

Original Research Article

# Pattern of Lip Print among Undergraduate Students: A Forensic Anthropological Study

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## Abstract

**Background:** Scientific study of lip prints as lines and fissures in form of wrinkles and grooves on labial mucosal surface of upper and lower lip which developed since sixth week of intra uterine life is called as Cheiloscopy.

**Materials and methods:** The present study was done among total 121 2<sup>nd</sup> MBBS students after obtaining their informed written consent and ethical approval. Lip prints were collected, developed and analyzed with use of red/pink lipstick (Persona®: non-metallic, non-glossy, non-persistent), white paper, cellophane tape, scanner, hand magnifying glass, scissors, Adobe Photoshop CS5 Software etc.

**Results:** Out of 73 male students, most common lip pattern was II (branched) in 45.21%, followed by I (long vertical) in 27.4%, IA (short vertical) in 15.6%. Out of 48 female students, most common lip pattern was II (branched) in 44.64%, followed by I (vertical) in 25.62%, IA (short vertical) in 13.22%. Out of total 121 students, most common lip pattern was II (branched) in 44.64% and least common was V (mixed indefinite) in 1.65%.

**Conclusion:** It was found that type II (branched) was most common type of lip print observed among students while type V (mixed indefinite) was the least common among students.

## Key words

Lip print, Students, Forensic anthropology.

## **Introduction**

Scientific study of lip prints as lines and fissures in form of wrinkles and grooves on labial mucosal surface of upper and lower lip which developed since sixth week of intra uterine life is called as Cheiloscopy [1-5]. Lip prints are unique, stable and permanent which help to solve crime and to identify person [6-7], except in identical twins. Sebaceous and salivary secretions at vermillion zone or middle portion of human lips help in formation of latent lip print on objects touched by mouth [8]. Many studies have been conducted on lip prints as well as to find their relationships with palatal rugae, blood groups or fingerprint patterns of a person [9-12].

## **Materials and methods**

The present study was done among 2<sup>nd</sup> MBBS students after obtaining their informed written consent and ethical approval. Lip prints were collected among 121 students who had no history of disease/ deformities/ injury of lips like dry lips, cleft lips, lips with abrasion, contusion, laceration or scar, etc.). Lip prints were collected, developed and analyzed with use of red/pink lipstick (Persona®: non-metallic, non-glossy, non-persistent), white paper, cellophane tape, scanner, hand magnifying glass, scissors, Adobe Photoshop CS5 Software etc.

## **Technique**

Lips of the subjects were cleaned with a wet tissue first. Then the selected lipstick was applied over the lips in one stroke only. The subject was asked to keep the lips in normal position. Lip prints were lifted by cellophane tape by placing the tape on the lips soiled with lipstick and it was gently pressed over the lips. The tape with transferred lip prints was then gently stuck on a white paper. At least three prints were taken from each individual to obtain one complete print sufficient for examination of patterns. Slight variations in the strength or direction of pressure applied may affect the accuracy levels of lip print impressions [13]. The picture of the transferred lip prints was scanned and the pattern types was classified and analyzed according to Suzuki and

Tsuchihashi [14] classification, using Adobe Photoshop CS55 using inverted grey scale and magnifying glass.

## **Results**

Total 121 students were included in the present study, out of which 60.33% were male and 39.67% were female. Out of 73 male students, most common lip pattern was II (branched) in 45.21%, followed by I (long vertical) in 27.4%, IA (short vertical) in 15.6%. Out of 48 female students, most common lip pattern was II (branched) in 44.64%, followed by I (vertical) in 25.62%, IA (short vertical) in 13.22%. Out of total 121 students, most common lip pattern was II (branched) in 44.64% and least common was V (mixed indefinite) in 1.65% (Table – 1).

## **Discussion**

Many data are useful for identification of person like age from skull sutures [15], age from eruption of teeth [16], voice fingerprinting [17], forensic onychology [18], finger prints, lip prints etc. Lip prints can be used as evidence just like fingerprints [19]. Lip prints are very important tool for reconstruction of crime also [20].

Fisher, an anthropologist and scientist, was the first to recognize the characteristic arrangement of groove lines on vermillion red of both upper and lower lips [19]. Timings, pressure, direction and method of obtaining lip prints may change the appearance of lip prints [21]. Varghese, et al. [22] proved that the ethnicity of an individual can determine predominance of a specific pattern.

Bansal, et al. [10] found a strong association between lip patterns and fingerprint pattern of an individual. Verma, et al. [9] found that Type II pattern was the most prominent among South Indians. Statistically significant sex differences were noticed in pattern types [5]. Our results differed from the studies of Sivapathasundaram [3], Kapoor and Badiye [5], who observed that Type III pattern was most predominant in females. Type V was found as the least

predominant lip print pattern which is in agreement with previous studies by Tsuchihashi [14] and Sivapathasundaram [3]. It may be clarified here that Type V pattern is ‘mixed and indefinite’ pattern type and not a type of pattern in true sense, so Type IV is likely to be the least

common pattern in total population as found by different workers. Tsuchihashi [14] found that Type III (intersecting grooves) was the most frequent and Type V as the least frequent pattern among Japanese.

**Table – 1:** Lip pattern among students.

Lip Pattern	Male (%)	Female (%)	Total (%)
I (Long vertical)	20 (27.40)	11 (22.92)	31 (25.62)
IA (Short vertical)	11 (15.06)	5 (10.42)	16 (13.22)
II (Branched)	33 (45.21)	21 (43.75)	54 (44.64)
III (Intersecting)	7 (9.59)	1 (2.08)	8 (6.61)
IV (Reticulate)	1 (1.37)	9 (18.75)	10 (8.26)
V (Mixed indefinite)	1 (1.37)	1 (2.08)	2 (1.65)
Total	73 (60.33)	48 (39.67)	121 (100)

### Conclusion

It was found that type II (branched) was most common type of lip print observed among students while type V (mixed indefinite) was the least common among students.

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