

Original research paper

A Study on Lip Print Types among the People of Kerala

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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 to fix personal identity. Previous work done on the subject also reveals that lip prints show differences according to the race and the ethnic origins of a person.

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 1 cm of the lower lip was taken as the study area. The lip prints were recorded by applying lipstick on the lips, then cellophane tape was applied on the lips and the prints were taken. These prints were studied and classified according to Tsuchihashi's classification of Type I (complete vertical grooves), Type I' (incomplete vertical grooves), Type II (forking grooves), Type III (intersecting grooves), Type IV (reticular grooves) and Type V (undetermined grooves). The predominant type in each quadrant was noted and the percentage was calculated. It was found that Type IV (reticular grooves) was the predominant pattern.

Key Words: Cheiloscopy, Kerala Population, Lip Prints, Reticular Type

Introduction:

The grooves present on the human lips are unique to each person and can be used to determine identity. The study of these grooves or furrows present on the red part or the vermilion border of the human lips is known as cheiloscopy. [1] This biological phenomenon was first noted by anthropologists. R. Fischer was the first to describe it in 1902. [2] In countries such as Poland and USA, cheiloscopy has been used to identify criminals. [3, 4] Yasuo Tsuchihashi in 1974 published a study on the lip print patterns of Japanese people. The lip prints were classified into six types, according to the shape and course of grooves: [5]

Type I: Clear-cut grooves running vertically across the lip

Type I': The grooves are straight but disappear half-way instead of covering the entire breadth of the lip.

Type II: The grooves fork in their course

Type III: The grooves intersect

Type IV: The grooves are reticular

Type V: The grooves do not fall into any of the types I to IV and cannot be differentiated morphologically.

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It was found that Type III was the predominant pattern (31.3% males and 33.3 % females). [5] In India, various studies have shown that the patterns formed reveal a population-wise dominance, that is, a particular population will show predominance of a particular lip print type. This is a potentially useful tool for identification. Vahanwalla and Parekh in 2000 on their study in 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 tended to have same patterns in all the quadrants. [6]

Sivapathasundharam, Ajay and Sivakumar in 2001 studied the incidence of particular lip print patterns in the Indo-Dravidian population and found that Type III was predominant. [7]

Manipady in his dissertation in Manipal, 2002 studied Indian and Chinese population and found that Type II was of the highest incidence among the Indian as well as the Chinese. Utsuno et al in 2005 have studied the characteristics of lip prints from cadavers with various causes of death. [8] Coward in 2007 has studied the stability of lip print patterns over a period of time. He took the prints of 85 subjects and studied them over a period of seven (7) months and showed that that lip prints remained unchanged. He also claimed that eight (8) was the number of matching features required to prove concurrence.[9] For the purpose of determination of the sex of the person from lip prints, Gondivkar SM et al in 2009 have studied 70 each male and female subjects in Maharashtra and were able to predict the sex with a high degree of accuracy. [10] The previous work done on the subject shows that different racial and ethnic groups show differences in the predominant lip

print pattern. The present study was undertaken to determine the predominant lip print type in the Kerala population of India.

Materials and Methods:

1. Lipstick of a bright red colour and non-glossy
2. Transparent cellophane tape, glued on one side
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. Those with any disease or deformity of the lips were excluded from the study.

Procedure:

The subject was asked to open the mouth and lipstick was applied in a single motion, evenly on the lips. The subject was asked to gently rub his/her lips together to spread the lipstick evenly. A strip of cellophane tape, 10 cm long was cut with scissors. The subject was asked to open the mouth slightly, and to keep the mouth stationary during the procedure. The glued portion of 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, avoiding any smudging of the print. The strip of cellophane was stuck on to a piece of white bond paper.

The subject’s serial number was written on the back to serve as a record. The middle one cm of the lower lip print was marked on the print with a pencil, which was the area to be studied, as this is the part most frequently found at a crime scene. This part was further divided along the centre to form left and right quadrants.

The predominant type of grooves in each quadrant was noted and the grooves were classified according to Tsuchihashi’s classification from types I to V. The frequency of each type of lip print was tabulated and the percentage of each type was calculated.

Results:

Table No. 1: Percentage of lip print types in males and females (*Left Quadrant, **Right Quadrant)

Type	Percentage			
	Male		Female	
	*L.Q.	**R.Q.	*L.Q.	**R.Q.
I	13	9	16.5	9.5
I'	16	18	14	22
II	14	16.5	12	10
III	24	21.5	22.5	21
IV	32	33	34.5	33.5
V	1	2	0.5	4

Table No. 2: Age-wise distribution of cases

Age group (in years)	Number of cases
18 – 23	19
24 – 29	23
30 – 35	42
36 – 40	16

Discussion:

It was observed that Type IV was the most frequently observed in both the sexes and in both the quadrants. Other works on Indian subjects have yielded varying results. Vahanwalla and Parekh in their study in Mumbai found that Type I was the most frequent. [6] Sivapathasundharam, Prakash and Sivakumar studied the lip prints of Indo-Dravidian population and noted that Type III was predominant. [7] Manipady compared Indian and Chinese individuals and found that the incidence of Type II was the highest among Indians. These studies reveal that lip prints show racial differences which can be a useful adjunct to identification of the person.

The present study revealed that the middle portion of the lower lip shows Type IV (reticular) as the predominant type. Cheiloscopy is a relatively new field among the large number of identification tools available to the forensic expert. 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 lip prints show gender differences. [6, 8, 9]

Further work on the subject can help to make cheiloscopy a practical reality at the ground level of the forensic identification process.

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