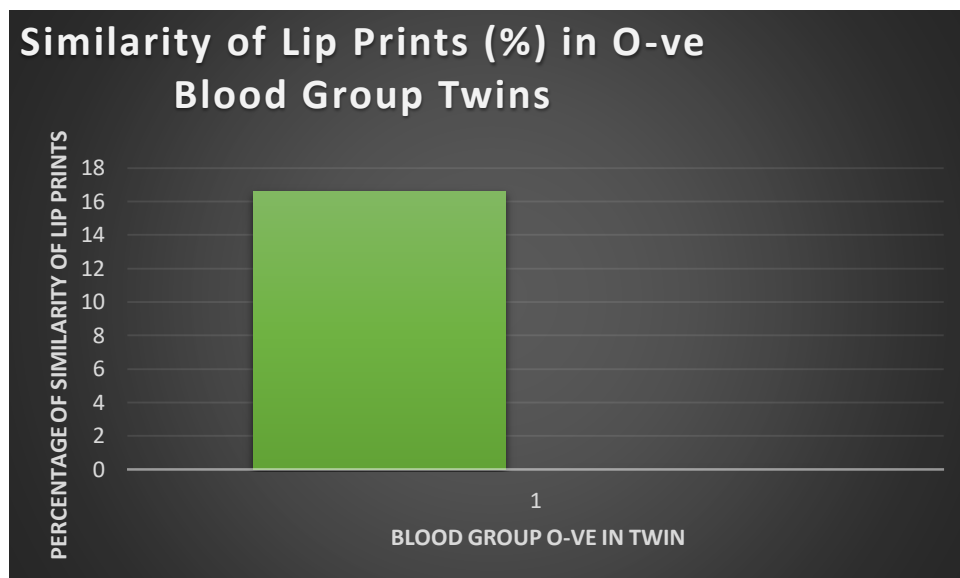
Table 4: Similarity of lip print in O+ve blood group



Graph 3 : Similarity of lip prints in O+ Blood group Twin

Blood Group	Similar Lip Print Pattern In Twins	Percentage	Average
O-	5	16.6%	16.60%

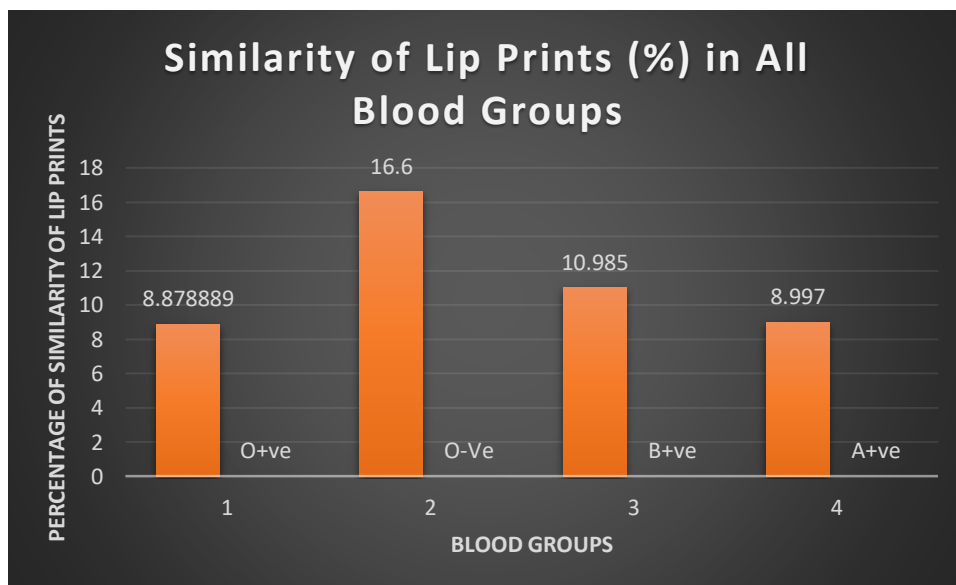
Table 5: Similarity of lip print in O- ve Blood Group.



Graph 4: Similarity of Lip Print in O- ve Blood Group Twins.

Blood Group	Total Average
O+	8.878889%
O-	16.6%
B+	10.985%
A+	8.997%

Table 6: Similarity of Lip Prints in All Blood Group



Graph 5: Similarity of lip prints in all blood groups of Human

CHAPTER 5: RESULT AND CONCLUSION

RESULT:

Among 30 pair of Twins, O+ ve blood group twins 8.997% similarity in their lip prints; A+ ve blood group twins are having 8.87% similarity in their lip prints; O- ve blood group twins have 16.66% similarity in their lip print pattern and B + ve blood group twins have 10.98% similarity in their lip print patterns.

The present study contains nine O + ve blood group twins, one O- ve blood group twins, ten A+ ve blood group twins and ten B+ ve blood group twins.

Out of nine O+ve blood group twins, four pairs are showing 10% similarity in lip prints, three pairs are showing 6.66% similarity in lip prints, one pair is showing 16.6% similarity and one pair is showing 3.33% similarity in lip print patterns.

O-ve blood group twin showing 16.6% of similarity in lip print pattern.

Out of 10% B+ ve blood group twins, 5 pairs are showing 10% similarity in lip prints, two pairs are showing 16.6% similarity in lip prints and one pair is showing 13.33% similarity in lip print pattern.

Out of ten A + ve blood group twins, three pairs are showing 13.33% similarity in lip prints, two pairs are showing 6.66% similarity in lip prints; one pair is showing 0% similarity and one pair is showing 20% similarity in lip print pattern.

CONCLUSION:

In this present study O-ve blood group twin is showing higher similarities followed by B+ ve, A+ ve and O+ ve.

From the present study it is concluded that there is no relation in blood group and lip prints of twins.

As the present study has lack of amount of samples for showing the relation in between blood and lip print of twins, the study is not reliable.

CHAPTER 6: REFERENCES

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