

ASSESSMENT OF CHEILOSCOPY IN STOMATOLOGY

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Abstract: Lip grooves are unchangeable, permanent and unique to one person and they play a huge role as a marker of sagittal jaw relation and gender differentiation.

Identification of people is often very difficult, challenging and time-consuming process. The most used techniques in identification processes are DNA comparison, fingerprints and odontometrics measurements. However DNA is very expensive and cannot be used for everyone. Hence fingerprints sometimes in burns also cannot be conducted because of severe decomposition. Sometimes is necessary to apply different and less known techniques. Lip grooves are nonusual, simple, reliable, cost – effective, noninvasive techniques that can be used successfully in human identification. This article reviews different conclusions of authors who researched about these topics.

The aim of the study is to establish identity of population of South-East Kosovo, selected among schools of this region, 14 to 18 year old, divided equally between girls and boys, using Cheiloscopy.

Material and methods: The study involves 17 adolescents of South-East of Kosovo selected among schools of this region, 14- to 18-year-old. All participants are well informed for the purpose of the study and signed an informed consent prepared before the examination. Lip prints are recorded using red lip stick.

Materials that are being used are: White paper A4 size white paper, Cellophane tape (10 cm long), Graphite pencil (AIHAO 0.7 mm), Dark red color lipstick, nonglossy (pretty by flormar), Magnifying lens, Scissors. The lipstick is applied with cotton wools gently into the lips and spread over, evenly in upper and lower lip. The lip prints are taken with cellophane tape in the relaxed position of lips. Then the lip prints are immediately stocked on to a piece of white bond paper for further analyses, by using magnifying lens. Also, the thickness and length of the lips will be measured separately for the upper lip and for the lower lip with standard Vernier caliper (0-150 mm)

Results: The predominant lip pattern in both genders is Type II lip pattern followed by type I. The most predominant lip pattern among males is type I and II, and Type II & IV lip pattern among females.

Conclusion: Cheiloscopy reveals strong association with sagittal skeletal jaw relation, thus predicting malocclusions that could be managed early with preventive and interceptive orthodontics. Cheiloscopy also has the role in identification of people in forensic medicine, because identification of human bodies sometimes is very challenging task. When DNA and fingerprints in several circumstances could not be done, lip prints could be considered as an alternative source for identification, because of their highly unique structures.

Keywords: Cheiloscopy, Lip grooves, Malocclusions, Forensic medicine

1. INTRODUCTION

Lip prints are characteristic fissures and lines present in the zone of transition between the inner labial mucosa and outer skin, and authors studies lip prints with cheiloscopy (Vats et al.,2012). It has been proved that lip prints are unique for individuals like the fingerprints (Maheswari, & Gnanasundaram,2011). Several research studies showed that lip prints can be used in forensic investigations as well gender identification (Padmawathi et al.,2013; Negi et al.,2016; Ugrappa et al.,2015). In the other hand, many studies show that lip prints can be employed for sagittal recognition (Kulkarni et al.,2012; Raghav et al.,2013). The most used techniques in identification processes are DNA comparison, fingerprints and odontometrics measurements. DNA is very expensive and cannot be conducted for everyone. Also fingerprints sometimes in burns also cannot be conducted because of severe decomposition. Sometimes is necessary to apply different and less known techniques. Lip grooves are simple, reliable, cost – effective, noninvasive technique, and can be used successfully in human identification (Caldas ,2007)

2. THE PURPOSE OF THE STUDY

The purpose of the study was to establish identity Albanian population of Southeast Kosovo using cheiloscopy, also envisaging the application of this method in identification of people, sex discrimination, and correlation between this parameter and dental malocclusions. The objective of the study is: To evaluate common pattern of lips among

adolescents of Kosova and predominant lip print pattern among class I, II, III malocclusion groups according to Angle's classification.

3. MATERIAL AND METHODS

The study involves 17 adolescents of Southeast of Kosovo selected among schools of this region between 14–18-year-old. All participants are well informed for the purpose of the study and signed an informed consent prepared before the examination. Lip prints are recorded using red lip stick.

Criteria of selection: All participants should be healthy, without any congenital abnormalities, without inflammation, trauma, malformation, deformity, surgical scars, or active lesions of lips, without hypersensitivity to cosmetic.

Data collecting: Materials that are being used are: White paper A4 size white paper, Cellophane tape (10 cm long), Graphite pencil (AIHAO 0.7 mm), Dark red color lipstick, nonglossy (pretty by flormar), Magnifying lense, Scissor

Figure 1and 1b. Materials for data collection



4. METHODOLOGY

Before the examination lips are rubbed with tissue paper, then the lipstick is applied with cotton wools gently into the lips and spread over, evenly in upper and lower lip. The lip prints are taken with cellophane tape in the relaxed position of lips, then the lip prints are immediately stocked on to a piece of white bond paper (this is reproduced in two white bond paper, as permanent record) for further analyses by using magnifying lens. Also, the thickness and length of the lips will be measured separately for the upper lip and for the lower lip with standard Vernier caliper (0-150 mm). The predominant lip prints will be classified according to Suzuki and Tsuchihashi classification (Tsuchihashi,1974) (Figure2)

Figure 2: Suzuki and Tsuchihashi classification

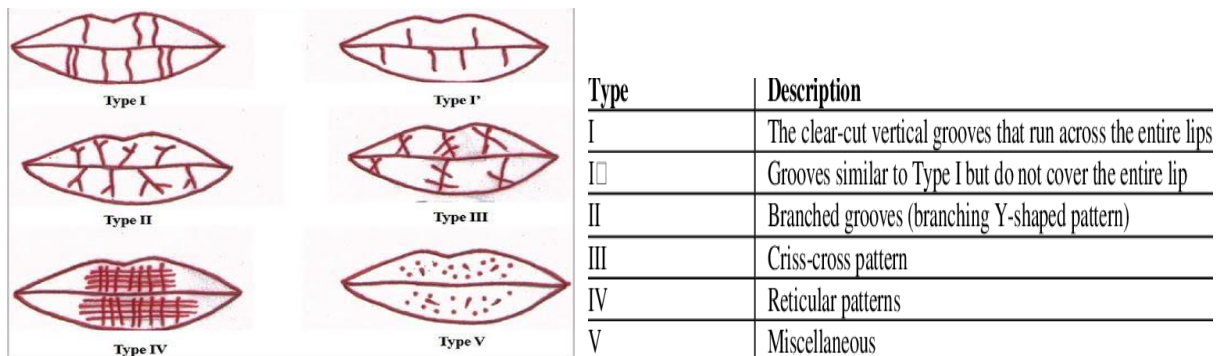


Figure 3: Lip record



5. RESULTS

In the present study was found that:

The predominant lip pattern in both genders is Type II lip pattern followed by type I.

The most predominant lip pattern among **males is type I and II**, and **Type II & IV lip pattern among females**.

Table 1: The most predominant lip pattern

Previous studies	Males	Females
<u>Malik and Goel</u> (2011)	IV > V > II > III > I > I'	I > I' > III > IV > II > V
<u>Kumar et al</u> (2012)	III > II > IV > I > V	II > IV > I > III > V
<u>Sharma et al</u> (2014)	III > IV	I > I'
<u>Kapoor and Badiye</u> (2015)	I > V > II > III > IV > I'	III > I > II > IV > V > I'
<u>Simovic et al</u> (2016)	III > II > IV > V > I	II > I > III > IV > V
<u>Tandon et al</u> (2017)	II > I > IV > III	I > IV > II > III
Present study	II & I > III > I'	II & IV > I > I'

The most predominant lip pattern in females among 3 classes according to Angle classification is:

Class 1: **I'** Lip print pattern

Class 2: **II** Lip print pattern

Class 3: **II, V, IV** Lip print pattern

Table 2: Predominant lip pattern among females according Angle Classification

Female / Class I	I' Lip print pattern
Female / Class II	II Lip print pattern
Female / Class III	II, V, IV Lip print pattern

The most predominant lip pattern in males among 3 classes according to Angle classification is:

Class 1: **II Lip** print pattern

Class 2: **I** Lip print pattern

Class 3: **II** Lip print pattern

Table 3: Predominant lip pattern among males according Angle Classification

Male / Class I	II Lip print pattern
Male / Class II	I Lip print pattern
Male / Class III	II Lip print pattern

6. DISCUSSION

According to the data obtained about lip patterns, it was revealed that these structures are unique. Some of the studies showed that these structures differ among population, also among gender. Many authors found out statistically significant correlation between lip pattern and sagittal malocclusions. Predominant lip pattern among different population among previous studies was III lip print pattern and less prevalent I' lip print pattern. Previous studies showed that Predominant lip print pattern among males based on Tsuchihashi and Suzuki classification is III lip print pattern and among females I lip print pattern.

Nagalaxmi et al., (2014), in their cross sectional study “Cheiloscopy, Palatoscopy and Odontometrics in sex prediction and discrimination – A comparative study“ with 30 males and 30 females, concluded that all three methods are considered in determination of gender, hence cheiloscopy showed sensitivity of 81.7 % more reliable in prediction of sex.

Several research studies showed that there is strong correlation between soft tissue and skeletal malocclusions. In the study conducted by Vats et al., (2012), the authors concluded that lip prints serve as a tool in gender differentiation similar to findings of Sharma et al., (2009), but lip print collection, and the design of examination should be standardized.

Ghimire et al., (2013) in their study “Lip print pattern: an identification tool” with the objective of analyzing gender predilection of lip print pattern, in students undergraduate of 18-25 years, found out that type I pattern was the most predominant pattern among boys and girls in all four quadrants, except first right upper quadrant in girls was type II pattern predominant.

Predominant lip patterns among males and females based on Tsuchihashi and Suzuki classification by Malik and Goel, (2011) in males was IV lip print pattern, and in females I lip print pattern, but Kumar et al., 2012 [14] find in males III lip print pattern and females II lip print pattern.

Sharma et al., (2014) find in males predominant III lip print pattern and females In lip print pattern study by Tandon et al., (2017) in males II lip print pattern and I lip print pattern, by Sharma et al., (2009).

Simovic et al., (2016) in their conducted study reported that males belonging to Type III are predominant in population of Croatia, followed by those belonging to Type II, IV, V, I. In female Type II is predominant followed by Type I, III, IV and V.

According to a study conducted by Kumar et al., (2016), the most predominant lip pattern in African, Dravidian and Mongoloid males was type IV, and Type I in African and Mongoloid females, and Type II lip pattern predominant in Dravidian girls.

7. CONCLUSION

This article present results of cheiloscopy. In several studies cheiloscopy reveals strong association with sagittal skeletal jaw relation thus predicting malocclusions that could be managed early with preventive and interceptive orthodontics. Cheiloscopy also has the role in identification of people in forensic medicine, because identification of human bodies sometimes is very challenging task. When DNA and fingerprints in several circumstances could not

be done, lip prints could be considered as an alternative source for identification, because of their highly unique structures.

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CONFLICT OF INTEREST

None.

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