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LIP PRINT PATTERN AMONG STUDENTS OF THE UNIVERSITY OF PORT HARCOURT, NIGERIA

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ABSTRACT

This study was carried out on150 students (75 males and 75 females) residing in the three campuses of the University of Port Harcourt within the age range of 17-30 years. The subjects encompassed people from different tribes, culture and religion. The lips of the subjects were cleaned properly and a red coloured lipstick was applied on the transition zone of the lips. The lip prints were obtained by making an impression on a white A4 paper in the normal rest position of the lips. A cellophane strip was then stuck over the lip impression on a white A4 paper for permanent record purpose. The lip prints were studied with the aid of a magnifying lens using a classification scheme that was devised by Suzuki Tsuchihasi (1970). The study revealed that the lip prints of all the subjects were unique irrespective of tribe, culture, religion and race. The most common lip print pattern in both males (33.6%) and females (26.0%) are type II lip pattern and the least common lip print pattern in both sexes are Type I' pattern (5.3% for males and 5.6% for females). The most common lip print pattern for males in the 1st and 2nd quadrants are Type I while Type II was the most common in the 3rd and 4th quadrants. Similarly, the most common lip print pattern found in females were Type III for the 1st quadrant, Type II for the 2nd and 3rd quadrants and Type I for the 4th quadrant. It was concluded from this study, that every individual has a peculiar lip print pattern and that would be useful in forensic studies.

Key words: Cheiloscopy, Lip Prints and personal identification.

INTRODUCTION

Human identification is one of the most challenging subjects that man has been confronted with. Identity is a set of physical characteristics, functional or psychic, normal or pathological – that defines an individual (Vahanwala *et al.,* 2005). Human identification is based on scientific principles that mainly involve dental records, finger prints, DNA comparisons and sometimes, it has become necessary to apply lesser known and unusual techniques like cheiloscopy which is the examination of lip prints (Sharma *etal*.,2009).

Lip prints are figures formed by the wrinkles and grooves or elevations and depressions seen in the ruddy part and the zone of transition of the human lips. These elevations and depressions on human lips are unique among individuals and this suggests why it can be used in human identification (Saraswathi *et al*.,2009).

Synder (1950) reported in his book 'Homicide Investigation' that the characteristics of the lips formed by lip grooves are as individually distinctive as the ridge characteristics of finger prints. He conducted an investigation of a traffic accident case by Leland Jones, Los Angeles police department in which he studied a lip print present on the left front fender of a car and compared with those of the injured women. In the investigation, he proved that the car was the vehicle, which had caused the injury, and with the help of lip print studies, the injured women were identified. Thus, he was the first person to suggest the idea of using lip prints for identification.

In 1970, Suzuki and Tsuchihashi examined lip prints collected from 280 inividuals consisting of 150 males and 130 females aged 6-57 years in a Japanese population and in eighteen pairs of male twins aged 12-13 years. They analyzed the lip prints using photographic methods and lip prints were collected directly using finger printer, traced on cellophane paper to be observed under magnifying lens. They concluded that lip prints are dissimilar among different individuals and that no dissimilarity exists between the twins. They also recorded the use of lip prints in criminal investigations.

This research is therefore aimed at studying the lip print pattern amongst students of the University of Port Harcourt with the objectives of determining the most prevalent, the most reoccurring and the least frequent lip print pattern amongst male and female students of the University of Port Harcourt.

MATERIALS AND METHODS

The study sample size involved 150 students, of which 75 were males and 75 females, with age range from 17 to 30 years. The study involved people from different tribes, culture and religions. All subjects were healthy individuals whose upper and lower lips of the maxilla and mandible respectively were free of congenital abnormalities, inflammations, traumas or orthodontic treatments hence individuals with any the above were excluded from the study. Consent was obtained from all participants but it seemed difficult for the males.

The lips of the individuals were cleaned so as to avoid interference with the imprints. A red-coloured lipstick was applied uniformly on the lips, over the entire transition zone to obtain a homogenous print. A white paper was then folded into 2 halves and placed in between the lips slightly held apart and subsequently, a lip impression was made in the normal rest position of the lips by dabbing it first at the centre and then pressing it uniformly toward the corners of the lips. The paper was left for a minute and then removed.

After the removal, cotton wool soaked in warm water was used to clean the smear of the lip stick. A cellophane strip was then stuck over the lip impression on the white A4 paper to create a permanent record and then visualized with the aid of a magnifying

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lens. While studying the different groove patterns in these lip prints, each individual's lips were divided into four compartments, that is, two compartments on each lip, and were allotted the Roman numerals I - IV in a clock-wise sequence starting from the subject's upper right lip.

Right Upper Lip I Quadrant(Q1)	Left Upper Lip II Quadrant(Q2)
Right Lower Lip IV Quadrant(Q4)	Left Lower Lip III Quadrant(Q3)

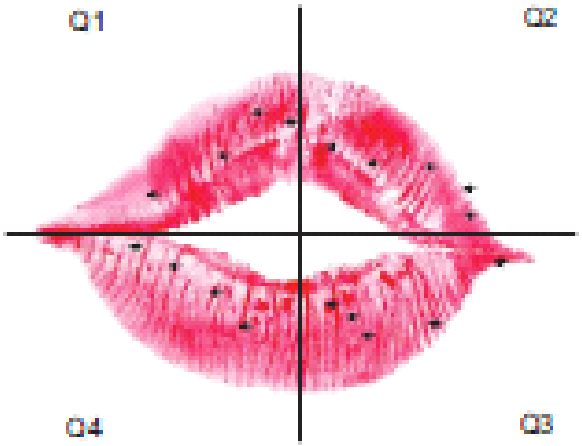

Fig. 1: *Compartmentalization of the Lip into 4 Quadrants. Adopted from Wikipedia,2010.*

In this study, in order to classify the different groove patterns seen in the subjects' lip prints, the classification scheme proposed by Suzuki and Tsuchihashi was used.

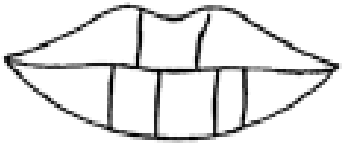

Fig. 2: Type 1 Lip Print – There is a clear cut groove running vertically across the lip from the transition zone to the line of contact between the lips (oral fissures).

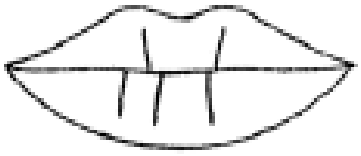

Fig 3: Type I' Lip Print **-** Is a partial length groove of type I which does not extend to the transition zone.

Fig.4: Type II Lip Print **-** Is branched or a Y – shaped groove.

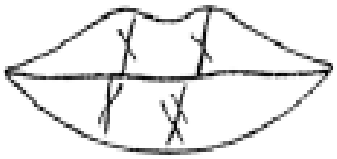

Fig.5: Type III Lip Print - Is like a crisscross or intersected groove.

Fig.6: Type IV Lip Print **-** Is reticular, net or fence like.

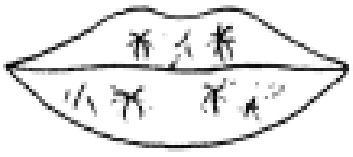

Fig 7: Type V Lip Print **-** This groove does not fall into any of the above categories and cannot be differentiated morphologically, that is, undifferentiated grooves

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RESULTS

Table 1: Lip Print Pattern on Lip Compartment Q I for both Males and Females

Lip Compartment	Lip Print Pattern	Males	Females
1	Type I	29	17
	Type I'	7	4
	Type II	14	16
	Type III	10	18
	Type IV	7	8
	Type V	8	12

Table 2: Lip Print Pattern on Lip Compartment Q II for both Males and Females

Lip Compartment	Lip Print Pattern	Males	Females
II	Type I	29	15
	Type I'	4	7
	Type II	22	20
	Type III	10	15
	Type IV	6	8
	Type V	3	10

Table 3: Lip Print Pattern on Lip Compartment Q III for both Males and Females

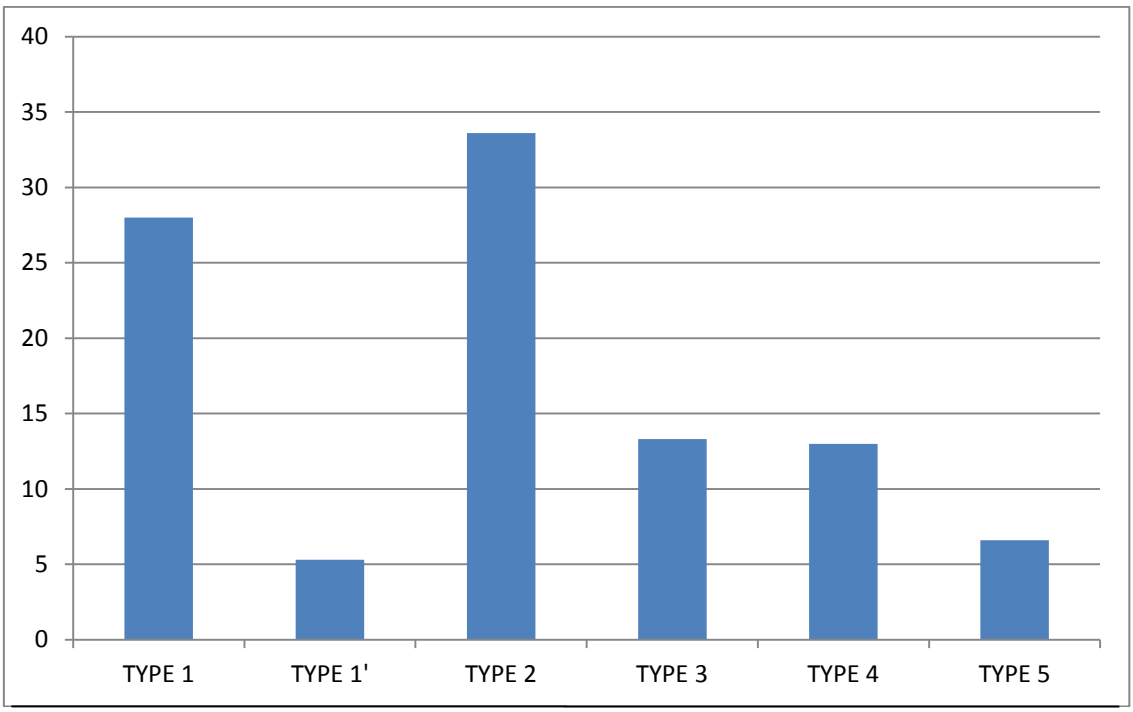
Lip Compartment	Lip Print Pattern	Males	Females
III	Type I	15	18
	Type I'	2	3
	Type II	31	28
	Type III	11	11
	Type IV	13	9
	Type V	4	6

Table 4: Lip Print Pattern on Lip Compartment Q IV for both Males and Females

Lip Compartment	Lip Print Pattern	Males	Females
IV	Type I	11	24
	Type I’	3	3
	Type II	34	14
	Type III	9	18
	Type IV	13	14
	Type V	5	2

Table 5: Total and Percentage Distribution of Lip Print Patterns in Gender in all Quadrants.

Lip Print Patterns	Males		Females	
	Total	%	Total	%
TYPE I	84	28.0	74	24.7
TYPE I’	16	5.3	17	5.6
TYPE II	101	33.7	78	26.0
TYPE III	40	13.3	62	20.7
TYPE IV	39	13.0	39	13.0
TYPE V	20	6.6	30	10.0



Lip print pattern

CHART 1: Showing the Percentage Distribution of Lip Prints Patterns in the Male Subjects.

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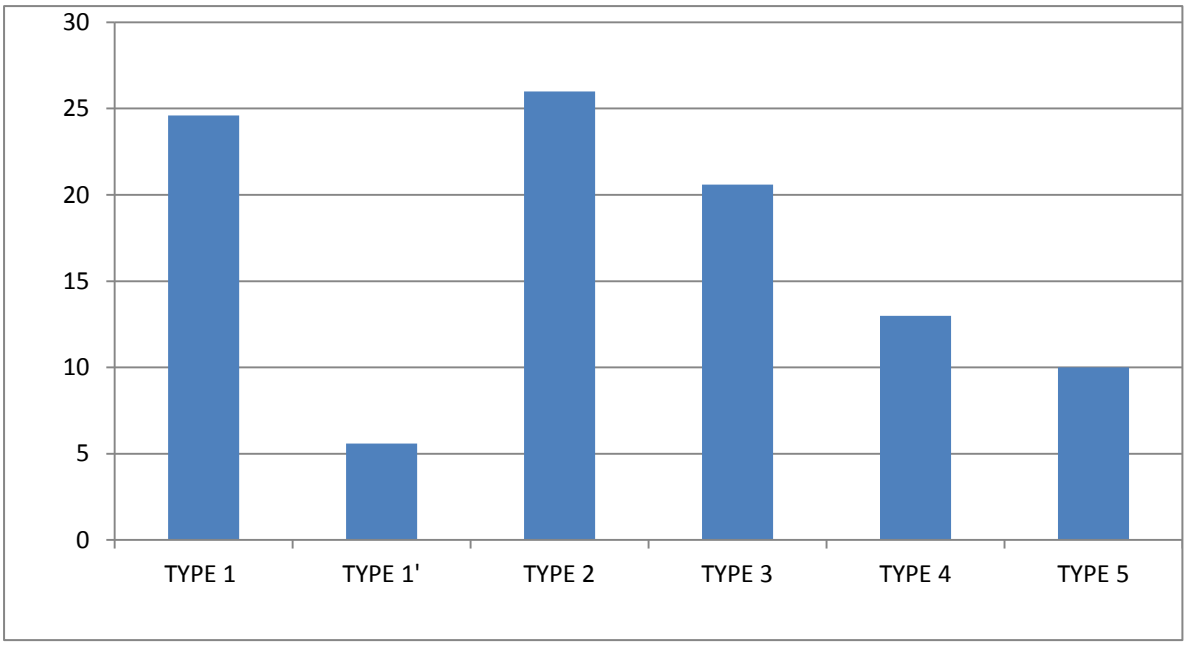

CHART 2: Showing the Percentage Distribution of Lip Prints Patterns in the Female Subjects.

DISCUSSION

Following thorough analysis of 600 quadrants in this present research, the following deductions were made as regards lip prints pattern in this study.

In this study, no individual had a single type of lip print in all the four compartments and no two or more individuals had similar type of lip print pattern (Sharma et al; 2009).The most common lip pattern in the entire males studied was type II (33.6%)(Table 5). This finding agrees with the research work done by Rashmi *et al.,* (2011), Maheswari and Gnanasundaram (2011), Bindal *et al.,* (2009) and Vahanwala *et al.,* (2005), who in their studies stated that the most frequent lip pattern in all the males studied was type II. The least observed lip pattern in males was type I' (5.3%)(table 5).This also agrees with the work of Maheswari and Gnanasundaram (2011),which described Type I' Pattern as least common and insignificant among males making them merge it with Type I. Similarly, the most common lip pattern in the entire females studied was Type II (26.0%) (Table 5) and this agrees with the work of Bindal *et al*; (2009),who disclosed in their work that the most common lip pattern in all the females studied was type II. Tsuchihashi (1974), Sivapathasundaram *et al*; (2001) and Saraswathi *et al*; (2009), put forward type III lip pattern as the commonest in both sexes.

The least observed lip pattern in all the females studied was Type I' (5.6%) unlike the study of Sivapathasundaram *et al.,* (2001) that showed Type IV to be the least common lip pattern in females. This also agrees with the work of Saraswathi *et al.,*(2009). Bindal *et al.,* (2009) observed

Type III lip pattern to be least common in females.

The overall result of the male subjects when compared with that of the female subjects, showed that both males and females had the type I' lip pattern as the least common (the males 5.3% and the female 5.6%). The most common lip pattern in the males and females is the type II (33.6%) and (26.0%) respectively (Table 5).

Human beings can be identified via finger prints, bite marks, lip prints, ear impressions, footprints and shoe soles impressions, et cetera. The main interest in this present study is lip prints. After a close observation and when compared with previous studies on lip print pattern in different compartments of lip, one deduce marked prints have displayed great nonconformity. This suggest that lip prints are unique and to a particular individual irrespective of religion and race. Therefore lip print can be utilized in the identification of persons in Forensic investigation and can aid sex determination when the appropriate techniques are used.

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