



Review Article

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APPLICATION OF DIFFERENT PARAMETERS FOR SELECTING NORMAL AND ABNORMAL SKIN CHARACTERISTICS IN DETERMINATION OF PRAKRITI IN INFANTS

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ABSTRACT

Prakriti (Basic physical constitution) of an individual is decided at the time of conception and subsequently during intra-uterine life, as a result of overall effect of dominant Dosha of Shukra (Sperm), Shonit (Ovum), Ahara (diet) and Vihara (regimen) of Garbhini (pregnant women), Kaalgarbhashaya (in-utero duration and condition of uterus) and Mahabhaucic components. Assessment of Prakriti and Vikriti in children is essential and enables the pediatrician to evaluate metabolic imprinting, individual physiology and susceptibility to specific disease, its diagnosis, prevention, treatment as well as the prognosis after illness. There are many subjective criteria to determine the Prakriti in adults, but as far as infants are concerned, no detail description is available in Ayurvedic classics. Individual Prakriti can be determined as per the characteristics specified in Brihatrayi and Laghutrayi, which include the examination of skin, hair, nails, eyes, palm, sole and other physical and psychological features, and may be used in children for Prakriti determination. However, it can be better understood and differentiated each other by considering various methods and modern technology. Out of various characteristics of body parts, skin characteristics such as texture (roughness or smoothness, elasticity and thickness), color and temperature of skin significantly contribute in Prakriti determination. Use of objective parameters such as RGB and HSV method, Fitzpatrick Scale method and derma spectrometer for the skin color differentiation; skin-pH, stratum corneum hydration, TEWL, sebum content, cutometer and ultrasonography for skin texture as well as thermometer, thermister via pulse oxymeter for skin temperature may be very useful tools to differentiate individual Prakriti under controlled conditions. The aim of this conceptual study was to explore importance of various methodologies for differentiating Prakritaskin characteristics from the Vaikrita skin characteristics more precisely and scientifically in infants.

Keywords: HSV (Hue or color, Saturation, Value or brightness), RGB (Red, green, blue), TEWL (Trans epidermal water loss).

INTRODUCTION

Prakriti is an important tool that explains individuality and has important role in prevention¹, diagnosis², in deciding the line of treatment of disease³ and forecast of future disorders. It explains unique but definite unchangeable traits, decided by specific and permanent configuration of Dosha in an individual⁴. One or more than one Dosha predominates at the time of conception which reflects the Doshika Prakriti of an organism and can be identified by Dosha specific characteristics manifested in growing individual⁵. The word Prakriti is derived from 'Pra' and 'Kriti', here 'Pra' means origin or beginning and 'Kriti' means to create or to act; while the Prakriti means constitution, disposition or fundamental form⁶. The word Prakriti is referred in many contexts, while the Vikriti is a Vikara (disorder) or pathological manifestation⁷. Meaning of Vikara is a change of form or nature, alteration or deviation from any natural state and change of bodily or mental condition⁸. When, these Dosha are not in perfect equilibrium state (qualitative and quantitative) in the body, may present various abnormal clinical features termed as Vaikrita Dosha and finally lead

to Vikara in the body. It is well-established concept that single Dosha Prakriti individuals frequently fall sick i.e. more vulnerable to various diseases, while Samyavastha (equilibrium state) of three Dosha in an individual results in healthy state⁹. Knowledge about the Prakriti is prerequisite for assessment of Vikriti (pathology) hence it plays a very important role in deciding diagnosis, therapeutics and prognosis¹⁰. It has, also, a decisive role in maintenance of health and cure of the disease, which is the prime objective of Ayurveda¹¹. In-utero, different body parts of the fetus are derived from Shadabhavas and skin is derived from Matrija (Maternal) bhava¹²⁻¹⁵. Skin (Twacha) is considered as an Updhatu of Mamsa Dhatu along with Vasa. Upadhatu is something, which support the Sharira. Bhutatma along with Shukra and Shonita when obtains maturation then six layers¹⁶ or seven layers¹⁷ of skin are formed. First layer of skin is 'Prathama' or Udakadhara which is outer most layer of skin, second is Asrigdhara layer and third is the layer affected by disease like Sidhma and Kilasa. The forth layer is affected from Dadru and Kushta. Apart from its simple morphological differentiation, also specify clinical differentiation of diseases penetrating the various layers.

Avabhasini is the layer of the skin that displays the Varna (complexion) and Prabha (Luster) of the body. The Varna (complexion), which is of four types such as Gaura, Krishana, Krishna-shyama and Gaura-shyama, develops during fetal life¹⁸. This paper has laid an emphasis on various objective and subjective parameters using

ancient concepts and different modern technologies in assessment of various Prakrit and Vaikrit twak characteristics of infants, which can facilitate in deciding evidence based Prakriti and Vikriti respectively. Skin is an important part of body and their characteristics help in determining the individual Deha or Doshika Prakriti.

Table 1: Prakriti Specific Skin Characteristic

Skin	Vata Prakriti	Pitta Prakriti	Kapha Prakriti
Texture	Sphutitanga (Cracked body parts) Krishna parusha (Blackish and rough skin)	Prabhuta Piplu, Vyanga, Tila, Pidika (Plenty of moles, freckles, black moles and pimples)	Snigdhangha (Oily organ-skin) Mriduanga (soft organs)
Color	Dhusaragatra (Dust color or grey color)	Gaura (Fair complexion), Tamravarna (coppery color) Avdatagatra (Fair body complexion)	Avdatagatra, (Fair body complexion) Shweta (white)
Temperature	Sheeta (Cold)	Ushnamukha (warm face relative to rest of the body temperature)	Sheet (Cold skin) ¹⁹⁻²⁶

Sometimes pathological features may appear in skin and may cause error in deciding Prakriti, because of their almost similar presentation. Therefore, accurate assessment of Prakriti is mandatory to differentiate Prakrit features of skin from the Vaikrit. Skin condition, in general, defined as a combination of texture, color, temperature. Assessment of skin characteristics such as texture (roughness/smoothness, dryness/softness, elasticity, and skin thickness), skin color and temperature etc can be done by many techniques. These techniques include inspection, palpation method and oleation method under subjective criteria; while the skin pH assessment, stratum corneum hydration measurement, trans-epidermal water loss (TEWL) method, sebum content measurement, elasticity of skin, and skin thickness as an objective criteria^{27,28}. Fitzpatrick photo typing scale, RGB, HSV method (computerized photographic study) and derma spectrophotometer (Cortex technology) are objective criteria for skin color assessment²⁹. Mercury or digital thermometer and thermistor are objective criteria also for the assessment of skin temperature while the pulse oxymeter can measure temperature and SpO₂ assessment, both.

Method of assessment

The skin specific characteristics can be assessed with various methodologies as follows -

Texture of skin

The texture of skin means how skin feels on touch i.e. whether it is moist or dry and hard or soft. Normal skin generally characterized by smooth surface plateaus separated by furrows, while dry skin is uplifted scales result in a jagged surface, which obscures the plateau and furrow pattern³⁰. On close inspection, there may be some flaky or granulated sections and dry skin often feels tight or mildly uncomfortable. For assessing skin texture, objective and subjective tools may be adopted-

Subjective parameters

It is done by inspection, palpation and oleation method. These methods may be used as screening tool.

Inspection and Palpation Method

Roughness and smoothness, softness and hardness, skin turgidity and tone of skin can be assessed by inspection and palpation method. For this purpose an area is selected which is usually not exposed to such external stimuli that can affect the nature of skin. For this purpose an area over the cheek is preferred than volar aspect of the arm because effect of skin hydration is smaller on the cheek than forearm, probable due to presence of beard stubbles³¹.

Oleation Method

Oleation method or oil application method is a self-adopted method to assess the roughness and smoothness of skin. It is based on the parent’s observation. For this purpose coconut oil may be used due to easy availability, low cost, and less allergic reaction. This method should not be used if baby is suffering from any allergic diseases such as eczema, drug eruption, urticaria or any infectious dermal diseases such as pyoderma, scabies and mycosis due to risk of aggravation. Thereafter assessment of skin is carried out based on the questionnaire filled up by the mother and verified by the skilled research scholar.

Table 2: Question for parents

Question for parents	Answer -1	Answer -2	Answer -3	Answer -4
How much quantity of oil is used to make the skin smooth below the neck of body?	< 20 ml	20-30 ml	30 – 40 ml	> 40 ml
What is the required frequency of massage in 24 h to keep the skin normal?	1 time	2 times	3 times	> 3 times
After, how many hours dryness reappears?	6 h	12 h	18 h	> 18 h

Objective Assessment

It is done by Trans-epidermal water loss (TEWL), stratum corneum hydration skin surface pH, sebum content, Cutometer and ultrasonography.

Skin surface pH Assessment

The pH of the skin follows a sharp gradient across the stratum corneum, which is suspected to be important in controlling enzymatic activities and skin renewal. Skin pH is normally acidic ranging in pH values of 4–6, while the body's internal environment maintains a near-neutral pH^{32,33}. Skin surface pH is measured with the help of pH meter specific to skin like Skin-pH-METER PH 900 and Skin-pH-Meter® PH 905. This is a quick, easy and economical tool, which specifically measures the pH on the skin surface. The skin pH is affected by a great number of endogenous factors e.g. skin moisture, sweat, sebum, anatomic site, genetic predisposition and age. In addition, exogenous factors like detergents, application of cosmetic products, occlusive dressings as well as topical antibiotics influence skin pH³⁴⁻³⁶. Before each measurement, the flat glass electrode is rinsed with distilled water and any excess is shaken off. Subsequently its flat glass electrode is usually fixed on the volar aspect of the forearm with slight pressure for 3 seconds³⁷. This equipment provides data of pH value with an accuracy of 0.1. As the skin is washed with alkaline soap increases pH and the change in skin surface pH caused by soap does not last long (< 2 h) so avoid washing skin at least 2 h before skin pH assessment³⁸.

Stratumcorneum hydration Assessment

The outer part of the skin is the stratum corneum which forms a barrier against diffusion of water and also an effective barrier for microbes and chemical substances. The degree of hydration is most frequently determined by measuring electrical properties of skin. In the past, skin surface hygrometer was the instrument of choice for measuring conductance and capacitance³⁹. Now a days, skin hydration is measured with a corneometer CM825 (Courage and Khazaka), which measures the capacitance of the skin electrically to a depth of 0.1 mm. Data are given in arbitrary units (AU). The probe (49 mm²) is placed upon the volar forearm and a measurement is taken as well as displayed after the correct pressure is achieved. The probe is applied to the skin with a spring-loaded standard force of 3.5 N and the result is shown digitally in AU within 3 seconds of applying the probe⁴⁰. This parameter depends on the high dielectric constant of water content relative to other component⁴¹. The corneometer have a software option to facilitate data analysis.

TEWL (Trans-epidermal water loss) Assessment

The Trans epidermal water loss measurement (TEWL) is taken as measure of skin's intrinsic barrier property. TEWL is calculated as the amount of water evaporated per unit of surface in an hour and its measurement expresses in grams per square meter per hour⁴². The servo

Med Evaporimeter (Evaporimeter EP-1, Servo Med, Stockholm, Sweden) is most widely used instrument for TEWL measurements. The Evaporimeter instruments are based on two different methods, first, closed chamber method and other is open chamber method⁴³. The TEWL should be recorded on the flexor side of the forearm. Subject perspiration has effect on TEWL and to avoid inducing perspiration and to provide general comfort procedure test should be performed in a closed room with an ambient air temperature of about 22°C, relative humidity of 35 %, acclimation period of ten minutes to one hour and is dependent on ambient condition and subject's emotional state⁴⁴. Other factors also alter data of TEWL like the daytime and the season of measurements. Therefore, for the medical interpretation of a measured TEWL, predefined criteria should be adopted.

Sebum content Assessment

Sebum content assessment is done by Sebumeter SM 815 attached to a Courage and Khazaka MPA5 system and it uses the difference of light intensity through a plastic strip to indicate the amount of absorbed sebum. The sebum level is expressed in $\mu\text{g}/\text{cm}^2$ ⁴⁵. Measurement is done on the forehead or flexor site of forearm. All the subjects must have rest at least for 30 minutes at 22–24°C temperature and relative humidity of 45–55 %, prior to measurement.

Skin elasticity

Elastic property is responsible for skin's returning to normal shape after deformation. Previously, the pinch test of Holling worth was used to measure elasticity but nowadays a number of more sophisticated methods are available as Cutometer and Dermaflex A⁴⁶. Cutometer pulls the targeted skin into the probe with a controlled vacuum pressure, then the vertical deformation of skin is measured and analyzed by computer software which is expressed arbitrarily⁴⁷.

Skin Thickness

Skin thickness measurement is useful to characterize physiological and pathological changes in skin. Ultrasound is the commonly used technique for measuring skin thickness. Ultrasound thickness measurement is conducted after patch test (Finnchamber). Higher concentration results in increased skin thickness as well as increased TEWL. No report to indicate change in skin thickness after soap exposure under actual use condition^{48,49}

Skin color Assessment

Normal human skin color can be classified either as constitutive pigmentation or facultative pigmentation⁵⁰. Constitutive skin color is defined as the basal or genetically determined color whereas facultative skin color is that which develops following exposure to a stimulant such as sunlight. Various factors including race, sex, age and hormones are reported to have an influence

on change of human skin color⁵¹⁻⁵⁴. Several methods are available for assessing skin colors as RGB (Red, green and blue), Fitzpatrick Scale method and Derma-Spectrophotometer method. In RGB method, red green and blue (RGB) color space is determined and RGB method is image based color analysis with the help of RGB calculating software and to avoid error on data, room light, configuration of camera, angle and distance of camera and baby cloth color should be predefined for all samples or infants. The Fitzpatrick Scale, also known as Fitzpatrick skin typing test or Fitzpatrick photo typing scale, is a numerical classification scheme for the color of skin. It was developed in 1975 by Thomas B. Fitzpatrick, a Harvard dermatologist, as a way to classify the response of different types of skin to ultraviolet light. It remains a recognized tool for dermatologic research into the color of skin⁵⁵. Recently, a hand-held microprocessor controlled reflectance spectrophotometer (Derma-Spectrophotometer, Cortex technology, Hadsund, Denmark) began to use in many dermatological studies. This instrument provides readout of the erythema index (E-index) and melanin index (M-index) as a function of the absorbance characteristic of human skin. For every subject, three readings should be taken, and its mean will reflect exact data. All skin color examination should be in same room-circumstances. Exposure to sunlight should be almost completely obviated and room temperature is maintained between 21°C to 26°C.

Skin Temperature Assessment

Body temperature represents a balance between the heat produced by the body and the heat lost. There are two ways to measure body temperature by measuring core temperature and surface temperature. Core temperature means temperature of deep tissues, and is measured mainly from oral cavity, ear canal and rectum. Surface temperature means temperature of surface skin tissues and can be measured from forehead and armpit. A subjective criterion for skin temperature assessment is palpation method. Simple palpation method is in practice for thousands of years to assess body temperature, while the objective criteria for skin temperature assessment in infant is mercury-in-glass thermometer, electronic (digital) thermometer, infrared thermometer and pulse oxymeter. Normal temperature range, according to the body sites and type of thermometers can be seen in Table 3.

Table 3: Ranges and mean of body temperature

Body site	Type of thermometer	Normal range (°C)	mean (°C)
Axilla	Mercury, electronic	34.7 -37.3	36.4
Sublingual	Mercury, electronic	35.5 – 37.5	36.6
Rectal	Mercury , electronic	36.6 – 37.9	37.0
Ear	Infrared emission	35.7 – 37.5	36.6 ^{56,57}

General Precautions for the Assessment of Skin Characteristics

To assess skin characteristics, the following precautions should be taken to avoid error-

- The subject must be kept relaxed during the measurement.
- Noninvasive biophysical methods should be used to assess skin condition.
- Before the assessment of skin condition, the subject must be remained in sitting or lying position for more than 10 minutes in an environmentally controlled room temperature $22 \pm 2^\circ\text{C}$; with relative humidity 40-60- % to acclimatize the ambient condition.
- All the measurements should be performed three times and the mean of three readings should be recorded.
- The subject should be asked not to use any cosmetics or soap for > 16 hours before the measurement is made, and ask not to wash the measurement site on the test day.
- Skin hydration, TEWL and skin surface pH should measure on the right forearm and sebum content on the forehead⁵⁸.

DISCUSSION

The experts of Ayurveda have mentioned different characteristics for different Prakriti. They have described specific and unchanged characteristics of skin, forever, in specific type of Prakriti. This article is focused mainly on objective and subjective parameters to assess prakrit and vaikrit skin, which play an important role for deciding Prakriti of an infant. For this purpose, subjective and objective parameters have been taken into consideration for analysis of texture, color, temperature etc characteristics of skin. The main reason behind the poor reliability of Ayurveda based diagnosis is lack of systematic evidence based objective methodology. Therefore, first time, an attempt is made to explore the hypothetical, logical and scientific utility of objective parameters in assessing the prakrit characteristics of skin mentioned in Ayurveda.

Skin pH

The homeostasis of skin surface pH has been essential part of the 'acid mental concept'⁵⁹. The mean pH value of the first day of life in full-term neonate is 7.08, which is significantly higher than in adult controls (pH 5.7)⁶⁰. A decrease in pH occurs from day 3 to day 30⁶¹ and pH values later in infancy are similar to that of adults and normal value of skin pH is 4.5 to 5.5⁶². Dryness of the skin increases when skin pH value is raised because increased in pH value increases the activity of serine proteases, kallikrein-5 and 7, which is involved in desquamation and degradation of corneo-desmosomes and that increases dryness⁶³. Increased pH reflects cutaneous irritation and may provide media for growth of bacterial flora of the skin. So, if any pathological condition, such as atopic dermatitis and candida infection are not present but skin pH is raised, it can be inferred as the feature of vatika Prakriti skin. Because increased pH value reduces the antibacterial and antimycotic properties of the skin surface, which enables more frequent occurrence of skin infection suggest one feature of vatika

Prakriti⁶⁴. It is a well-known fact that kaphaja person have relatively good immunity in comparison to individuals of single doshik Prakriti and excellent in tri Doshaja or sama Prakriti. Kaphaja person have low value of pH, therefore, the incidence of skin disorders like fungal or microbial growth will be least in kaphaja Prakriti such inference needs further validation by researches on infant's or children's skin. After excluding Vikriti, it may be inferred that lower side of normal range of skin pH is due to Kaphaja Prakriti, mid of normal range belongs to Pittaja Prakriti and higher side due to Vatika Prakriti. Both sebum content, and hydration of skin correlate significantly with surface pH, an increase in sebum content and hydration is related to decrease in surface pH.

Stratum corneum hydration

Stratum corneum hydration has an important role in skin function such as regulating epidermal proliferation, differentiation and inflammation⁶⁵. Normal value of stratum corneum hydration does not change with age and sex but depends on site of body. Normal range of stratum corneum hydration at forearm site is 49.74 ± 19.25 IU⁶⁶. Decreased stratum corneum hydration and altered permeability barrier functions are associated with many pathological conditions such as atopic dermatitis, psoriasis and ichthyosis⁶⁷⁻⁶⁹. Hydration of stratum corneum is related to dryness of skin so if value of stratum corneum hydration is decreased leads to increased severity of dryness. In Ayurveda dryness is a feature of Vatika Prakriti while smoothness is feature of Kaphaja Prakriti. So, after excluding pathological conditions, decreased stratum corneum hydration value may suggest Vatika Prakriti features manifested in skin while increased stratum corneum hydration suggests Kaphaja Prakriti.

Trans-epidermal water loss

Measurement of Trans-epidermal water loss is used to assess skin water barrier function. Normal value of TEWL is 15.49 ± 11.47 g/meter²/hour and it is not variable as per sex but value of TEWL changes as per anatomical site due to variation in thickness of skin layers. Variation in TEWL level is due to different factors such as skin blood flow, skin temperature, stratum corneum lipid contents and degree of corneocyte formation⁷⁰. TEWL measurements should be carried out in a special room with standard conditions (stable temperature and stable relative humidity). It is also known that the TEWL value depends not only on the type of skin, but also on the emotional condition of a person and other parameters, like the day time and the season. Therefore, the medical interpretation of a measured TEWL value is difficult. Several studies have confirmed the correlation between increased values of TEWL and decreased values of skin hydration^{71, 72}. In physiological stage, Vatika Prakriti person should have higher value of TEWL and Kaphaja Prakriti person should have lower value of TEWL.

Sebum content assessment

Sex and age have no significant effect on sebum content but anatomical variation is significant. Sebum secretion is highest on nasolabial fold and lowest on leg⁷³. Snigdhangha (Oily skin)⁷⁴ is a feature of Kaphaja Prakriti while Sphutitanga (Cracked skin)⁷⁵ of Vatika Prakriti. Therefore, increased sebum secretion will be in Kaphaja Prakriti, less in Vatika Prakriti and in between in Pittaja Prakriti person.

Skin elasticity

Skin elasticity property depends on collagen content of skin and it is highest on 20-30 years age group and lowest in older age and it has no significant relation with sex. Pittaja Prakriti person have loose skin⁷⁶ and Kaphaja Prakriti person have compact skin⁷⁷ so we can say that Kaphaja Prakriti person shall have more skin elasticity and collagen content while the Pittaja Prakriti person shall have less skin elasticity and collagen content.

Skin thickness

Thick skin is a feature of Kaphaja Prakriti whereas thin skin of Vatika Prakriti and Pittaja Prakriti individuals' skin thickness is considered in between. By the use of ultrasonography we can make standard criteria for Prakriti wise in regard to skin thickness. Eczema, edema and epidermal hyperplasia are pathological conditions that can cause more skin thickness and should be excluded.

Skin color

Skin color is not a genuine physical quantity but a sensory perception based on color vision. It is believed that basic skin color continued to be constant throughout the life of an individual. In reality, however the color of skin shows considerable variation throughout the life of an individual⁷⁸ because of exposure to various factors. In spite of these variations, color characteristics have been included in Prakriti assessment in maximum textbooks of Ayurveda (detail in Table 1). Visual assessment i.e. inspection method remains one of the "gold standard" methods for assessing skin color but observer variability is more common in this method. In last few years, many techniques have been developed for the assessment of skin color as Fitzpatrick photo typing scale, visual comparisons of skin color with standardized sets of colored paper method are too subjective to obtain reliable results. Since the development of spectrophotometer (skin reflectance instruments), RGB and HSV methods, many studies^{79,80} on human skin color have been done including skin color of infants. Out of these equipments, a skin reflectance instrument is better than any other instrument because of minimum chances of error. Two types of skin reflectance instruments are available for the determination of skin -a tri stimulus colorimeter using the CIE L*a*b* color system and narrow band simple reflectance meters using the erythema / melanin indices (E Index and M index). Sensitivity of narrow band simple reflectance

meters is better than tristimulus colorimeter because narrow band simple reflectance instruments are able to characterize skin color, to quantify small skin color changes and error variability is low. Normal persons with different Prakriti have different skin color presentation i.e. individual color variation. For the purpose of management, such individual variation has been broadly, categorized in accordance to Prakriti in Ayurveda such as Vata Prakriti individuals show lusterless skin⁸¹ and dusky skin color, while the Pittaja Prakriti person's body is yellowish and their eyes, lips, palms and soles are coppery color⁸². The complexion of Kapha Prakriti person is Shweta (Whitish) or Avadatgatra (fair complexion)⁸³. Normal value of erythema index in person having age 10 or more than 10 years is 378.14 +- 124.50 for male and 303.63 ± 100.73 for female on forehead region. Normal value of melanin index is 214.82 ± 77.66 for male and 176.82 ± 58.42 for female on forehead region⁸⁴. It requires further research to affirm these values in infants for the correlation and to differentiate with different type of Prakriti. This method can be very useful in differentiating normal skin with the pathological or diseased states that can change color of skin in anemia, jaundice, hypoxia and carbon monoxide poisoning. Personal factors (age, sex, race, anatomical site, skin surface properties) and environmental factors (light conditions, temperature) and different procedures may affect the skin color⁸⁵, so that a standard protocol should be followed in all children included in study to get findings and comparison and inference.

Skin temperature Assessment

There is no 'gold standard' for measuring true body temperature. However, rectal temperature by mercury-in-glass thermometer is found to be a more precise measurement of body temperature due to smaller standard deviation than axillary temperature. The rectal site is not, influenced by ambient temperature while axillary route is influenced by ambient temperature and evidences suggest that axillary temperature have low sensitivity and can give false reading due to brown fat in neonates. An infectious hazard; an outbreak of Salmonella cross infection, transmission of human immunodeficiency virus and rectal perforation can be the complication of rectal route temperature measurement⁸⁶. For measurement of temperature in physiological studies, rectal temperature is the best and have less error^{87,88}. There are many potential benefits to infrared ear thermometry. The technique is fast and easy to use without risk of cross infection and is not influenced by environmental temperature, and is considered most favorable in terms of easy, speed, and safety than oral or rectal thermometer⁸⁹. Pulse oxymeter method for temperature assessment is also a good technique but it provides surface temperature. However, it is not frightening for small children and procedure usually does not cause discomfort and pain with least chance of infection. Room temperature is kept at optimum level to prevent error caused by thermal instability. An ideal thermometer should be convenient, easy, comfortable to use, produce instant result, not resulting in cross infection, not influenced by ambient temperature, safe and cost

effective. Body temperature measurements vary depending on the site where the temperature is taken. Skin temperature is influenced by many factors for example moisture evaporation, tissue heat transfer, etc. Therefore, for avoiding variation in actual findings, one protocol should be prepared for the temperature assessment infants. As per Ayurvedic texts, Ushna is a attribute of Pittajaa Prakriti, Anushna-shitaattribute of Vatika Prakriti while Sheeta is the quality of Kaphajaa Prakriti⁹⁰. Therefore, facial skin temperature of Piitaja Prakriti individual tends to have a higher than normal body temperature, sweat a lot, and intolerance to hot weather. On the other hand Kaphajaa Prakriti persons have low body temperature and intolerance to cold weather while Vatika Prakriti individuals have in between.

CONCLUSION

This is the first attempt to elaborate skin characteristic according to Prakriti and use of different objective and subjective parameters to differentiate Prakriti skin characteristics from Vaikrit skin. On the list of subjective criteria, inspection and palpation is the best for skin texture and skin color assessment. Palpation (touch) method is best for skin temperature assessment. For the assessment of skin textures, skin pH method, TEWL method and stratum corneum hydration assessment methods are preferable objective methods. Skin color by derma spectrophotometer and RGB, HSV method in which derma spectrophotometer is better. Assessment of skin temperature is done by mercury in glass thermometer or pulse oxymeter. Among which, mercury in glass is better and cheap. All the methods maybe affected by personal and environmental factors so one standard protocol should be followed in each case. By application of these methods, gathered values shall be helpful to validate the subjective parameter based Prakriti. These data may be definitive or supportive to main Prakriti deciding features and/or data. After Prakriti determination of infant useful guidelines can be developed to make a right judgment for prevention, treatment, prognosis and Pathya/ Apathya Aahar-vihar etc. These gathered data could also be helpful to form a sensitive and specific framework for forecasting the future disorders in children.

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