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Anatomy

# A Study to Find out Commonest Type of Lip Print among the Male and Female in Two Different Populations in Madhya Pradesh

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**Abstract** **Original Research Article**

***Background:*** Research studies and information concern with use of lip prints as evidence in personal identification and crime scene investigation. However, studying in depth, details and establishing further facts and truth in lip prints will definitely help as useful evidence. Identification by any means is a matter of paramount importance in any crime investigation. ***Methods:*** Study was carried out in two districts of Madhya Pradesh these are Ujjain and Jhabua for a period of 02 years. Sample size was 400. A multi stage sampling technique was followed. In this study, we followed the classification of patterns of the lines over the lips proposed by Tsuchihashi, which is the most widely and commonly used classification in literature. It was found to have a clear description of nearly all type of the commonly encountered lip patterns and was easy to interpret. ***Conclusion:*** Type 3 lip print pattern is common in both lip, but more common in lower lip. Type 1B equal (60) in both upper and lower lip, whereas type 4 is (11) in upper lip and (10) in lower lip. Upper lip frequency in tribal and urban group in which type 3 (151) is more common and type 4 (11) is least common. Lower lip frequency in tribal and urban group, type 3(169) is more common and type 4(10) is least common. Lower lip pattern in which type 3 is common and more common in urban (91) as compare to tribal (78). Lip print type 4 Least common in groups, urban (4) and tribal (6). Upper lip print patterns in which type 3 is common similar to lower lip, more common in urban (85) as compare to tribal (66). 1A in tribal group just double to urban.
**Keywords:** Lip print identification lip print, lip print patterns.


## INTRODUCTION

Lip prints are lines and fissures in the form of wrinkles and grooves present over the zone of transition of human lip, between the inner labial mucosa and outer skin, examination of which is known as cheiloscopy. This is unique for individuals similar to finger prints. Research studies and information concern with use of lip prints as evidence in personal identification and crime scene investigation. However, studying in depth, details and establishing further facts and truth in lip prints will definitely help as useful evidence. Identification by any means is a matter of paramount importance in any crime investigation. Even though DNA and fingerprints are the time-tested methods, these evidences are not always available at the investigation sites. In such circumstances, it is necessary to apply different type and less-known techniques. A new range of investigation in the detection of crime is the use of wrinkles on the lips. Cheiloscopy (Quiloscopy) is a method of identification of individuals based on characteristic arrangement of lines and grooves appearing on the red part of lips. Very few has been said or written about the application of lip prints in these days of advanced scientific crime detection. The studies done so far based on the manual method for the lip print analysis which has its own demerits[1-2].The information that is lacking in the research of cheiloscopy is an accurate methodology use for lip print collection and a standard method for its analysis. The current study was conducted to study the lip prints pattern of different persons in different geographical area, to establish facts so as to aid in giving further details of lip prints. In present study there is comparison of two populations with different kind of living standard (urban and tribal) in different geographical area in central Indian [3].

## MATERIALS AND METHODS

Study was carried out in two districts of Madhya Pradesh these are Ujjain and Jhabua for a period of 02 years. Sample size was 400. A multi stage sampling technique was followed. Stage first: - Districts were selected by the use of convenience sampling.

Stage Second: - in each district three colleges were selected by the use of convenience sampling Stage third: - Individuals were selected by the use of simple random sampling.

All individuals were aged between 15 and 25 year and all those who give written consent are included and persons of abnormal lip morphology due to any reason and those with any inflammation, trauma, congenital deformities, and operated case of any lip deformity. Smoker or any other diseases of the lips were excluded from the study. In this study our total sample size 400, we divided by two equal part (200) one from urban (Ujjain) and one from tribal (Jhabua) population.

The subject was completely explained the procedure and after giving written consent he/she is taken into consideration. The subject was asked to open the/her mouth and lipstick was applied in a single motion, evenly on the lips with using mirror. The subject was asked to gently rub lips together to spread the lipstick evenly. A strip of transparent cellophane tape, ten cm long was cut with scissors. The subject was asked to relax the lips and to keep the mouth stationary and closed during the procedure. Carefully the glued portion of the cellophane tape was applied on the upper and lower lip together. It was held in place, applying gentle and even pressure for a few seconds. Then the tape was carefully lifted from the both lips, from one end to the other, avoiding any smudging of the print. The strip of cellophane was attached to left corner of a piece of white OHP transparency. This served as a permanent record. The subject's serial number was written with permanent marker pen on same side and same level of lip print in right corner of OHP transparency it serve as a record. The print was subsequently examined with the use of a magnifying lens and scanner. The number of lines and furrows present, their length, branching and combinations were noted. The lip prints obtained, were coded while noting the name and sex of the respective individuals. The research protocol was approved by institutional ethics committee.

In this study, we followed the classification of patterns of the lines over the lips proposed by Tsuchihashi, which is the most widely and commonly used classification in literature. It was found to have a clear description of nearly all type of the commonly encountered lip patterns and was easy to interpret. As follow:-

Type I-Clear-cut vertical grooves that run across the entire lip
Type I'- Similar to type I, but do not cover the entire lip
Type II- Branched grooves
Type III-Intersected grooves
Type IV- Reticular grooves
Type V- Grooves do not fall into any of the Type I - IV and cannot be differentiated morphologically (undetermined).

**Fig-1: Type 1A**

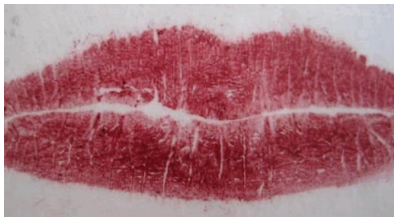

**Fig-2: Type 1B**

**Fig-3: Type 2**

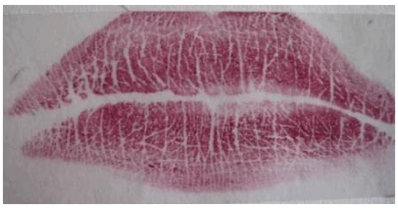

**Fig-4: Type 3**

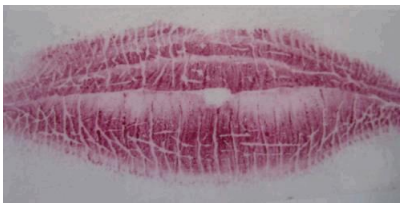

**Fig-5: Type 4**

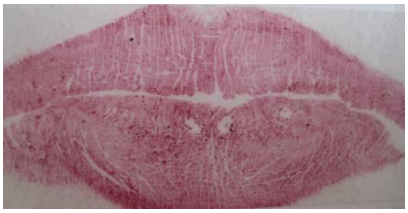

**Fig-6: Type 5**

## OBSERVATIONS AND RESULTS

Statistical analysis was performed using SPSS 16.0 (SPSS Inc., Chicago, IL). We use statistical tools like mean, SD, diagrams and z-score, for comparing different parameters of lip print pattern with respect to upper lip, lower lip, sex and tribal & urban groups.

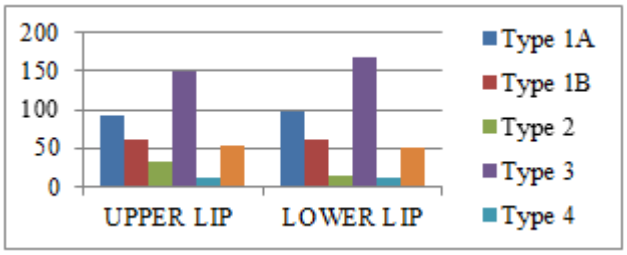


**Fig-7: Bar diagram show Upper lip and lower lip frequency of two populations**

**Table-1: Upper lip and Lower lip print pattern frequency of urban and tribal Populations**

| Types of Upper lip print | Frequency | Percent |
|---|---|---|
| Type 1A | 93 | 23.2 |
| Type 1B | 60 | 15.0 |
| Type 2 | 33 | 8.2 |
| Type 3 | 151 | 37.8 |
| Type 4 | 11 | 2.8 |
| Type 5 | 52 | 13.0 |
| Total | 400 | 100.0 |

**Table-2**

| Types of Lower lip print | Frequency | Per cent |
|---|---|---|
| Type 1A | 97 | 24.2 |
| Type 1B | 60 | 15.0 |
| Type 2 | 14 | 3.5 |
| Type 3 | 169 | 42.2 |
| Type 4 | 10 | 2.5 |
| Type 5 | 50 | 12.5 |
| Total | 400 | 100.0 |

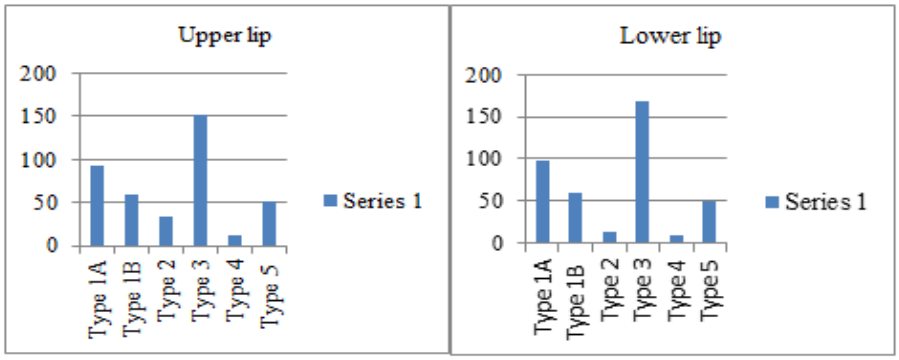


**Fig-8: Upper lip and Lower lip frequency in urban and tribal Populations**

**Table-3: Upper lip and Lower lip print patterns in urban and tribal populations.**

| Upper lip print patterns | Urban | Tribal | z-score |
|---|---|---|---|
| Type1A | 31 | 62 | 3.73 |
| Type1B | 32 | 28 | 0.56 |
| Type2 | 13 | 20 | 1.27 |
| Type3 | 85 | 66 | 1.96 |
| Type4 | 05 | 06 | 0.30 |
| Type5 | 34 | 18 | 2.39 |
| Total | 200 | 200 | |

**Table-4**

| Lower lip print patterns | Urban | Tribal | z-score |
|---|---|---|---|
| Type1A | 31 | 66 | 4.17 |
| Type1B | 36 | 24 | 1.68 |
| Type2 | 08 | 06 | 0.54 |
| Type3 | 91 | 78 | 1.31 |
| Type4 | 04 | 06 | 0.64 |
| Type5 | 30 | 20 | 1.51 |
| Total | 200 | 200 | |

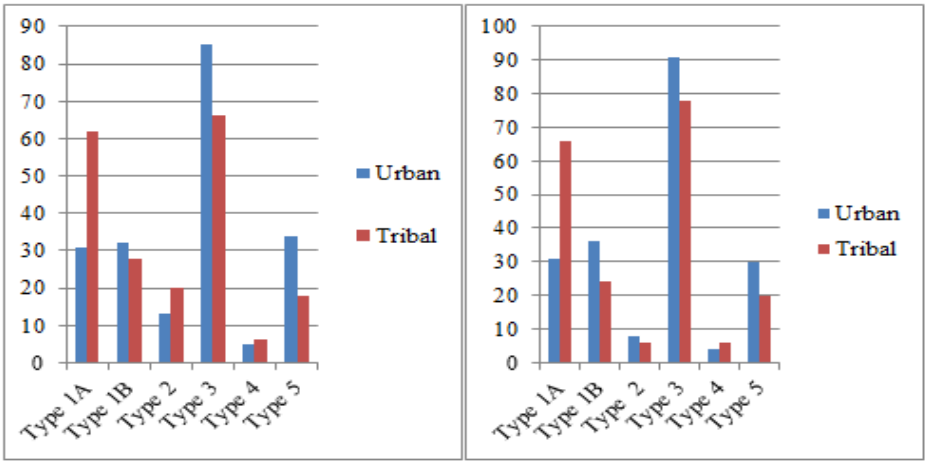


**Fig-9: Upper lip and Lower lip print patterns in tribal and urban populations**

## DISCUSSION

This study was conducted to analysis the lip prints pattern of different individuals in different geographical area, to establish facts of lip print so as to aid in giving further details of lip prints [4]. Effectively and widely acceptable a method of standardization has to be developed to assess and accurately measure the lip patterns. The effect of age and environmental influences on the groove pattern remains a problem which needs further study. Although, the study lip print patterns showed better reliability for sex determination in the 21-40 years age group, differentiation of gender was uncertain in young and late age. Studied the lip print pattern in the middle part of lower lip up to 10 mm wide, and recommended this fragment as it is almost

always visible in any trace. Due to the diverse combination of patterns of the lip print, Augustine *et al*. divided lips into four quadrants and further each quadrant was divided into two equal parts as middle and lateral but in present study we analyzed upper lip and lower lip without divided lips into four quadrants. Type 3 is common in both lip, but more common in lower lip[5]. Type 1B equal (60) in both upper and lower lip, whereas type 4 is (11) in upper lip and (10) in lower lip[6].Upper lip frequency in tribal and urban group in which type 3 (151) is more common and type 4 (11) is least common. Lower lip frequency in tribal and urban group, type 3(169) is more common and type 4(10) is least common. Lower lip pattern in which type 3 is common and more common in urban (91) as compare to tribal (78).Least common type is type 4 in groups, urban (4) and tribal (6)[7]. Upper lip print patterns in which type 3 is common similar to lower lip, more common in urban (85) as compare to tribal (66). Least common type is type 4 in both group urban (5) and tribal (6).Type 1A in tribal group just double to urban. In present study, type 3 is the most common pattern seen in both upper and lower lips in the entire study population, followed by type 1A, while according to Augustine *et al*. type III was the most common pattern observed followed by type II. In present study, upper and lower lip frequency in tribal and urban population type 3 is common, more common in lower lip (169) as compare to upper lip (151) whereas in both population least common is type 4 in upper 4 (11) and in lower lip 4(10)[8-10].

## CONCLUSION

Type 3 lip print pattern is common in both lip, but more common in lower lip. Type 1B equal (60) in both upper and lower lip, whereas type 4 is (11) in upper lip and (10) in lower lip. Upper lip frequency in tribal and urban group in which type 3 (151) is more common and type 4 (11) is least common. Lower lip frequency in tribal and urban group, type 3(169) is more common and type 4(10) is least common. Lower lip pattern in which type 3 is common and more common in urban (91) as compare to tribal (78). Lip print type 4 Least common in groups, urban (4) and tribal (6). Upper lip print patterns in which type 3 is common similar to lower lip, more common in urban (85) as compare to tribal (66). 1A in tribal group just double to urban.

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