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## AN OBSERVATIONAL STUDY ON *CHARAKOKTHA TWAK SARA PAREEKSHA* IN *PANDU ROGI*

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### ABSTRACT

**Background:** Nowadays in the era of scientific globalization of *Ayurveda*, it is important that we must prove our concept in the language of modern science. **Aim and objective:** To evaluate the status of *Twak Sara Purusha* in *Pandu Rogi* with special reference to mild and moderate anaemia. **Materials and methods:** The present study is a cross sectional observational study, conducted in 153 patients of mild and moderate anaemia categorized based on diagnostic and inclusion criteria. Detailed history taken with a specially designed case proforma and *Charakoktha Twak Sara Purusha Lakshanas* assessed with a validated questionnaire. **Results:** On analysis of *Twak Sara Purusha Lakshanas* in *Pandu Rogi* with special reference to mild anaemia and moderate anaemia showed a considerable change in the status of above mentioned *Sara Purusha Lakshanas* within and between two groups of mild anaemia and moderate anaemia.

**Keywords:** *Sara, Pandu Rogi, Twak Sara Pareeksha, questionnaire, mild anaemia, moderate anaemia*

## INTRODUCTION

Ayurveda is an observation based science. Assessment of health, disease and response to treatment are done mainly by clinical observation by the physician. In earlier decades Ayurvedic practitioners were not aware of many modern investigations. But the advanced present era has a vast area of investigations which nowadays are a routine in Ayurvedic practice. One such area is the assessment of *Dhatu Sara Lakshanas*. In order to bring scientific validation to the principles of *Ayurveda* in the modern era and to contribute to its basic principles the *Sara* concept should be supported with solid evidence using modern parameters. A healthy skin reflects the optimal nutritional state of the body. Thus in fact, according to *Acharya Dalhana*, *Rasa Sarata* is best revealed on *Twak* and this might be the reason for *Rasa Sarata* being designated with the name of *Twak Sarata* [1]. The word “*Twak-Sara*” means “Persons possessing an excellent quality of skin and *Rasa* residing in the skin”. In the description of *Twak Sara* narrated in *Kashyapa Samhita*, expounds that person having *Rasa Sara*, will not be affected by diseases of *Twak* and will be devising *Prasanna* and *Kanti*. This implies that the *Rasa Dhatu* having best qualities will be circulating beneath the skin in such

individuals. Further he adds that easy and quick cure of *Twak Roga* as the *Rasadhatu* has the capacity to repair it through its own *Preenana Karma* [2]. As it is making *Preenana Karma* of all *Dhatu*s, aids to conserve *Dhatu Bala* in the body, thereby upholding the status of health. So *Charaka* may have mentioned *Arogya* as *Twak Sara Purusha Lakshana*. *Loma*, generally the term *Loma* applies to the hairs present on scalp, moustache, beard etc. and the body hairs apart from it are regarded as *Loma*. As *Rasa* is *Dravadhātu*, which is continuously circulating beneath the skin and other structures, so the *Mruduta*, *Snigdhatu* may have been included as its qualities and continues circulation *Rasa* also help for *Prasannata*, *Sukumarata* of *Twak* and *Loma*. *Pandu* is a *Pitta Pradhana Tridoshaja Vyadhi* affecting the *Rasa*, *Raktha* and *Mamsa Vaha Srotas*. *Panduroga* is analogous to anaemia and globally affects 24.6 % of population.

## AIMS AND OBJECTIVE

To evaluate the status of *Twak Sara Purusha* in *Pandu Roga* with special reference to mild anaemia and moderate anaemia.

## METHODOLOGY

### Diagnostic criteria

- Mild anaemia – female -11.0g/dl to 11.9g/dl and males -11.0g/dl to 12.9g/dl

- Moderate anaemia – 8.0g/dl to 10.9g/dl in males and females

Based assessment of severity of anaemia, based on haemoglobin levels according to WHO [3].

#### Inclusion criteria

- Patient between 18 - 60 years of age of either sex
- Fulfilling diagnostic criteria and ready to sign the written consent

#### Exclusion criteria

- Severe anaemia (hemoglobin level less than 8.0 g/dl)
- Age group less than 18 years and more than 60 years
- Diagnosed case of HIV, TB, STD
- Pregnancy

#### Assessment criteria

Under 2 main domains – *Twak* (skin) and *Loma* (bodily hairs), 9 sub domains under each domain that are *Snigdha*, *Slakshna*, *Mrudu*, *Prasanna*, *Sookshma*, *Alpa*, *Gambheera*, *Sukumara* and *Saprabha*. Total 37 questions under that 23 questions of *Twak* (skin) and 14 questions of *Loma* (bodily hairs).

#### *Twak* (skin)

*Snigdha Twak* (oiliness of skin) evaluation with 10 sub questions. Subjective assessment will be done on interrogating of how moist is your skin surface (face) 1-2 hours after face

wash without applying any moisturizer, toner or any other products; score 3 will be given for normal skin, 2 for mild oiliness, 1 for moderate oiliness and 0 for severe oiliness [4]. Oiliness in blotting paper will be tested by wiping over forehead with a blotting paper and grading will be done based on the oiliness on the blotting paper; score attributed will be 0 for absence of unctuousness, 1 for mild unctuousness, 2 for moderate unctuousness and 3 for severe unctuousness [5]. For measuring the *Snigdhata*, examiner will be stroking the forehead with index finger and observe for the slipperiness; also noting for the stickiness of forehead on touch and with examiners index finger on stroking and observing for the oiliness over the examiners finger; score 1 and 0 will be attributed for presence and absence of oiliness. Respectively for the three methods [6]. On interrogation by subjective analysis does the skin feels uncomfortable 1 – 2 hours after face wash without applying any moisturizer, toner or any other products on T-Zone of face and score 0 and 1 will be attributed for the answers yes and no. Score 1 will be given if the individual uses emollient on skin and 0 for not using. If yes; detailed enquiry will be done with three sub questions. Based on the usage with respect to season – winter

(October, November, December, January), summer (February, March, April, May) and Monsoon (June, July, August, September). Score 0 will be attributed if using in all seasons, 1 for using 2 seasons and 2 for using only in 1 season. If yes; enquire on type of emollient using - cream, ointment, gel, lotion and specify others if any; no score will be attributed for this question. If yes; by asking based on how often the usage in a day scores will be attributed as 3 for occasional use, 2 for once daily, 1 for twice daily and 0 for more than two times a day. *Slakshna Twak* (smoothness of skin) assessment will be done by inspecting the face, interscapular region, forearm, calf region for presence of keratinization, scar tissue, flakes / scales on excoriation, warts, papilloma and scores 3 will be given for none of these, 2 for any one present, 1 for any two present and 0 for three or more present [7, 8]. *Mrudu Twak* (softness of skin) will be evaluated by gently lifting the skin between the thumb and index finger and score 1 will be given for normal skin turgor (takes <3 sec to come back to normal) and 0 for impaired skin turgor. Also on interrogation ask for the skin remains soft without seasonal changes and scores 1 and 0 will be attributed for the answers yes and no [9]. *Prasanna Twak* (clear skin) assessment will be done by careful inspection on the

basis of skin integrity over back of neck, forearm and calf muscle region for fragile, pressure injury, flake / scale, wound, scarring, callus, cellulitis and any other known skin disorders; score attributed will be 3 for none of these present, 2 for 1 - 2 of these present, 1 for 3 - 4 of these present and 0 for more than 4 present [10]. *Sookshma Twak* (fine skin) evaluation will be done on the basis of subjective sensation of painful skin, itchy skin and tingling sensation at three different areas of body. For assessment of painful and itchy skin brushing over scalp surface, superficial palpation (above clothing) over pectoral region, abdomen and lateral aspect of thigh and leg; score 0 and 1 will be attributed for presence and absence of painful and itchy skin. Subjective assessment will be done for tingling sensation over scalp, pectoral and lateral aspect of thigh and leg, score 0 and 1 will be attributed for presence and absence of tingling sensation [11]. *Alpa Twak* – Fixation of skin will be evaluated by palpating the skin with index and thumb finger; score 3 will be given for normal skin, 2 for slight thickening, 1 for moderate thickening and 0 for severe thickening [12]. *Gambheera Twak* refers to texture of skin evaluation will be done by palpating over cheeks, triceps and calf muscles for firmness and score 1 will be attributed for firm skin

and score 0 will be attributed for sagging skin. *Sukumara Twak* refers to sensitive skin. The evaluation done based on interrogating with the patient regarding the reactive and non – reactive skin on changes in use of cosmetics, soap, gel, jewelries or climate. Score 1 will be given for answer yes and 0 for answer number. *Saprabha Twak* refers to Lustreness of skin and that will be evaluated with three visual analogue scales. Status of complexion will be checked with the help of Fitzpatrick skin tone scale - fairness meter [13]. No scores will be attributed for this question. On inspection assessment will be done on cheeks and forehead for hypo pigmented area or whitish patches; score 0 and 1 will be given for presence and absence of hypo pigmented area. Also inspection will be done for glossiness of skin against light source on cheeks and forehead; score 1 and 0 presence and absence of glossiness of skin against light.

### **Loma (bodily hairs)**

*Snigdha* (unctous) at *Loma* is assessed on inspection of scalp (scalp hairs) for the presence of dandruff, score 0 is attributed for dandruff present and 1 for dandruff absent. *Snigdha Loma* also considered by checking the unctuousness of bodily hairs at forearm or leg by gently rubbing the hairs in between the fingers with blotting paper and at scalp

by gently rubbing the scalp hairs in between the finger with blotting paper; score 1 and 0 will be attributed for presence and absence of unctuousness. *Slakshna Loma* (smoothness of hairs) checked by gently rubbing the fingers above the scalp hairs and score 1 and 0 allotted for presence and absence of smoothness respectively. *Mrudu Loma* (softness of hairs) assessed by holding the hairs over forearm and legs below knee in between thumb and the index finger, gently move the fingers upwards and score 1 will be attributed for smoothness present, 0 for absent and no score given for not eliciting the test due to waxing. *Prasanna Loma* (Healthy hair) by observing the natural scalp hair color entailing options of brown to black, reddish to brown and jet black and no score will be attributed for this question. Also on inspection of scalp hairs and beard/moustache for the presence of grey hairs and score 0 and 1 will be given for presence and absence of grey hairs. *Sookshma Loma* by assessed by inspecting the visual appreciability of bodily hairs (at forearm) from a distance of a meter and score 1 and 0 will be attributed for presence and absence of visual appreciability of bodily hairs; no score given for not eliciting the test due to waxing. *Alpa Loma* (sparsity) assessment will be done on bodily hairs

(mainly on forearm, legs below knee and chest) by careful inspection of follicles; score 1 and 0 will be attributed for presence and absence of scarcity of bodily hairs no score given for not eliciting the test due to waxing. Also *Alpa Lomata* assessment done on inspecting the volume of scalp hairs; score 0 will be given for thin (with visible scalp), 1 for medium (visible scalp without the use of any emollient) and 2 for thick (with non-visible scalp). Assessment of baldness will be done for assessing *Alpa Lomata* by careful inspection of scalp hairs; score 0 and 1 will be attributed for presence and absence of baldness. *Gambheera Lomata* (deep rooted hairs) evaluation will be done with hair pull test by grasping a hair with index and thumb

finger to determine if it can be extracted with pull on scalp hairs and forearm (leg if waxed); score 0 will be attributed for easily extractable, 1 for elongated or tapered end and 2 for not extractable of hairs and no score given for not eliciting the test due to waxing. *Sukumara Loma* (delicate hairs) assessment done on interrogating with the patient rising two questions- do your hairs and eye lashes fall easily; score 1 and 0 will be attributed for answer no and yes respectively. For *Saprabha Loma* (Lustrelessness of hairs) evaluated by inspecting the glossiness of scalp hairs against light and score 1 will be attributed for present and 0 for absent.

## OBSERVATION AND RESULT

Table (a): Showing the Chi square test of *Twak Sara (Twak)* among mild anaemia and moderate anaemia

S. No.	Question	Category	Mild anaemia N=153					Moderate anaemia N=153				
			F	%	X <sup>2</sup>	P	S	F	%	X <sup>2</sup>	P	S
1	Moistness of skin surface 1-2 hours after face wash	Normal	91	95.5	106.6	0.00	HS	58	37.9	46.55	0.00	HS
2	Oiliness in blotting paper	Absent	73	47.7	40.74	0.00	HS	70	45.8	82.94	0.00	HS
3	Slipperiness of skin when stroked	Absent	79	47.7	0.163	0.68	NS	102	66.7	42.88	0.00	HS
4	Stickiness of skin on touch	Absent	89	58.2	4.085	0.04	S	117	76.5	42.88	0.00	HS
5	Oiliness of finger after stroking of skin	Absent	98	64.1	12.08	0.00	HS	120	78.4	47.47	0.00	HS
6	Uncomfortable feel 1-2 hours after face wash	Yes	104	68.0	19.77	0.00	HS	112	73.2	32.94	0.00	HS
7	Do you use emollient on skin	Yes	112	73.2	32.94	0.00	HS	90	58.8	4.765	0.02	S
8	If yes; use of emollient in which season – Winter/ Summer/ Monsoon	In all seasons	100	65.4	148.4	0.00	HS	78	51	40.89	0.00	HS
9	If yes; which among these do you apply	Cream	48	31.4	73.05	0.00	HS	54	35.3	68.97	0.00	HS
10	If yes; how often do you apply in a day	Twice daily	50	32.7	33.79	0.00	HS	38	24.8	22.93	0.00	HS

Table (b): Table showing the Chi square test of *Twak Sara (Twak)* among mild anaemia and moderate anaemia

S. No.	Lakshana	Mild anaemia (N=153)						Moderate anaemia (N=153)				
		Category	F	%	X <sup>2</sup>	P	S	F	P	X <sup>2</sup>	P	S
1	Slakshna	None of these present	94	61.4	118.3	0.00	HS	90	58.8	107.52	0.00	HS
2	Mrudu	Normal	145	94.8	122.6	0.00	HS	140	91.5	105.41	0.00	HS
	Mrudu (soft throughout the year)	Yes	108	70.6	25.94	0.00	HS	71	46.4	0.791	0.37	NS
3	Prasanna	None of these present	96	62.7	76.03	0.00	HS	56	36.6	116.30	0.00	HS
4. Sookshma		Scalp-absent	151	98.7	145.1	0.00	HS	151	98.7	145.11	0.00	HS
	a. Painful skin	Pectoral-absent	151	98.7	145.1	0.00	HS	149	97.4	137.41	0.00	HS
		Lateral aspect of thigh-absent	151	98.7	145.1	0.00	HS	148	96.7	133.65	0.00	HS
		Scalp-absent	141	92.2	108.7	0.00	HS	136	88.9	92.556	0.00	HS
	b. Itchy skin	Pectoral-absent	142	92.8	112.1	0.00	HS	136	88.9	92.556	0.00	HS
		Lateral aspect of thigh-absent	142	92.8	112.1	0.00	HS	138	90.2	98.882	0.00	HS
		Scalp-absent	148	96.7	133.6	0.00	HS	145	94.8	122.67	0.00	HS
	c. Tingling sensation	Pectoral-absent	147	96.1	129.7	0.00	HS	134	87.6	86.43	0.00	HS
		Lateral aspect of thigh-absent	138	90.2	98.88	0.00	HS	131	85.6	77.65	0.00	HS
		Normal skin	127	83.0	173.0	0.00	HS	112	73.2	206.13	0.00	HS
5	Alpa – fixation of skin	Normal skin	127	83.0	173.0	0.00	HS	112	73.2	206.13	0.00	HS
6	Gambeera-firmness	Firm skin	140	91.5	105.4	0.00	HS	126	82.4	64.059	0.00	HS
7	Sukumara	No	86	56.2	2.359	0.12	NS	98	64.1	12.085	0.00	HS
8	Saprabha	Status of complexion-4	115	75.2	214.0	0.00	HS	80	52.3	160.17	0.00	HS
		Hypo pigmented area-present	90	58.8	4.785	0.29	NS	83	54.2	1.105	0.29	NS
		Glossiness-absent	100	65.4	14.43	0.00	HS	123	80.4	56.539	0.00	HS

Table (c): Showing Chi square test result between *Twak Sara (Loma)* in mild and moderate anaemia patients

S. No.	Lakshanas		Mild anaemia (N=153)					Moderate anaemia(N=153)				
			F	%	X <sup>2</sup>	P	S	F	%	X <sup>2</sup>	P	S
		Presence of dandruff	97	63.4	10.98	0.00	HS	97	63.4	10.98	0.00	HS
		Forearm/ leg	98	64.1	12.73	0.00	HS	120	78.4	52.45	0.00	HS
		Scalp hair	104	68.0	15.90	0.00	HS	122	79.7	57.27	0.00	HS
2	<i>Slakshna</i>	Smoothness of hairs	107	69.9	20.63	0.00	HS	123	80.4	56.52	0.00	HS
3	<i>Mrudu</i>	Softness of hairs	107	69.9	26.28	0.00	HS	114	74.5	39.26	0.00	HS
4	<i>Prasanna</i>	Natural hair color-reddish to brown	128	83.7	176.0	0.00	HS	115	75.2	126.1	0.00	HS
		Presence of grey hair	106	69.3	22.75	0.00	HS	114	74.5	36.76	0.00	HS
5	<i>Sookshma</i>	Visual appreciability of hairs-present	87	56.9	4.195	0.04	S	Absent				
								77	50.3	0.026	0.871	NS
6	<i>Alpa</i>	Sparsity of bodily hair-present	87	56.9	3.503	0.06	NS	79	51.6	0.237	0.623	NS
		Volume of scalp hairs -medium	98	64.1	84.24	0.00	HS	95	62.1	79.52	0.00	HS
		Baldness	86	56.2	2.35	0.12	NS	93	60.8	7.118	0.008	S
7	<i>Gambeera</i>	Hair pull test: tapered end	85	55.6	53.33	0.00	HS	80	52.3	63.40	0.00	HS
8	<i>Sukumara</i>	Hair fall-Yes	80	52.3	0.320	0.57	NS	94	61.4	8.007	0.005	S
		Eyelash fall	93	60.8	7.118	0.00	HS	106	69.3	22.75	0.00	HS
9	<i>Saprabha</i>	Polish against light	115	75.2	38.75	0.00	HS	126	82.4	64.05	0.00	HS

## DISCUSSION

Owing to derangement in the *Snigdha Guna* of *Pitta*, *Prakritha Kledana Karma* of *Pitta* changes, additionally due to vitiation of *Rakta* by *Dushita Pitta Varna* of *Twak* changes. Also *Prakrutha Rakta Dhātu* vitiated by *Vata* cause *Rookshata*. It can also have attributed by the *Dushita Kapha* predominantly due to derangement of *Kleda Guna*, *Sthira Guna*. In the context of sweat production from the epidermis especially from the acerine gland that contains sodium, Chloride, potassium, iodine, sulphate, iron,

zinc, amino acid, fat and few proteins. On nutritional deprivation, sweat production correspondingly affected thus resulting in dryness of skin [14]. *Slakshna* denotes *Manohara* [15]. Person possessing the *Rasa Sarata* having well nourishment of *Shareera Kleda* reservoir in turn the *Preenana* function of *Rasa Dhātu* get prospered. Reduced nutritional status having similar impact on the cutaneous system. Iron is a vital co-factor for proteins and enzymes involved in maintenance of healthy skin, mucous membranes, hairs and nails [16]. *Mrudu* in



the context of skin refers to *Komala*. Nutritional derangements may lead to skin changes such as xerosis and roughness, rashes, pigmentation [17, 18]. *Prasanna* means *Nirmala* that is devoid of *Mala* [19] (impurities) can be assumed as clear skin. In the *Vidhishonitheeya Adhyaya* depicting *Shudharaktha*, *Prasanna Indriya* have been mentioned. In this context it can be assumed to *Twak Indriya* [20]. Through proper *Ahara Parinama* raw material for *Dhatu Poshana* will be adequate thus *Mala (Kitta)* formation also compact. The present study in mild anaemia and moderate anaemia presented with none among fragile, pressure injury, flake/scale, wound, scarring, callus, cellulitis or any other known skin diseases. *Dhatu* are said to *Sarva Shareera Sanchari*. *Dosha* vitiates *Rasa* as well as *Rakta* and manifestation are appreciated in *Twak* based on *Kha Vaigunya*. *Vikuna* is said to be a derangement of *Twak*, which can be explained as due to *Prakupita Vata* causing *Indriya Bhramsha* specifically *Twagindriya Bhramsha*. *Sookshma* refers to minuteness, that can traverse even through minute channels [21, 22]. According to *Acharya Sushruta*, the 24 *Dhamanis* divides and subdivides into *Sahasra* and terminate in skin; *Twaknibhadha* [23]. Also nutritional disorders (nicotinic acid, Vit-A, Vit-E, Vit-C,

Vit-B<sub>12</sub>, Zinc, Selenium) affecting the cutaneous systems with the symptoms of altered sensations, numbness, pinpricks, change in turgor, etc. [24]. *Alpa* denotes to *Kshudra* refers to thinness of skin. Usually normal skin epidermis comprised of stratified squamous epithelium. In nutritional deprivation capable of causing change in thickness of the skin epidermis [25]. *Gambheera* refers to the *Nimna* (deep seated) correlated to firmness of fixation of the skin. *Ahara Parinama* is proper each single layers of the skin nourished and formed properly. *Sukumara* can be equated to the context of skin immune system. Epidermis contains antigen that possess capacity to circulate [26]. Langerhan's cells migrates to skin from the bone marrow, are dendritic cells that serves as antigen-presenting cells. Thus, the skin alerts lymphocytes, if barrier breached by invading microorganisms. Langerhans cells present antigen to helper T cells, facilitating their responsiveness to skin associated antigens (SALTS-skin associated lymphoid tissue) [27]. *Prabha* is said to be *Tejasi* in nature and *Taila Lipta* or *Sneha Padarthas* have the tendency to produce glistening nature in the body. It is indicative of *Tejasa Guna* in the body. So *Twak Sara Purusha* will have *Tejasa* or *Prabhayukta Twak*.

### (b) Discussion on *Twak Sara* assessment-on *Loma*

*Prakrutha Rasa* and *Rakta Dhatu* vitiated by *Vata* cause *Rookshata*. It can also have an impact on *Kesha* and *Loma* as they are also part of integumentary system [28]. *Slakshna Loma* denotes smoothness of hair. Individual owning the *Rasa Sarata* having well sustenance of *Kleda* reservoir. Sebaceous glands are also associated with hairs in the dermis to the side of hair follicle that secretes oily substances (mixture of cholesterol, triglycerides, proteins and inorganic salts). Sebum coats the surface of hairs and shielding them from becoming brittle and dry [29]. Reduced nutritional status having similar impact on the bodily hairs and scalp hairs smoothness. *Mrudu* refers to softness of hairs. In the case of nutritional scarcity, the sebum coating over the hair also diminished. As it is having the function of preventing from excess evaporation and to keep it soft and prevention of bacterial growth [30]. *Prasanna* in this context can be estimated to melanin and its keratinized cell production. Melanin is synthesized by melanocytes scattered in the matrix of the hair bulb and passes into cells of the cortex and medulla. Dark colored hair contains mostly true melanin, whereas blond and red colored hairs variants of melanin where there is iron and

more Sulphur. Greying of hair occurs because of a progressive decline in tyrosinase, whereas white hairs results from accumulation of air bubbles in the medullary shaft [31]. *Sookshma* thinning of shaft of hairs including connective tissue sheath, internal and external root sheath, cuticle, cortex and medulla of hair [32]. In the case of nutritional decline there may be possibility for thinning of each layers of the hairs shaft layers. *Alpa* refers to reduction in the quantity of *Kesha* and *Loma*. Total number of hair according to *Acharya Charaka* is about 29,956 [33] As per the western anatomy, an average 90,000-1,00,000 number of hairs in scalp. Also between 800 to 1290 hairs per square inch (124 to 200 hair per square centimeter) [34]. In case of lack of nutrition supply to hair, the growth phase gets delineated resulting in sparsity. *Gambheera* refers to deep rooted. The base of each hair follicle have an onion shaped structure, bulb. This structure houses a nipple-shaped indentation, the papilla of the hair that contains areolar connective tissue and many blood vessels that nourish the growing hair follicle. The bulb also contains a germinal layer of cells called matrix. The matrix cells arise from the stratum basale, the site of cell division and responsible for the growth of existing hairs and produce new

hairs when old hairs shed off [35]. *Sukumara* refers to delicate hairs. Hair growth is a cyclical process that involves Anagen (growth phase), Catagen (regression phase) and Telogen (resting phase) [36]. These cyclical changes involve a rapid restructuring of both epithelial and dermal components of hair follicles [37]. During the growth phase, cells of the matrix differentiate, keratinize and die. This process forms root sheath and hair shaft. In the case of nutritional deprivation, the nutritional supply to the hair follicle declined and the substances required for the growth phase will be inadequate leading to sudden detachment of hairs follicle [38]. *Prabha* is said to indicative of *Tejasa Guna* in the body. So *Twak Sara Purusha* will have *Tejasa* or *Prabhayukta Kesha* and *Loma*.

## CONCLUSION

Research is a process of re-searching the existing knowledge, analyzing multiple facets of the subject interpreting with advanced new information, testing with scientific parameters and reaching a new conclusion. Scientific and statistical validation of questionnaire on assessment of *Sara Pareeksha* and assessment of *Pandu Roga* showed relevance in effective and efficient in examination of *Sara Pareeksha* in *Pandu Roga*. Study shows changes in status

of *Twak Sara Purusha Lakshanas* in *Pandu Rogi* - 59.8 % and 53.49 % *Twak Sarata* observed in mild and moderate anaemia respectively.

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