FREQUENCY OF THE LIP PRINTS TYPE AMONG PASHTUN MALE AND FEMALE STUDENTS OF JINNAH MEDICAL COLLEGE

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ABSTRACT

Objective: To assess the frequency of lip print patterns of pashtun male and female students of Jinnah Medical College.

Background: Lip prints are valuable in forensic odontology for personal identification, particularly when other evidence is unavailable. These unique, lifelong patterns vary by population and gender. This study focused on Pashtun male and female students in Peshawar to examine the frequency and distribution of lip print patterns, providing population-specific forensic data.

Methods: This cross-sectional study analyzed lip prints of 500 Pashtun students (294 males, 206 females) at Jinnah Medical College, Peshawar, aged 22-28, using convenience sampling. Participants meeting the inclusion criteria (Pashtun ethnicity, current enrollment, and consent) had their lip prints collected with frosted lipstick on bond paper. Prints were classified using Tsuchihashi & Suzuki's method. Statistical analysis was conducted using SPSS 26.0, with chi-square tests for gender associations. Ethical approval and informed consent were obtained.

Results: Type II lip prints were the most common (22.4%), with a higher frequency in males (59.8%) compared to females (40.1%), but the p-value (0.66) indicated no significant gender difference. Other types (I, I', III, IV, and V) showed varying frequencies, but none revealed statistically significant differences between genders.

Conclusion: No significant gender differences were found in the distribution of lip print types among Pashtun students. Type II lip prints were the most prevalent, slightly more common in males. These findings suggest lip print patterns are not influenced by gender in this population.

Keywords: Lip prints, forensic odontology, Medical students, variation.

INTRODUCTION

The pattern of lines and fissures on an individual lips has gained importance in forensic science and has become a very essential diagnostic tool.[1] The method of analysis of individual lip prints to identify that person is called cheiloscopy.[2] As each lip print is different and stable when time passes such as finger prints, it can be used in the future in the techniques of identification. They are important in forensic investigations as they are permanent, simple to collect, and different.[3,4]

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Researchers are still divided on whether or not to recognize cheiloscopy as a means of human identification, in contrast to fingerprints.[5] However, the identification of lip prints may be discussed in the discipline's literature, Suzuki's concepts that each person's lip print is unique and the method used for gathering and comparing them, which has gained acceptance in the forensic science community, are not well supported by science or research.[6] Due to its weak scientific foundation, the method would not be able to meet any dependability standards.[7] However, the principles of cheiloscopy and dactyloscopy are the same, meaning that lip prints are everlasting, consistent, and capable of classifying objects.[8]

The use of lip prints in forensics has many advantages. They are collected non-incisively and do not deteriorate easily, so they can be gathered easily at crime scenes.[9] However, they can be used along with dental data and fingerprints to improve the accuracy of individual identification. It can be used in crime investigations, disaster victim identification,

and security system verification because of these potentials.[10]

Lip prints also have anthropological values.[11] The variation of lip prints among different populations may be due to factors related to environment and genes. To advance our knowledge of human diverse nature, these trends should be examined in each ethnic group. This can highlight traits unique to that specific population.[12]

The pashtuns are people with distinct genetics and cultural values. The aim of the research is seeing the frequency and distribution of lip prints among male and female pashtun students at Jinnah Medical College in Peshawar. This study aims to determine whether specific lip print patterns are more common in this community and whether there are any noteworthy gender differences by focusing on backgrounds of a particular ethnicity.

MATERIALS AND METHODS

The present research study design was cross-sectional. It was conducted at Jinnah Medical College, Peshawar. The sample size calculated was 500 which included 294 male and 206 female participants and the sample size was collected through non-probability convenient sampling. The inclusion criteria included participants with pashtun ethnicity, enrolled in Jinnah Medical College at the time, and willing to give informed permission. Exclusion criteria included non-pashtuns individuals, those who had lipstick allergies, those with trauma or congenital anomalies, and those who refused to give their consent.

The goals and protocols of the study were explained to every individual before taking the lip prints. After providing the permission in written, they were asked to clean their lips to get rid of any dirt. A variety of equipment was used in the technique, such as tissue paper or cotton, a magnifying lens, thin executive bond paper (4" x 10"), dark-colored frosted lipstick (not glossy), and a piece of cardboard (4" x 10"). The participant was seated comfortably on a stool. One smooth stroke of lipstick was applied to each lip, starting with the upper lip and moving down to the lower. After that, the subject was told to rub their lips together to evenly disperse the lipstick.

Next, the participant was instructed to stretch their lips and then fold them slightly inwards while keeping their mouth open to obtain clear lip impressions. They were then instructed to place the folded piece of bond paper between their lips and press their lips against it for 2-3 seconds, ensuring not to slide their lips to avoid smudging the prints. The positions of the upper/lower lip and right/left sides of the print were marked on the bond paper. The obtained print was then examined with a magnifying lens to observe the lip print patterns.

The study followed the classification of lip patterns proposed by Tsuchihashi & Suzuki, which is widely used in the literature.[13] This classification provides a clear description of most common lip patterns and is easy to interpret:

Type	Description
Type I	Clear-cut long grooves running vertically across the lip
Type I	Short vertical grooves that vanish midway into the lip (partial length grooves, called "Type I dash")
Type II	Branching or forking grooves
Type III	Intersecting grooves
Type IV	Reticulate (net-like) grooves
Type V	Grooves are those that do not fit into any of the other classifications and are not morphologically distinguishable.

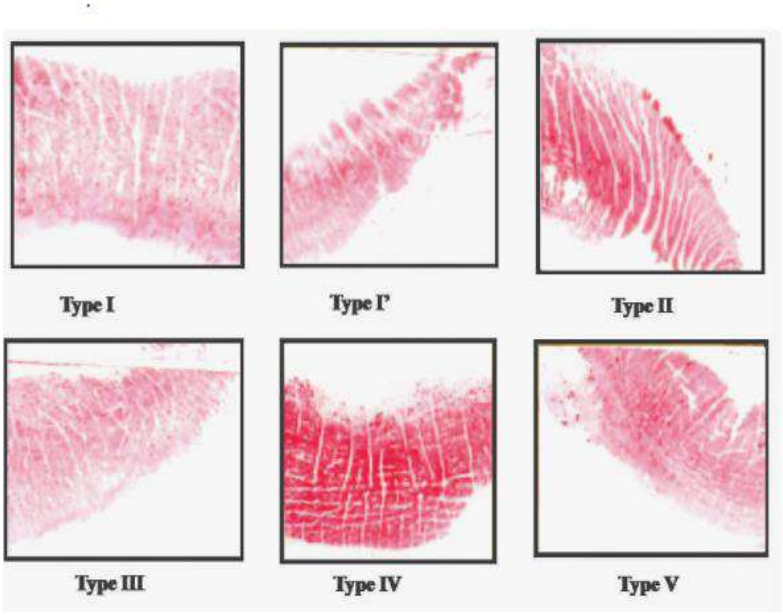

Figure 1: Tsuchihashi & Suzuki's classification system for lip prints

Data analysis was conducted using SPSS version 26.0. Descriptive statistics were used to calculate frequencies and percentages for each lip print type and summarize demographic data. Chi-square tests assessed the association between gender and lip print types, with a p-value of <0.05 considered statistically significant. Ethical considerations included obtaining approval from the ethical review board of Jinnah Medical College, Peshawar,(No. JMCP/RCH/01/24, dated 11/06/2024) informed consent (written) from all participants. Data confidentiality was maintained by removing personal identifiers from the dataset.

RESULTS

The study comprised of 500 students of Jinnah Medical College. There were 294 male students and 206 female students. The mean age of both the genders came out to be 24.7 years (SD = 3.5). All participants were pashtun students from Jinnah Medical College, Peshawar. After recording the lip patterns of various participants, our findings revealed that each lip consist of combination of patterns rather than a single pattern. For the reason of statistical analysis, we considered that pattern most prevalent which was abundant on the lip. According to that Type I lip prints were observed in 20.2% of the total sample, with a similar distribution between males (67.3%) and females (32.6%). The p-value of 0.95 indicates no significant difference between genders for this type. Type I' lip prints had a total frequency of 16.6%, with 45.7% in males and 54.2% in females. The p-value of 0.83 shows no significant gender difference.

Type II lip prints were the most common, occurring in 22.4% of the total sample. Males had a higher frequency (59.8%) compared to females (40.1%), but the p-value of 0.66 indicates no significant difference. Type III lip prints were found in 19% of the total sample with males (57.8%) and females (42.1%). The p-value of 0.98 indicates no significant gender difference. Type IV lip prints accounted for 14% of the total sample, with males showing a higher frequency (61.4%) compared to females (38.5%). The p-value of 0.85 suggests no significant difference. Type V lip prints were the least common, occurring in 7.8% of the total sample. Males had a slightly higher frequency (59.8%) compared to females (41.02%), with a p-value of 0.77, indicating no significant difference between genders. (Table 1) (Figure 2)

Overall, the p-values indicate that there are no statistically significant differences in the distribution of lip print types with males and females in this study population.

Table 1: Frequency Distribution of Lip Print Types Among pashtun Male and Female Students

Lip Print Type	Total Frequency (N=500)	Male (N=294)	Female (N=206)	p-value
Type I	101 (20.2%)	68 (67.3%)	33 (32.6%)	0.95
Type I'	83 (16.6%)	38 (45.7%)	45 (54.2%)	0.83
Type II	112 (22.4%)	67 (59.8%)	45 (40.1%)	0.66
Type III	95 (19%)	55 (57.8%)	40 (42.1%)	0.98
Type IV	70 (14%)	43 (61.4%)	27 (38.5%)	0.85
Type V	39 (7.8%)	23 (59.8%)	16 (41.02%)	0.77

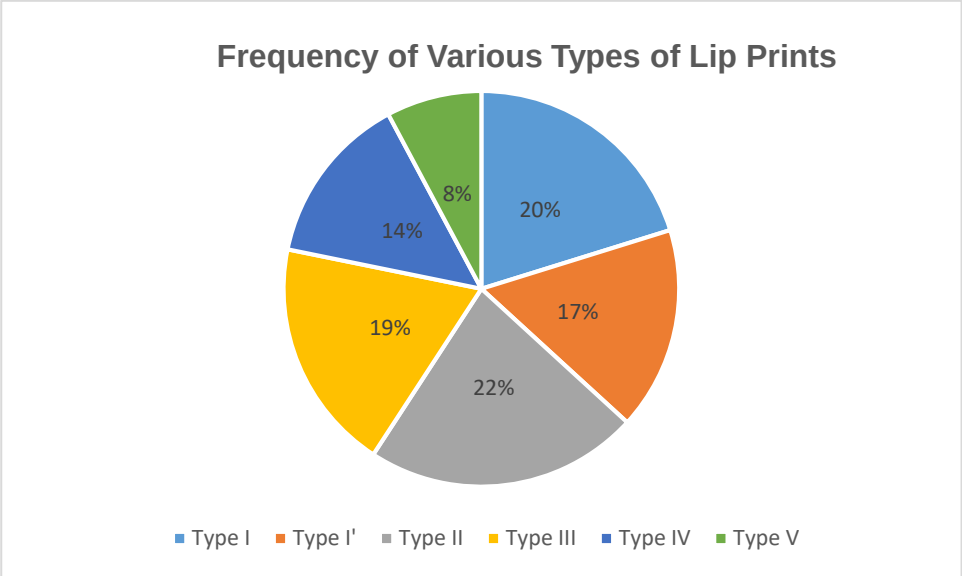

Figure 2: A pie chart illustrating various frequencies of lip prints among the students of both genders.

DISCUSSION

The variety of lip patterns is consistent with the Tsuchihashi and Suzuki lip pattern classification.[13] In literature, this is the classification that is most frequently used. Every lip design was determined to have a precise definition and meaning. The forensic dentist was also aware of its similarity to the dental formula.

In our study, the most frequently observed pattern was type II (22%) followed by type I (20%), type III (19%), Type I' (17%), Type IV (14%), and type V (8%). Our study findings are in accordance to Amani et al., (2020) who also reported type II to be the commonest pattern involved in their study group.[2] Our findings are also in accordance with Shailesh Kesarwani et al., (2021) which showed type II as the most common pattern (28.59%) followed by Type III (27.89%), Type I (19.29%), Type I' (12.80%), Type IV (9.64%).[14] A study findings by Sunil et al., (2023) and Biswas et al. (2020) are also in accordance with our study.[11,15]

Some studies show results in contrast to our findings. A study conducted by Mahmoud et al. (2020) from Malaysia showed type III as the most common type.[16] Additionally displaying conflicting findings, Tripathi P et al. (2021) determined that type IV was the most prevalent pattern.[17]

The differences in lip prints among various populations shows the uniqueness of these populations. Some lip prints are more common in one population and less common in another. However, Type V lip print was the least common among all and these findings are in consistent with other investigations. A study conducted by Gurung S et al. (2019) also found Type V to be the least common type encountered in their study.[18]

Our study showed that different segments of the lips frequently had different patterns. It was also observed that none of the participants had similar lip prints, either the same type or different types. It was further noticed that not even an individual had one particular type of lip print in the upper lip or lower or both. These findings are consistent with prior studies conducted on other demographics that found that each person's lip print had a distinct pattern that appeared to be unique.[19,20]

Peeling off the skin's outer layers was a common characteristic of the lips in this investigation. This might be because of the region's dry climate, which dries up lips and causes people to get used to biting off the dry skin. This did not, however, conceal the lip print pattern, which became visible when multiple prints were taken. Given that the lip pattern is permanent and unaffected by climatic variations or external illnesses, this phenomenon may be very helpful in subject identification.

CONCLUSIONS

Based on the findings of this study, there are no statistically significant differences in the distribution of lip print types between male and female Pashtun students from Jinnah Medical College, Peshawar. Type II lip prints were the most common pattern overall, with a slight predominance in males, but without significant gender differences across any of the observed lip print types.

Authors Contributions:

1. Dr. Anwar ul Haq: Conception of work and interpretation of data. Agree to be accountable for all aspects of the work

2. Dr. Ihsan Ullah: Drafting the manuscript, Agree to be accountable for all aspects of the work

3. Dr. Rizwan Ul Haq: work Interpretation of data, revising it critically. Agree to be accountable for all aspects of the work

4. Dr. Nyella Nejat Bangash: Drafting the manuscript, Agree to be accountable for all aspects of the work

5. Dr. Naheed Siddiqui: Drafting the manuscript, Agree to be accountable for all aspects of the work

6. Dr. Faqir Ullah: Final approval, Agree to be accountable for all aspects of the work

Conflicts of Interests: None

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