DOI: https://doi.org/10.53350/pjmhs221651582

ORIGINAL ARTICLE

Patterns of Lip-prints in Undergraduate Medical Students of Bahawalpur

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ABSTRACT

Objectives: To determine the frequency of different lip patterns among medical students.
Study Design: Cross Sectional Study (Descriptive)
Setting and Duration of Study: Department of Forensic Medicine & Toxicology, QAMC/ Bahawal Victoria Hospital, Bahawalpur. From 15th January 2018 to 14 March 2018
Materials and Methods: Total 203 of medical students 18-25 years of age of and both genders was selected. Subjects with any lip deformity or allergic episode with lip stick were excluded. After application of a dark colored, non-glossy, less moist lipstick on lips, lip-prints were obtained on a cellophane tape and then pasted on A4 paper.
Results: Out of these 203 subjects, 110 (54.19%) were men and 93 (45.81%) were women with M:F ratio of 1.2:1. In this study, Type I (26.11%) and Type II (20.69%) was the utmost communal lip patterns, trailed by Type-I' (18.72%), Type III (18.23%), Type IV (10.34%) and Type V (5.91%).
Conclusion: This study concluded that cheiloscopy and its pattern recognition in varying circumstances provide valuable information with regards to identification of an individual.
Keywords: Cheiloscopy, Identification, Fingerprinting, Geographical Area

INTRODUCTION

Identifying a person alive or dead is based on the theory that all persons are unique. Personal identification is becoming increasingly important not only in forensics, but also in criminal investigations, identification and genetic testing[1]. Sir William Herschel introduced the fingerprint system in 1858 in India. Currently, identification can be recognized using a number of approaches that make the process of identification relatively smooth[2]. They serve as permanent records. Sophisticated molecular biology techniques are not always used due to cost and lack of availability. Therefore, in such cases, easier, but more reliable methods, such as an imprint of the lip, can be used[3].

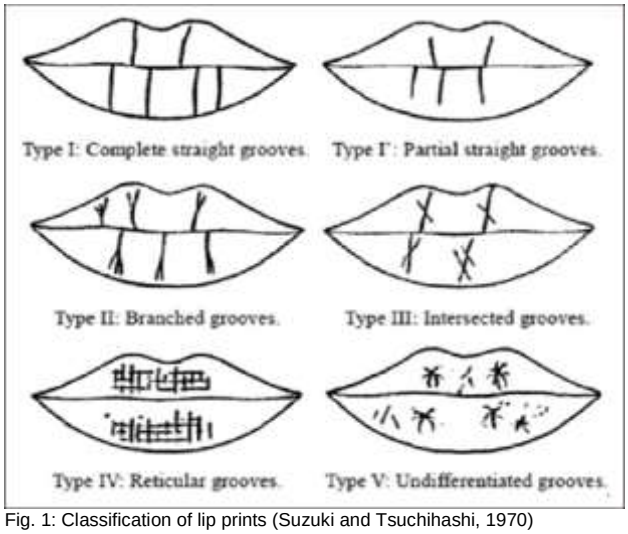


Fig. 1: Classification of lip prints (Suzuki and Tsuchihashi, 1970)

Like fingerprints, lip wrinkles have their own characteristics. The lip prints are inimitable and remains same throughout life. The term chelios originates from the Greek word for lip. Examination of lip prints is called cheiloscopy[4]. At the scene of a crime, on clothes, glasses, glasses, cigarettes, doors, etc., lip traces can be easily obtained from a variety of materials[5]. Fischer first described it in 1902. The use of fingerprints to identify persons was first proposed by Locard in France[6-7]. In 1950, Synder also proposed the idea of using fingerprints for identification (cheiloscopy). Lip prints are considered unique to an individual and similar to fingerprints[8]. In Japan, Y. Tsuchihashi and T. Suzuki developed a classification of lip print patterns that is widely used all over the world[9-10].

In Korea, forensic physicians use biometric systems (a technology that uses a person's unique physical characteristics to automatically identify a person) through fingerprint patterns. Research in the field of cheiloscopy is increasing in India. Not only have the laboratories developed a new technique for identifying suspects or criminals from their lip description, the Forensic Science laboratory in Bangalore has developed a comprehensive system for classifying microstructural features (lip grooves and wrinkles) and macrostructural features (Shape and size of lips) patterns of lips. In Pakistan, a number of researchers have advocated the use of cheiloscopy for the purpose of personal identification.[12,13,14] But none of those studies had established a comparison between lip prints of persons belonging to various geographical areas of Pakistan. This study will not only help establish a relationship between various age groups and gender, but will also focus on any connection existing between change in pattern of lip prints with regard to geographical area.

MATERIAL AND METHODS

A total number of 203 students were studied during a period of two months i.e from 15th January 2018 to 14th March 2018. All those subjects having any lip deformity or allergy to lipstick were excluded from the study, while age group pertaining to 18-25 years in both genders was included. Multistage, stratified random sampling technique was used to divide sample of 203 into different groups. Target population for this study was of students 1st, 2nd, 3rd, 4th and final years QAMC. Proportional allocation was made for was class according to its total strength as follows;

First year = 339/1664 x 203 = 41.
Second year = 333/1664 x 203 = 41.
Third year = 331/1664 x 203 = 40.
Fourth year = 326/1664 x 203 = 40.
Final year = 335/1664 x 203 = 41.

Following approval by the ethics review committee, a total of 203 individuals were selected who met the inclusion criteria. Each participant has given written informed consent. Then, with the help of a lip brush, a matte, less moist dark lipstick is applied to the surface of the lips. The lipstick is left on for a minute, then a transparent cellophane tape somewhat bigger than the lip

thickness will be applied evenly and smoothly from right to left. The tape was pulled out and glued onto a sheet of A4 paper. Lip prints were observed and the results were recorded in a proforma.

Data was analysed on SPSS v22.0. The percentages and frequency were presented for lipprints pattern, gender and geographical area. Effect modernizers like gender, age and geographical area of residence (Punjab/Sindh/KPK/Balochistan/Kashmir) were controlled with stratification. To see their effect on different lip patterns; Post-stratification chi square test was used and p value<0.05 was considered significant.

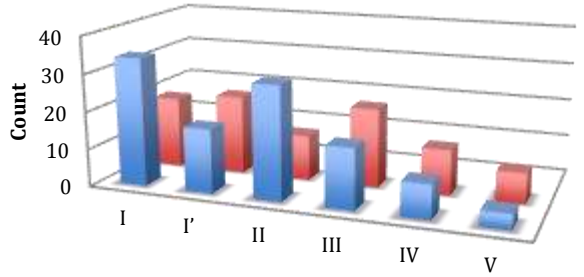
RESULTS

Out of these 203 subjects, 110 (54.19%) were men and 93 (45.81%) were women with M:F ratio of 1.2:1 as shown in Table – 1. The communal patterns of lip institute were Type I (26.11%) and Type II (20.69%), trailed by Type I' (18.72%), Type III (18.23%), Type IV (10.34%) and Type V (5.91%) (Table – 1). The subject's distribution conferring to the geographical area of residence and age groups were also documented in Table – 1. Stratification of different lip patterns with reference to age groups is reflected in Table – 2. Stratification with regards to gender and geographical area is illustrated in Fig.2 and Fig.3 correspondingly.

Table 1: Summary

Category	Number	Percentage
Age group (in years)		
18-21	133	65.52
22-25	70	34.48
Total	203	100.0
Gender		
Male	110	54.19
Female	93	45.81
Pattern of Lipprints		
Type I	53	26.11
Type I'	38	18.72
Type II	42	20.69
Type III	37	18.23
Type IV	21	10.34
Type V	12	5.91
Geographical Area		
Punjab	126	62.07
Sindh	16	7.88
KPK	23	11.33
Baluchistan	11	5.42
Kashmir	27	13.30

Fig. 2 Lipprints Patterns with regards to Gender Distribution

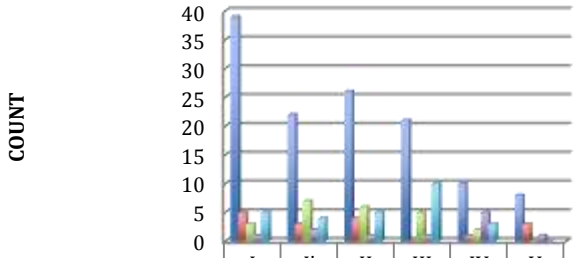


	I	I'	II	III	IV	V
Male (n=110)	34	17	30	16	9	4
Female (n=93)	19	21	12	21	12	8
P-Value	0.09	0.195	0.012	0.14	0.271	0.135

Table 2: Distribution Lipprints patterns with regards to age groups

Pattern of Lipprints	18-21 years (n=133)	22-25 years (n=70)	p-value
Type I	36	17	0.668
Type I'	23	15	0.473
Type II	30	12	0.365
Type III	24	13	0.926
Type IV	13	08	0.085
Type V	09	03	0.476

Fig.3 Lipprints Pattern with regard to Geographical Area



	I	I'	II	III	IV	V
Punjab (n=126)	39	22	26	21	10	8
Sindh (n=16)	5	3	4	0	1	3
KPK (n=23)	3	7	6	5	2	0
Baluchistan (n=11)	1	2	1	1	5	1
Kashmir (n=27)	5	4	5	10	3	0
p-value	0.182	0.648	0.034	0.027	0.003	0.087

DISCUSSION

In Table 1, the most common age group studied ranged from 18 to 21 years (65.53%), with the majority of subjects being 133 (65.52%) aged 18 to 25 years. Of these 203 people, 110 (54.19%) were male and 93 (45.81%) were feminine, with a M:F ratio of 1.2: 1, and volunteered to participate in the study. In this study, the communal patterns of lip institute were Type I (26.11%) and Type II (20.69%), trailed by Type I' (18.72%), Type III (18.23%), Type IV (10.34%) and Type V (5.91%). In a study by Sharm et al., men has most communal were type III and type IV (20% each) lip patterns, trailed by type V (19%), type I '(13%), type I and type II and mixed (10% each), equated to women whose most common patterns are Type I ' (25% each), trailed by Type II (18%), Type IV and Type III (11%), mixed type (9%) and type V (6%).

Table 2 did not reflect the significant relationship between the two age groups in terms of the lip print pattern. Figure 2 shows that there is a significant relationship between male and female genders with regard to the pattern of a Type II lip print. Ishaq et al found that such a relationship exists in the type III lip print pattern, and 70% of men have this type of lip print compared to women (1%)[12]. Arif et al showed that type IV was more common in men, and type I (40%) in women[13-14]. Sivapathasundharam et al found in their studies that the maximum protuberant pattern was type-IV[15-16]. A study by Badiye and Kapoor found that Type I was the dominant pattern in the 200 Indian population sample, which can be accredited to the statistic that various locations and individual populations races may be interrelated to genetic factors. Prabhu et al clarified that this variability may be because of strict standards or geographical differences for identifying various models[17-18].

Figure 3 revealed a significant relationship between the geographic area of residence and the pattern of the lip print. He explained that, as far as the geographic regions of Pakistan are concerned, types II, III, IV are an important pattern for the imprint of the lips. However, it is too early to draw any firm conclusions as

the sample size was not large enough to obtain definitive evidence on this point.

Lipprints are similar to fingerprints and can be used for personal identification because they are unique to individuals and do not change throughout life. Lipprints have been shown to improve after minor injuries, inflammation, and lesions such as cold sores and that the arrangement and shape of the furrows do not change under the influence of environmental factors[18-19]. The biological phenomenon of the furrow system in the red part of human lips was first observed in 1902 by the R. Fischer an anthropologist. but in 1932, one of the greatest French criminologists, Edmond Locard, suggested the practice of fingerprints for criminalization and identification[20]. Since then, many studies have shown the uniqueness of cheiloscopy. This study was held to govern the prevalence of different lip patterns among medical students from different geographic regions in Pakistan.

Lip traces can be left on a variety of objects at the crime scene, such as duct tape, cigarette butts and glasses. Both face-to-face examination and photographing allow for more detailed and precise observations required to examine lip prints. Appropriate examination of the modifying forms of lipprints is important to recognize accused and further confirm their presence at the crime scene[21]. An imprint of the lips at the scene of a crime can provide clues to a variety of questions, such as the type of crime, the number of people involved, the gender of the suspects, the cosmetics used, habits, professional characteristics and pathological changes in the lip itself[22].

CONCLUSION

This study concluded that the Type I (26.11%) and Type II (20.69%) lips patterns were the most communal type, trailed by Type I' (18.72%), Type III (18.23%), Type IV (10.34%) and Type V (5.91%). So, it is concluded that cheiloscopy and its pattern recognition in variable circumstances offer valued evidence with respects to Individual identification.

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