

CHEILOSCOPY AND CONSTITUTIONAL TYPOLOGY: A CROSS-SECTIONAL EVALUATION OF AYURVEDIC PRAKRITI USING SUZUKI AND TSUCHIHASHI CLASSIFICATION

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ABSTRACT

Introduction: Cheiloscopy, the study of lip print patterns, has emerged as a valuable tool in forensic science, anthropology, and morphology due to its non-invasive nature and the uniqueness of lip markings. Each individual possesses distinct grooves, fissures, and furrows that remain stable throughout life unless altered by trauma. Despite the recognized individuality of both cheiloscopy patterns and prakriti, limited research has attempted to establish a correlation between the two. This study was undertaken to explore the relationship between lip print types and prakriti and assess whether specific constitutional types display identifiable morphological tendencies. **Methods:** An observational cross-sectional study was conducted on 300 healthy volunteers selected through convenient sampling. Participants with lip deformities, injuries, active lesions, or a history of cosmetic alteration were excluded to ensure

undistorted pattern visibility. Lip impressions were recorded using a standardized method involving the application of a uniform layer of lipstick and gentle transfer onto cellophane tape. These impressions were then affixed to white bond paper for clarity. Each print was classified according to the Suzuki and Tsuchihashi system into six categories: Prakriti Assessment-Prakriti evaluation was conducted using a validated questionnaire covering physical, physiological, and psychological attributes, followed by expert assessment.

Results: Type III was the most common lip print pattern across all prakriti groups. Type IV was more frequent in PK and PV, Type I and I' in KP and KV, while Type V was occasionally seen in Vata-dominant constitutions. **Discussion:** Type III lip prints were predominant across all prakriti groups, indicating a common developmental pattern. Type IV patterns were more common in Pitta-dominant prakriti (PK, PV), while Kapha-dominant types (KP, KV) showed higher frequencies of Type I and I' patterns, possibly reflecting their respective constitutional traits.

KEYWORDS: Cheiloscopy, lip patterns, prakriti, Suzuki and Tsuchihashi system.

INTRODUCTION

The prime aim of ayurveda is to keep person healthy then to treat him various diseases.^[1] Ayurveda, the ancient Indian therapy system, has a profound but timeless concept known as Prakriti that is a person's intrinsic psycho-physiological constitution. It is established at conception and never alters throughout a person's life. It is established by the proportioning of the three fundamental forces of biology—Vata, Pitta, as well as Kapha—controlling every aspect of a person's bodily function. This is known as Prakriti – a Sanskrit word which means nature or the original creation.^[2,3]

According to Acharya Sushruta, Prakriti is decided in the very initial stage i.e. during the union of Shukra and Shonit (sperm and ovum) itself, the dominant Dosha form the Prakriti of the individual.^[4] Cheiloscopy is a forensic science methodology that rely on lip prints for identification of humans based on anatomy and lip morphology.^[5] Fissures appearing as grooves or wrinkles where inner labial mucosa of a lip joins to skin constitute lip prints.^[5] Distribution pattern of wrinkles found on an individual's lips contain distinctive attributes like fingerprints. In depth observations over a single lip print have ensured that a single print is distinctive throughout one's lifespan.^[6] Lip prints can be utilized effectively for individual identification.^[7], identification of sex.^[8], medical documentation, forensic examination.^[9,10] etc.

REVIEW OF LITERATURE

Prakruti means 'nature.'^[11] It is described in Bhagavada Gita as the 'primal motive force.' It is the essential constituent of the universe and is at the basis of all the activity of the creation.^[12] According to Samkhya and Bhagavad Gita Prakruti or nature is composed of the three Guna which are tendencies or modes of operation, known as Sattva (creation), Rajas

(preservation) and Tamas, (destruction).^[13], Sattva encompasses qualities of Goodness, light and harmony. Prakriti are distinct phenotypes that are characterized by physical, psychological, physiological, and behavioral characteristics. They are unaffected by social, racial, or geographic factors.^[14] According to the Yoga Vasishtha, people who are of a Sattvika nature and whose activities are mainly based on Sattva, will tend to seek answers regarding the origin and truth of material life. With proper support they are likely to reach liberation.^[15] Rajas is associated with concepts of energy, activity, ambition, and passion; so that, depending on how it is used, it can either have a supportive or hindering effect on the evolution of the soul. Every person's relationship with the divine remains consistent throughout their existence.^[16] Tamas is commonly associated with inertia, darkness, insensitivity. Souls.^[17] who are more Tamasika are considered imbued in darkness and take the longest to reach liberation.^[18] Prakriti denotes the prevalence of a certain Dosha in a human being and is defined as the development of unique characteristics brought on by the predominance of the Doshas (Vata, Pitta, and Kapha, the functional components of the body). The composition of a body is also somewhat influenced by other elements.^[19] Although each of the a forementioned variables is crucial in determining Prakriti.^[20] It is a closer definition of 'fundamental matter'; and is often defined as the essence of matter, that aspect of the Absolute which underlines all the objective aspects of Nature.

According to Acharya Charaka pancamaha Bhuta and chetana (soul) unite to form purusha and the nature of this sharira is known as prakriti.^[21] While Prakruti encompasses classical earth element, i.e. solid matter, MulaPrakruti includes all classical elements, including any considered not discovered yet (some Tattva). Predominance of any one, two, or all the three dosha (body humors- vata, pitta and kapha) determines the characteristics features of the future child as ekadoshajaprakriti (vataja, pittaja and kaphaja), dvandvaja (vata-pitta, vata kapha, kapha-pitta), and samamishra (vata,pitta and kapha in equal proportions).^[22] Devi Prakruti Shakti in the context of Shakti as forces unifies Kundalini, Kriya, Ichcha, Para, Jnana and Mantrika Shakti. Each is in a Chakra. -The concept of prakriti and its relationship with genomics was hypothesized over a decade ago.^[23] Nature can be described as environment. It can also be used to denote the 'feminine' in sense of the 'male' being the Purusha. According to the ancient Vedic science of Ayurveda, the three Guna (Sattva, Rajas and Tamas) as they pertain to the human physiology are called Dosha: Kapha, Pitta, Vata. Prakriti stands for an individual's unique constitution or body type and is determined by the relative balance of three dosas.^[24] To preserve the will power of human Prakruti advised is

mentioned in Atharvaveda which is possible in three ways.^[25] A. Adidaivika, B. Adibhautika C. Adhyatmika. In Matsya Purana third chapter Shrishtiprakarana deals that equilibrium of Sattva, Rajas and Tama Guna, as this is called as Prakruti.^[26] During the creation of universe there are five types of Prakruti being mentioned as Durga, Radha, Lakshmi, Sarasvati and Savitri.^[27] In the word Prakruti Pr indicates Prakrishta, Kriti indicates universe and the best creation of the universe is known as Prakriti. Pr indicates best Sattva, Kr indicates Rajas and ti indicates Tamas. There are three types of Manas Prakriti; Sattvik, Rajsik and Tamsik. Acharya Shushruta has called it Mahaprakriti.^[28,29,30]

MATERIALS AND METHODS

MATERIALS

Dark-colored lipstick, Lip applicator or brush, Tansparent cellophane tape, White bond paper, Magnifying lens, Cotton swabs, Scissors, Hand mirror.

METHODS OF COLLECTION OF DATA

- The lip prints were obtained by SUZUKI and TSUCHIHASHI method.
- Prakriti pareeksha was assessed based on questionnaire (Originally prepared by: Kishor Patwardhan and Rashmi Sharma. Modified by: Piyush Kumar Tripathi, Kishor Patwardhan and Girish Singh, Institute of Medical Sciences, Banaras Hindu University, Varanasi.)
- Lip prints and prakriti were analyzed accordingly.

METHODOLOGY

STUDY DESIGN

- **Informed Consent**

Obtain written informed consent from all participants prior to the procedure. Explain the purpose and method of lip print recording. Record the subject's details (name, sex, height and other demographic details) on the performa.

- **Application of Lipstick**

Apply a uniform layer of lipstick on the participant's lips using a lip brush. Ensure even coverage in a single, smooth motion.

- **Recording the Lip Print**

- Take a strip of cellophane tape.

- Press it gently on the participant's lips with minimal pressure to obtain a clear impression.
- Carefully lift the tape without smudging and carefully place the tape onto white bond paper without air bubbles or wrinkles.

- **Visualization**

Examine the lip impression under a magnifying lens to enhance visibility of grooves and lines.

- **Classification of Lip Prints**

Analyze the lip print patterns according to the Suzuki and Tsuchihashi classification:

Type I – Complete vertical grooves

Type I' – Incomplete vertical grooves

Type II – Branched grooves

Type III – Intersected grooves

Type IV – Reticular grooves

Type V – Undetermined.

Conduct the analysis under the guidance of the Agada Tantra department.

a. STUDY TYPE - Observational study.

b. SAMPLE SIZE -300.

c. METHOD OF SAMPLING -Selective sampling.

d. INCLUSION CRITERIA.

- Subjects with lips free from any active or passive lip lesions
- Subjects who gave consent and reported no hypersensitivity to lipsticks.

e. **EXCLUSION CRITERIA**

- Subjects who underwent lip surgery, had a history of lip trauma or developmental anomalies.
- Subjects with inflammation of lips, trauma, malformation, deformity, surgical scars, active lesions of the lips.
- Gross deformity of lips such as cleft lip, angular cheilitis, lip pits, cheilitis glandularis, and cheilitis granulomatosa.
- Subjects allergic to lipstick and cellophane tape.

f. STUDY DURATION - 1.5 Year.

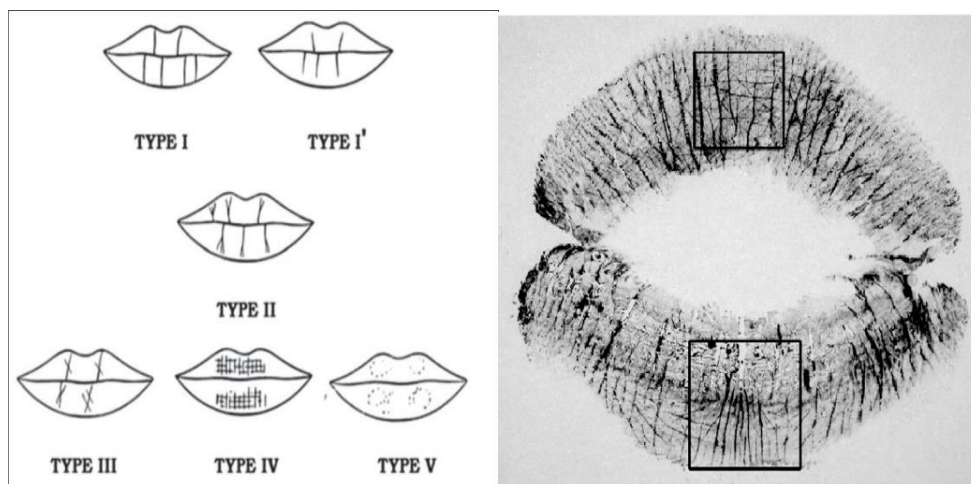
g. ASSESSMENT CRITERIA

Assessment was carried by subjective and objective criteria.

Subjective criteria

Details of individuals such as name, sex, and Prakruti was noted. Prakruti analysis of each individual was taken as per questioner's chart. (Refer-Originally prepared by: Kishor Patwardhan and Rashmi Sharma. Modified by: Piyush Kumar Tripathi, Kishor Patwardhan and Girish Singh, Institute of Medical Sciences, Banaras Hindu University, Varanasi.)

Objective criteria: Lip patterns (cheiloscopy) were studied with help of magnifying lens and are identified into 6 patterns according to SUZUKI and TSUCHIHASHI method as follows,



Type I – Complete vertical grooves

Type I' – Incomplete vertical grooves

Type II – Branched grooves

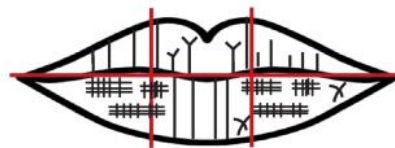
Type III – Intersected grooves

Type IV – Reticular grooves

Type V – Undetermined.



Analysis of the 4 quadrants
Predominant pattern: Type IV (reticular)



Analysis of the 6 segments
Predominant pattern: Type I (complete vertical) and IV (reticular)

STATISTICAL DESIGN

The data made on the observational study was analysed by applying Chi-Square tests- test by using Statistical Software- SPSS- version 23, help of cross tabulation and correlation between the primary lipprint pattern in various prakruti.

ETHICAL CLEARANCE

- Study was started after obtaining Ethical clearance from the Institutional Ethics Committee for Human Research, Parul Institute of Ayurved, Vadodara. No. PU/PIA/IEC/09/2024/343 Study has been registered.

OBSERVATIONS

Table 1: Distribution of Lip Print Patterns Among Different Prakriti Types (n = 300).

Prakriti	Type I	Type I'	Type II	Type III	Type IV	Type V	Total
VP	4	3	9	30	3	1	50
VK	2	3	7	25	6	7	50
PK	1	5	9	24	10	1	50
PV	10	1	9	24	5	1	50
KP	7	1	9	18	9	6	50
KV	5	7	11	23	3	1	50
Total	29	20	54	144	36	17	300

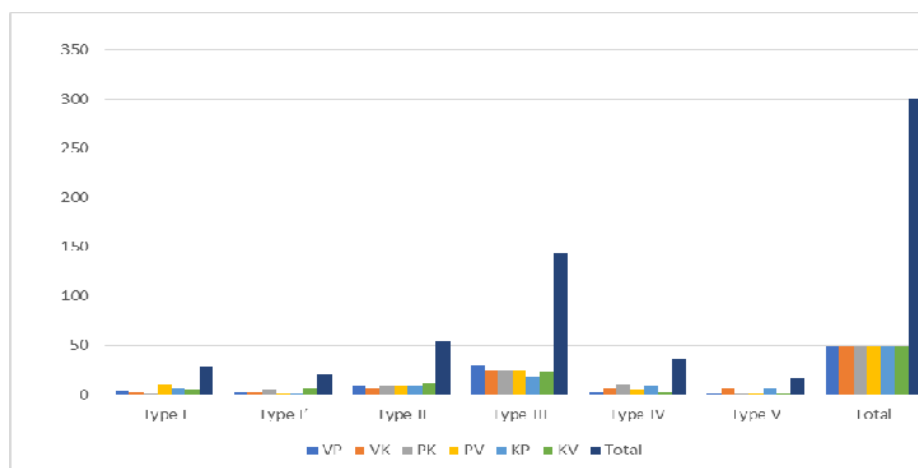


Table No.2: Percentage analysis of lip patterns.

Prakriti	Type I	Type I'	Type II	Type III	Type IV	Type V
KP	18%	18%	12%	36%	16%	0%
KV	16%	18%	8%	46%	12%	0%
PK	10%	12%	10%	48%	20%	0%
PV	12%	14%	4%	48%	20%	2%
VK	12%	14%	6%	50%	16%	2%
VP	10%	12%	4%	60%	12%	2%

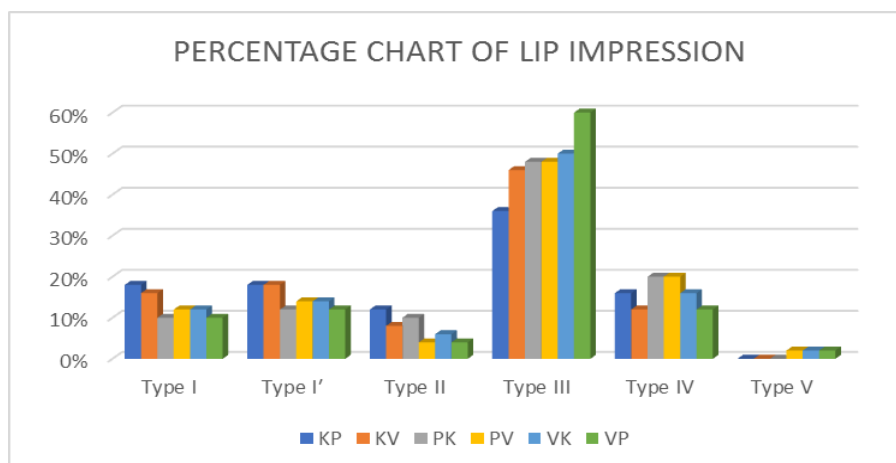


Table 3: Chi-Square Test Showing Association Between Prakriti and Lip Print Pattern.

Test	Value	df	p-value
Pearson Chi-Square	45.262	25	0.008
Likelihood Ratio	44.952	25	0.008
Cramer's V	0.174	—	—

Interpretation: A statistically significant association was observed between Prakriti and lip print patterns ($p < 0.05$), although the strength of association was weak (Cramer's V = 0.174).

DISCUSSION

The most important finding was that the Type III lip-print was the most common in almost every prakriti group. It was especially frequent in people with VP prakriti (60%) and VK prakriti (50%). Some other patterns showed small differences:

- PK and PV prakriti people had a little more of Type IV pattern.
- KP and KV prakriti showed more Type I and I' patterns.
- Type II was a bit more common in KP and PK.
- Type V was very rare overall.

These results mean that each prakriti may have a tendency toward certain lip-print patterns, but no prakriti had a unique or fixed pattern. For example, it is not true that “all VP prakriti people have Type I” or “all PK have Type IV.” Instead, it can only say that “VP people are more likely to have Type III,” and so on.

Prakriti-specific tendencies

❖ PK and PV prakriti demonstrated relatively higher proportions of Type IV (reticular/net-like) patterns, possibly reflecting the structural and metabolic influence of Pitta dominance. - In the present study, individuals with Pitta-dominant Prakriti (PK and PV) exhibited a

relatively higher prevalence of Type IV (reticular or net-like) lip print patterns. From an Ayurvedic perspective, Pitta is characterized by the attributes of ushna (heat), teekshna (sharpness), sukshma (subtlety), and laghu (lightness). These qualities influence both metabolic activity and tissue architecture. Pitta dominance is associated with agni (metabolic fire) efficiency, rapid digestion, and precision in structural formation, which may manifest phenotypically as well-organized, intricate, and interconnected anatomical patterns, consistent with the reticular grooves observed in Type IV lip prints.

❖ KP and KV prakriti were more frequently associated with Type I and I' (vertical/parallel grooves), patterns that may reflect the stability and regularity characteristic of Kapha predominance. In the present study, individuals with Kapha-dominant Prakriti (KP and KV) predominantly exhibited Type I and Type I' lip print patterns, which are characterized by complete or incomplete vertical grooves running parallel along the vermilion border. From an Ayurvedic perspective, Kapha Dosha is defined by the attributes of sthira (stability), guru (heaviness), snigdha (unctuousness), and mridu (softness). These qualities confer structural stability, cohesion, and uniformity to tissues, including soft tissues such as the lips, which are primarily composed of Māṃsa Dhātu supported by Kapha.

❖ KP and PK prakriti also showed slightly higher proportions of Type II (branched grooves), reflecting Kapha's stability combined with Pitta/Vata variability. In the present study, KP (Kapha-Pitta) and PK (Pitta-Kapha) dual-dominant Prakriti individuals demonstrated a slightly higher prevalence of Type II (branched) lip print patterns, characterized by grooves that bifurcate or branch along the vermilion border. From an Ayurvedic perspective, dual-dominant constitutions represent a dynamic interplay between the doshas, where the attributes of both constituent doshas influence the structural and functional characteristics of the body. In KP and PK individuals, Kapha's inherent stability, cohesion, and structural regularity combines with Pitta's metabolic sharpness or Vata's variability, producing tissue features that are primarily organized yet exhibit subtle branching or complexity.

❖ Type V patterns were rare but present in PV, VK, and VP, which could represent mixed constitutional features or rare variants. In the present study, Type V lip print patterns, characterized by irregular, indeterminate, or undifferentiated grooves, were observed infrequently in individuals with PV (Pitta-Vata), VK (Vata-Kapha), and VP (Vata-Pitta) Prakriti. From an Ayurvedic perspective, dual-dominant constitutions inherently exhibit

features of both constituent doshas, and the manifestation of Type V patterns may reflect subtle, complex, or atypical interactions between the doshas. Unlike the more organized and characteristic patterns associated with single-dominant Prakriti, Type V patterns appear less predictable and more variable, suggesting that these grooves may correspond to the inherent variability and dynamism of Vata, combined with modulatory influences from Pitta or Kapha.

CONCLUSION

1. A statistically significant association was observed between prakriti and lip-print patterns ($p = 0.008$).
2. Type III lip-print was the most common across all prakriti groups, especially in VP (60%) and VK (50%) individuals.
 - ✓ PK and PV showed relatively higher Type IV.
 - ✓ KP and KV exhibited more Type I and I'.
 - ✓ Type V was rare and scattered across PV, VK, and VP.
3. No prakriti demonstrated an exclusive lip-print type, but each showed distinct tendencies toward specific patterns.
4. Findings suggest that lip-prints may serve as a supportive, non-invasive tool in prakriti assessment. With larger, multi-centric studies and standardized methods, cheiloscopy has the potential to evolve into a reliable objective marker in Ayurveda research and practice.

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