

Original Research Paper

Comparative Evaluation of Lip Prints Among Indian and Malaysian Students

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Abstract

Cheiloscopy, the study of lip prints is an upcoming tool for the identification of persons. The lip print of every person is unique and can be used for personal identity. This study was done to compare and determine the most common lip print pattern among Indian and Malaysian students in both the genders and to ascertain if the lip prints behold the potential for determination of gender of the individual.

Study was conducted on 60 students (30 each from Indian and Malaysian origin) which included 20 males and 40 females. Lip stick was applied on each individual and the lip-print was obtained on a bond paper. The lip impression patterns were studied classified and recorded using magnifying lens with light. Study revealed that Type I pattern was seen in 42.7% for complete lip and 36.6% for central portion of lip among Indian students and 56.1% for complete lip and 60% for central portion of lip among Malaysian students. Type I pattern is the most common and there is no statistical difference in both the genders in lip print pattern among Indian & Malaysian students.

Key Words: Cheiloscopy; Lip prints; Gender determination; Racial; Indians; Malaysians

Introduction:

According to Locard's exchange principle, when two objects come into contact, there is always a transfer of material from each other. Traces from the scene of crime may be carried away on the person and at the same time may be left at the scene. [1]

Lip print is one of the evidence that can be left in the crime scene which helps in identification purpose. Lip prints are the normal lines and furrows in the form of wrinkles and grooves present in the human lip having certain individual characteristics like fingerprints.

During investigation it can be found over wine glass, love letters, on private parts etc. [2] Study of lip prints is known as Cheiloscopy.

It is unaltered from six week of intrauterine life till death. [3] Fischer in 1902 first described the furrows on the red part of the human lips. [3]

However, it was only in 1932 that Edmond Locard recommended the use of lip prints in personal identification. [4]

Synder in 1950 reported that the lip prints are individually distinctive as finger prints. [5] Suzuki, in 1967, recorded the measurement of the lips, made detailed study on the use and colour of rouge. He also elaborated on the method of its extraction to obtain useful data for Forensic application.

He said that the hereditary factors may have some influence on the lip print patterns. In 1970, he recalled the attention of everyone on the possible use of lip prints in personal identification and classified the lip prints into five types. [6] Mc Donell in 1972 conducted a study on two indistinguishable identical twins and found their lip prints to be different. [4]

Thus, lip prints are unique to a person and hence can be used as an aid in personal identification. The aim of the present study was to evaluate the distribution of lip print patterns in two different populations and to know the importance of lip prints in gender determination.

Materials and Methods:

Study was conducted on randomly selected 60 dental students (30 Indian and 30 Malaysian) studying in JSS Dental College & Hospital, Mysore. The study included a total of 20 males (12 Indians and 8 Malaysians) and 40 females (18 Indians and 22 Malaysians).

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All individuals were aged between 18 to 24 years. Lips which were normal and free of any disease were included in the study.

Individuals with known hypersensitivity to lipsticks, with any malformation or inflammation or trauma or scar or any other abnormality of the lip were excluded from the study. The materials used in the present study were bond paper, oil free lipstick or matted lipstick, lip stick applying brush and magnifying glass with light.

The subjects were asked to clean the lips and the matted lipstick was applied using a lipstick brush. The lip prints were recorded on the bond paper by placing it between the lips and asking the subjects to close the lips gently without applying pressure. Two duplicate prints of each individual were taken to avoid any improper prints or errors.

They were then studied carefully using a magnifying glass with light. While studying, each individual's lips were divided into six compartments, i.e. three compartments on each lip, and were allotted the digits one to six in a

clock-wise sequence starting from the subject's upper right.

The lip prints were classified based on Suzuki and Tsuchihashi's classification as:

- **Type I: Complete vertical,**
- **Type I': Incomplete vertical pattern,**
- **Type II: Branching or 'Y' pattern,**
- **Type III- Criss-cross pattern,**
- **Type IV: Reticular pattern and**
- **Type V: all other patterns. [6]**

The lip prints were analyzed in two categories, one as whole/complete lip and in the other only the central portion of the lip separately. The data entry and statistical analysis was done using statistical package for social sciences (SPSS) version 14 for windows.

Results:

In the present study, we found that no individual had single type of lip print in all the compartments and no two or more individuals had similar type of lip print pattern. The detailed results of the evaluation of the lip prints were recorded. (Fig. 1, 2)

Fig. 1: Distribution of Lip Print Patterns for the Complete Lip

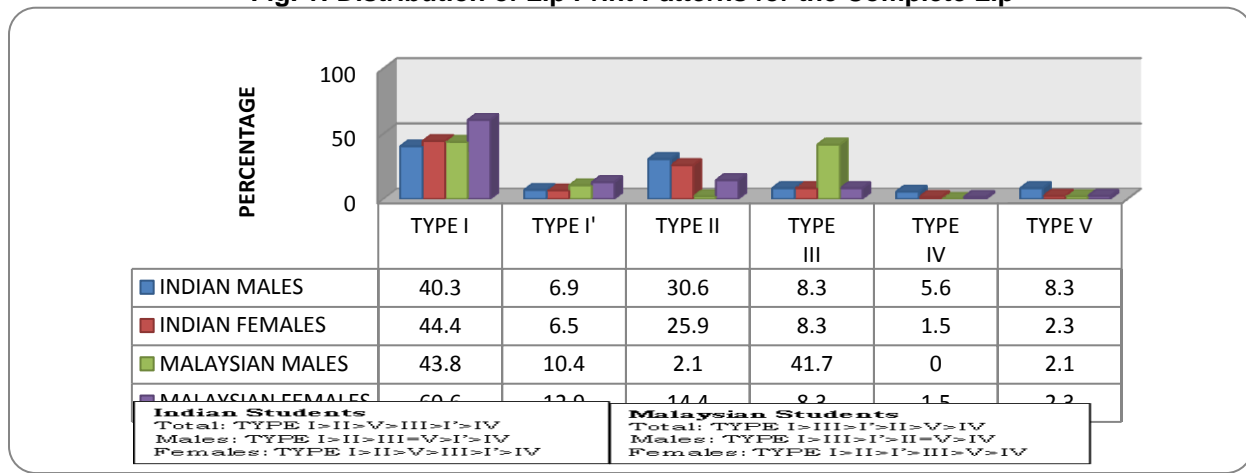
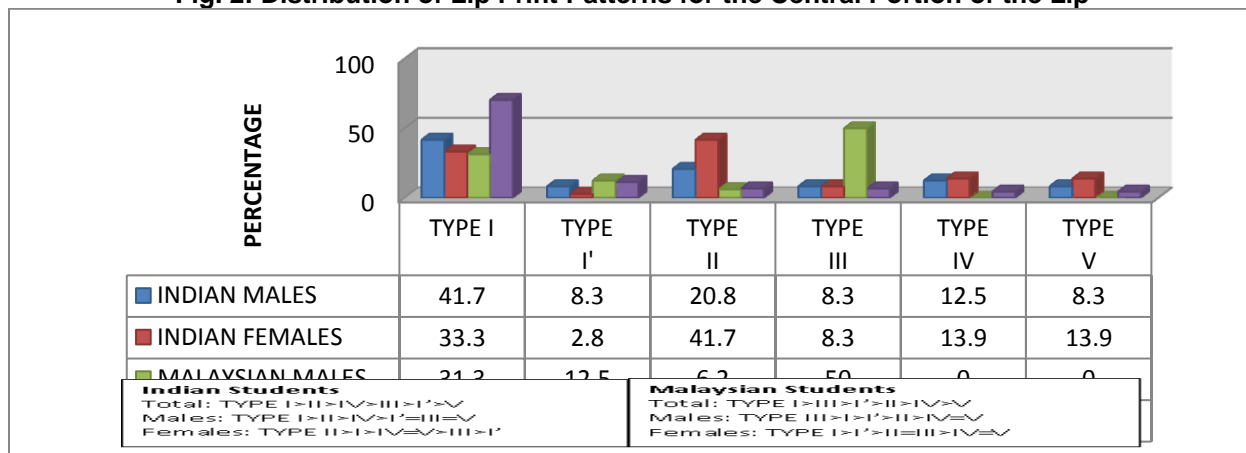


Fig. 2: Distribution of Lip Print Patterns for the Central Portion of the Lip



Discussion:

Personal identification is necessary for an unknown person in heir-ship, marriage, divorce, legitimacy, rape, homicide, suicide, accident; mass disaster etc. and various methods are available for this.

Usually the personal identification using cheiloscropy can be made by comparing the ante-mortem record with that of the postmortem record, if definite descriptions of the lip prints are available for that individual. [7] It is thought that hereditary factors may have some influence on the lip print patterns. [4]

Lip print identification is generally acceptable within forensic science as a means of positive identification, because lip print patterns are unique like finger prints. [8] It has been observed that lip prints are dissimilar among different individuals and also among identical twins. [4]

Recently, a detailed cheilosopic study of the lip print patterns in Saudi males and females proved the individuality of lip prints, as no identical patterns appeared in two subjects.

They reported that even when two subjects exhibited the same type of groove in the same area of the lip, there was specificity in the site and pattern of groove branching or reticulation. [9]

Another study done in Nigeria showed that no lip print patterns matched each other, thus establishing the uniqueness of lip prints. [10] In the present study also we found that lip prints were dissimilar among different individuals and no two individuals had same pattern, thus emphasising its uniqueness.

It has also been suggested that variations in lip print patterns among males and females could help in gender identification and studies have proved that gender difference does exist in lip print pattern. [7]

Different studies have shown that type I & type I' patterns are the most predominant patterns among females. [8, 11-13] A variation from this was reported as type IV to be the most predominant pattern in females. [14, 15] In males, it varied slightly.

According to some authors both type III & IV were found to be the most predominant patterns among males. [8, 11] Other studies reported type IV [12, 14, 15] or only type III [13] to be the most predominant patterns.

Others opine that type I pattern was the most predominant among both the genders and that the patterns in different quadrants varied in males than in females who tended to have the same pattern. [16] A study in Maharashtra

revealed that they were able to identify the gender with high degree of accuracy based on lip prints. [14, 16]

In the present study, type I pattern was the most prominent pattern among Indian and Malaysian males & females for the complete lip. For the central portion of the lip, type I was the most prominent pattern for Indian males & Malaysian females, type II for Indian females and type III for Malaysian males. Hence, we could not appreciate the gender based identification based on lip print pattern.

It was observed that an individual does not have a single type of lip print, but a mixture of different patterns and that no two individuals have similar type of lip-prints. [17] Further, it was seen that lip-prints did not change on repeated sampling in the same individual. [18]

We also found a mixture of different patterns rather than a single type of pattern in an individual. The prints at the corner of the lips are not very clear even in the prints of very good quality and it is usually the central strip of the lip which can be recorded better. [19]

In our study too, we observed that the central portion of the lip recorded better than the corners. Hence, more studies on the central portion of lips are necessary to validate this finding. It is assumed that lip print pattern variation is seen among different races or population. Manipady, in 2002 studied Indian and Chinese population and found no such variation, with both the population showing type II pattern predominantly. [14]

Some researchers found type J pattern (horizontal with other forms) as the most common lip print pattern in both the genders in subjects from Saudi Arabia & Nigeria. [9, 10]

Another study showed that type III as the most predominant pattern in Malaysian males and type I & type I' as the most predominant in Malaysian females. [13] But in the present study we could not elicit any racial variations, probably because of our small sample size.

Conclusion:

Findings from lip print studies make a strong evidence for their use in solving crimes. Although not useful for identification under conditions where only skeletal structures remain, intact lips provide prints that can provide valuable legal evidence, as lip prints are unique for every person. In our study, no two lip print patterns matched each other thus establishing the uniqueness of lip prints.

Although the uniqueness of lip prints has been widely established, further research needs

to be done to arrive at guidelines regarding gender & racial prediction.

Hence, more collaborative work needs to be done, maximizing the number of subjects involved in the study, to reach a consensus and have practical implications.

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