Research Article

DEVELOPMENT OF THE ASSESSMENT CRITERIA AND VALIDATION OF *TWAK SARATA*

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ABSTRACT

Introduction: *Sara Parikshana* is the one used to evaluate every *Dhatu* & to understand physical strength as well as mind strength. For assessing *Twak Sarata*, it was necessary to develop assessment criteria for evolution of *Twak Sarata.* **Aim and objectives:** To explore*,* develop assessment criteria and survey study regarding *Twak Sarata.* **Material and Method:** 100 *Twak Sara* individuals were selected after screening process for *Twak Sarata* in total 428 apparently healthy individuals. Subjective & objective parameters were observed on these selected individuals. Then, possible scoring of objective parameters has been done and spearman's correlation test is applied to check the relation between Subjective & objective parameters. **Results:** Characteristics of *Twak Sarata* were found significant when KS test was applied. There was significant relation found between parameters like *Snigdha* and moisture meter test readings, *Snigdha* and Hair thickness, *Loma Sukumarata* and Hair thickness. **Conclusion:** *Snigdhata* of *Twak Sara* individuals assessed objectively by moisture meter test and normal range was in between 30-50% for *Twak Sara Purusha*. *Snigdhata* & *Sukumarata* of *Loma* of *Twak Sara Purusha* assessed objectively by hair thickness objective parameter by using micro-meter hair dial gauze and range was <30 μm.

INTRODUCTION

Sara Parikshana is used to determine the state of *Dhatu Sarata* and also responsible for assessing *Bala Maan* (strength)*, Ayu* (lifespan) and *Saubhagya* (good fortune).[1],[2] It gives a clear view to assess the properties and functions of *Dhatu. Sara* has been classified into eight types depending upon the predominance and quality of particular *Dhatu* of an individual's body*.

A *Twak Sara* person is characterized by *Sukshma* (thin), *Alpa* (not thick distributed), *Gambhira* (deep-rooted), *Sukumara* (soft & attractive), *Snigdha* (unctuous), *Shlakshna* (smooth), *Mridu* (soft), *Prasanna* (charming) and *Prabha* (lustrous) of *Twak* & *Loma*. These individuals are endowed with

Sukha (happiness), *Saubhagya* (good fortune and prosperity), *Aishwarya* (power), *Upabhoga* (enjoyment), *Buddhi* (intelligence), *Vidya* (knowledge), *Arogya* (healthy) and *Ayushya* (longevity).[3]

This means that *Twak Sara Purusha* has a good quality of skin and hair.

The efficiency of *Rasa Dhatu* is evaluated by *Twak Sarata.* Advancement in *Ayurveda* science is necessary to keep pace with the need for modern times. Characteristics of *Twak Sarata* mentioned in our literature are qualitative. So there was a need to develop such methods that have congruence with our ancient concept of *Twak Sarata* and measure them on quantitative criteria also*.

The present work was an attempt to develop objective parameters for the evolution of *Twak Sarata* and to prove our fundamental concept of *Twak Sarata* in the terms of modern science without disturbing basic principles.

AIM AND OBJECTIVES

1. To explore the concept of *Twak Sarata.*
2. Development of assessment criteria of *Twak Sarata.*
3. Survey study regarding *Twak Sarata.*

MATERIAL AND METHODS

Sample size: 100 *Twak Sara* (apparently healthy) individuals.

Source of Data: The study was conducted over 100 apparently healthy *Twak Sara* individuals in National Institute of *Ayurveda* campus, Jaipur. The selection of the apparently healthy individuals were done randomly irrespective of their sex & religion.

Study Design: Observational study design was adopted & then statistical tests were applied.

Method of collection of Data: 100 *Twak Sara* individuals were selected after screening process for *Twak Sarata* in total 428 apparently healthy individuals. Screening was done on the basis of proforma developed on *Sara* by *Sharira Kriya* department, National Institute of *Ayurveda* (NIA), Jaipur. The data were collected from individuals who were residing in Jaipur (mostly NIA campus area) and were apparently healthy. These selected subjects had maximum percentage of characteristics of *Twak Sarata* based on *Sara* proforma i.e. in between 50% -100%. Further, survey for this study was done on these selected individuals. Then, subjective & objective criteria were observed & data was collected.

Informed consent form

Relevant information about present study (like questionnaires, instruments and laboratory investigations related information) were properly explained in detail to the willing participants, written consent was obtained from individuals before enrolling in this study.

Ethical clearance

The research topic with aims and objectives were presented in front of ethical committee. Ethical aspects of the study were discussed. This study was approved by Institutional Ethics committee, National Institute of *Ayurveda*, Jaipur vide letter number IEC/ACA/2018/72; dated- 11-05-2018, before starting the study on subjects of *Twak Sarata*.

Inclusion Criteria

1. Subject of either sex between 16 to 40 years of age.
2. Person who were ready to give written consent.
3. Apparently healthy individuals.

Exclusion criteria

1. Subjects were less than 16 years & above 40 years of age.
2. Person were suffering from any systemic disease.

3. Person who were taking long term medicines.

Assessment of Parameters

Assessment of *Twak Sarata* features, it includes both physical and psychological features. The questionnaires were prepared based on scoring of *Twak Sara* characteristics given in *Ayurveda* text. Selected 100 individuals were then evaluated on the basis of questionnaires of *Twak Sarata*. The filling of proforma was done with written informed consent.

Scoring Method

Physical features were evaluated by physical examination. Every physical feature based on its degree was given score as 1, 2 & 3 respectively. Psychological features of subjects were evaluated by interrogation and also by analysing their behaviour at the time of interrogation.

The selected 100 *Twak Sara* apparently healthy individuals were then asked to undergo for probably objective parameters. Some Instrumental Measurements (Moisture meter test, Number of hairs per unit area, Body hair thickness, Skin fold test & Blotting paper test) and Haematological investigations [C.B.C (Complete blood count), Lipid profile and Serum albumin] were included in objective parameters. To maintain the accuracy and standardization of the results, investigations were done in clinical laboratory of NIA, Jaipur.

After observing objective parameters outcomes in 100 *Twak Sara* selected individuals, possible instrumental (i.e. moisture-meter reading, hair thickness & blotting paper test) & laboratory investigation (i.e. Serum albumin & lipid profile) based on its degree (pathological or physiological variation & normal range) was given score as 1, 2 & 3 respectively for the purpose of correlation with the subjective parameters.

Materials Required

1) For collection of blood sample- 5 mL syringe, tourniquet, spirit, cotton and EDTA vial, vial were used.
2) Instruments: Moisture meter, Skin fold calliper, Micro-meter Dial Gauge for hair thickness, stamp pad, scissors and blotting paper.

Observation

Maximum number of individuals were found in age group 25-30 i.e. 36%, 29 % in 20-25, 26 % in 16-20, 6 % in 30-35 and 3% in age group between 35- 40 years. Maximum number of participants were found females i.e. 65% while 35% were males. Maximum subjects were Hindu (97%) and 1 % of Muslim religion and the remaining (2%) were from Sikh religion. Maximum subjects (83%) were unmarried while 17% were married. Maximum number of subjects of

Moisture meter reading was found in between 30-50% (N = 61 out of 100 subjects i.e. 61%). The highest frequency of Skin fold calliper reading in females were found in between 18-29.5mm (N = 34 out of 65 subjects i.e. 52.31%) & the highest frequency of Skin fold calliper reading in males were found in between 9.5-16 mm (N = 20 out of 35 subjects i.e. 57.14%). The highest frequency of Number of hairs per area cm^2 was found in between 10-15 (N = 45 out of 100 subjects i.e. 45%). The highest frequency of hair thickness was found in between <30 μm (N = 62 out of 100 subjects i.e. 62%). The highest frequency was found normal skin type individuals when Blotting paper test was done (N =59 out of 100 subject i.e. 59%). The highest frequency of Serum Albumin was found in between 3.5-5.0gm% (N = 95 out of 100 subjects i.e. 95%). The highest frequency of Haemoglobin in females were found in between 12-15.8 (N =47 out of 65 subjects i.e. 72.31%) & the highest frequency of Haemoglobin in males were found in between 13.3-16.2g/dl (N =32 out of 35 subjects i.e. 91.43%). The highest frequency of T.L.C. were found in between 4-11 x10^3μL (N =99 out of 100 subject i.e. 99%). The highest frequency of T.R.B.C in females were found in between 4.0-5.2 x10^6μL (N =55 out of 65 subjects i.e. 84.62%) & the highest frequency of TRBC in males were found in between 4.3-5.6 x10^6μL (N =27 out of 35 subjects i.e. 77%). The highest frequency of Platelets in were found in between 150-450 x10^3μL (N =93 out of 100 subject i.e. 93%).Highest frequency of Neutrophils were found in between 40-75% (N =95 out of 100 subjects i.e. 95%). The highest frequency of Lymphocytes were found in between 20-50% (N =95 out of 100 subject i.e. 95%). The highest frequency of Monocytes were found in between 2-10% (N =93 out of 100 subject i.e. 93%). The highest frequency of Eosinophils were found in between 1-6 % (N =71 out of 100 subject i.e. 71%). The highest frequency of Basophils were found

>1 % (N =61 out of 100 subjects i.e. 61%). The highest frequency of H.C.T. in females were found in between 34-46% (N =54 out of 65 subject i.e. 83.08%) & the highest frequency of HCT in males were found in between 41-53% (N =29 out of 35 subject i.e. 82.86%). The highest frequency of M.C.V was found in between 82-98 fl (N =75 out of 100 subject i.e. 75%). The highest frequency of MCH was found in between 27-33 pg (N =78 out of 100 subject i.e. 78%). The highest frequency of MCHC was found in between 31-35 gm/dl (N =98 out of 100 subject i.e. 98%). The highest frequency of Total Cholesterol (mg/dl) was found in between <200 (N =76 out of 100 subjects i.e. 76%). The highest frequency of Triglycerides (mg/dl) was found in between 0-150 (N =82 out of 100 subjects i.e. 82%). The highest frequency of HDL (mg/dl) was found in between >60 (N =52 out of 100 subjects i.e. 52%). The highest frequency of VLDL (mg/dl) was found in between 2-30 (N =80 out of 100 subject i.e. 80%). The highest frequency of LDL (mg/dl) was found in between <130 (N =85 out of 100 subject i.e. 85%).

Statistical analysis: The results were statistically analysed by using KS (Kolmogorov -Smirnov) test on subjective parameters and Spearman's Correlation test to correlate subjective and objective parameters by using Graphpad Prism software version 8.0. P<0.05 was considered statistically significant.

Results: The characteristics of *Twak Sarata*; 1) *Snigdha* 2) *Mridu* 3) *Shlakshana* 4) *Prabha* 5) *Loma Sukumarata* 6) *Sukha* 7) *Upbhogha, Aishwarya* and *Saubhagya* 8) *Buddhi* 9) *Arogya* were found significant (p<0.0001).

The relation between *Snigdha* & Moisture meter Reading, *Snigdha* & Hair thickness and *Loma Sukumarata* & Hair thickness were found significant.

Results

Correlation between Moisture meter Readings and *Snigdha* characteristics of *Twak Sara* Individuals.

Table1: Showing statistical analysis of Moisture Meter Reading & *Snigdhata* in *Twak Sara Purusha*

Correlation between parameters	Spearman correlation coefficient (r)	p-Value	Result
Snigdha & Moisture meter Reading	0.3763	0.0001	S

Correlation between Hair Thickness and *Snigdha* characteristics of *Twak Sara* Individuals:

Table 2: Showing statistical analysis of Hair thickness & *Snigdhata* in *Twak Sara Purusha*

Correlation between parameters	Spearman correlation coefficient (r)	p-Value	Result
Snigdha & Hair thickness	0.3167	0.0013	HS

Correlation between Hair Thickness and *Snigdha* characteristics of *Twak Sara* Individuals

Table 3: Showing statistical analysis of Hair thickness & *Snigdhata* in *Twak Sara Purusha*

Correlation between parameters	Spearman correlation coefficient (r)	p-Value	Result
Snigdha & Hair thickness	0.3167	0.0013	HS

Correlation between Serum Albumin and *Mridu* characteristics of *Twak Sara* Individuals

Table 4: Showing statistical analysis of S. Albumin & *Mridu* in *Twak Sara Purusha*

Correlation between parameters	Spearman correlation coefficient (r)	p-Value	Result
Mridu & S. Alb	-0.1012	0.3163	NS

Table 5: Showing statistical analysis results of Subjective Parameters by KS-Test

Parameter	Mean	S.D.	SEM	KS Distance	P-value	Result
Snigdha	2.04	0.7775	0.077	0.2115	<0.0001	S
Mriduta	1.78	0.7860	0.078	0.2795	<0.0001	S
Shlakshna	1.94	0.7762	0.077	0.2171	<0.0001	S
Prabha	1.71	0.5559	0.055	0.3591	<0.0001	S
Loma Sukumarata	1.76	0.8180	0.081	0.3036	<0.0001	S

Table 6: Showing statistical analysis results of Subjective Parameters by KS-Test

Parameter	Mean	S.D.	SEM	KS Distance	P-value	Result
Sukha	1.12	0.3266	0.032	0.5233	<0.0001	S
Upbhoga, Aishvarya & Saubhagya	1.68	0.4688	0.046	0.4326	<0.0001	S
Buddhi	1.65	0.6416	0.064	0.2845	<0.0001	S
Arogya	1.63	0.5801	0.058	0.3182	<0.0001	S

Table 7: Showing Results of Spearman's Rank Order Correlation

Correlation between Subjective and Objective parameters	Spearman correlation coefficient (r)	p-Value	Result
Snigdha & Moisture meter Reading	0.3763	0.0001	S
Snigdha & Hair thickness	0.3167	0.0013	HS
Loma Sukumarata & Hair thickness	0.5887	<0.0001	S
Snigdha & S. Albumin	0.001854	0.9854	NS
Mridu & S. Albumin	-0.1012	0.3163	NS
Snigdha & T. Cholesterol	-0.09470	0.3487	NS
Snigdha & Triglycerides	-0.1316	0.1917	NS
Snigdha & HDL	-0.1214	0.2287	NS
Snigdha & VLDL	-0.062	0.5385	NS
Snigdha & LDL	-0.1634	0.1042	NS

S-Significant NS - Non significant HS-Highly Significant

DISCUSSION

Demographical Observations: The maximum individuals belong to age group 25-30 years (36%), unmarried (83%), majority of females (65%) & maximum number of subjects i.e. 97% from Hindu religion were found in present study. This was because present study was carried out in NIA campus area, Jaipur and most of the subjects were students,

unmarried, females & belongs to Hindu dominating area at the time screening process.

Discussion on Results of Subjective Parameters

- *Snigdha Guna* has *Vatanashaka* property & predominance of *Jala Mahabhoota*.[4] It represents the presence or absence of *Snigdhata* in the selected individuals.

- Due to the predominance of *Jala* & *Akasha Mahabhoota* in *Mridu Guna* which is *Sparshagrahya*, provides softness to the skin as well as to the whole body.[5]

- *Shlakshna Guna* provides *Aparushata* (smoothness) to the skin& due to its *Ropana* function, rapid wound healing characteristics are possessed by *Twak Sara* individuals.[6]

- *Subha Prabha* contains *Vikasi*, *Snigdha* & *Vipula* characteristics (i.e. lustrous skin).[7]

- *Sukumara Loma* were found to be similar in appearance like vellus types hairs that are fine, thin, less in number & >30m.[8] *Twak Sara* individuals have healthy skin and *Loma* as already said in *Ayurveda* text.

- *Twak Sara* person is said to be *Bhogi* (i.e, pleasure seeking) *Saubhagyashaali* (good fortune to have healthy skin) and *Aiswaryashaali* (prosperous).[9] These psychological features are not independently found in an individual and so assessed in present study together and subjectively only.

- *Buddhi* is defined as to perceive the things and to reflect.[10] When *Dhi, Dhriti* and *Smriti Bhramsa* occurs, it leads to *Sarva Dosha Prakopa* which is caused by *Asubha Karma*.[11] This leads ultimately to several physical and mental disorders.

- *Arogya* means absence of diseases & has high immunity to resist against diseases.[12] Skin also provides immunity.

Snigdhata of *Twak* which is assessed by the need of application of lotion, *Mriduta* of *Twak* and *Loma, Shlakshna, Prabha, Sukumara Loma, Sukha, Upbhoga, Aishvarya, Saubhagya, Buddhi* & *Arogya* in selected *Twak Sara* individuals were found significant (p<0.0001) in the present study.

Discussion on Observations and Results of Objective Parameters

- Moisture meter was used to assess *Snigdhata/Adrata (Kledata)* in the skin. Hence, this parameter was correlated with subjective parameters. The relation between parameters *Snigdha* & Moisture meter reading were found significant. So, *Snigdhata* in selected *Twak Sara* individuals assessed by objective parameter i.e. moisture meter test.

- *Sukumara Loma* means *Mridu Lomaka* i.e fine & soft hairs.[13] Course & thick hairs were found less in the present study. So, by this finding, the *Sukshma* and *Sukumarata* of body hairs of *Twak Sara* individual have been checked objectively. Further, this parameter was correlated with subjective parameters. The relation between parameters, *Snigdhata* & hair thickness were found significant & when hair thickness decreased (<30), *Snigdha* & *Loma Sukumarata* characteristics of *Twak Sara Purusha* increased.

- The Blotting papers are commonly used to absorb excess sebum oil from the face. Blotting paper test was done in present study & highest frequency (59%) was found of normal skin type individuals.

- The microcirculation in the skin at young age works optimally & skin cells get sufficient oxygen to remain viable & function normally.[14] Here, good quality of haemoglobin, T.R.B.C & all count represent the excellence of *Rasa Dhatu* function; *Raktapushti* & *Prinana***.

CONCLUSION

In present study, following conclusions were withdrawn:

- *Snigdhata* of *Twak Sara* individuals assessed objectively by moisture meter test and normal range for moisture was in between 30-50% for *Twak Sara Purusha*.

- *Sukshma* characteristic of *Twak Sara* individuals assessed by skinfold calliper test and normal range was 18-29.5 mm in females and 9.5-16 mm in males.

- *Alpa Loma* characteristic was present in *Twak Sara* individuals in this study and range of number of hairs per cm² area of forearm was 10-15.

- *Snigdhata* & *Sukumarata* of *Loma* of *Twak Sara Purusha* assessed objectively by hair thickness objective parameter by using micro-meter hair dial gauze and range was in between 0-30 or <30 µm. *Twak Sarata* assessed by blotting paper test based on the present study was an essential objective parameter for *Twak Sarata*.

- C.B.C. investigation is suggestive of excellence of function of *Rasa Dhatu* i.e. *Raktapushti* & *Prinana* (nourishment is also provided to the body by blood).

- Serum albumin ad Lipid profile investigations were not an assessment criteria for *Twak Sarata* based on the present study results.

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