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ORIGINAL RESEARCH ARTICLE

Development of the Assessment Criteria and Validation of *Majja Sarata*

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ABSTRACT

There is a ten-fold examination of individuals for a better assessment of the *Bala* of the individual. Determination of the strength (*Bala*), *Sara Pariksha* is described as third place. *Sara* is the supreme quality or the result of properly nourished *Dhatu* (tissue quality). *Acharya Chakrapani* has described *Sara* as "*Vishudhataro Dhatu*" or "*Utkarsha Dhatu*," which means the essence of all *Dhatu*. Every particular *Sara* is characterized by both physical as well as psychological parameters. The seven types of *Sara* provided the person *Balamana* (strength), *Ayu* (life span), and *Saubhagya* (good fortune). The 100 *Majja Sara* individuals were selected for the study. For the assessment of *Majja Sarata* following characteristics were assessed- *Mridvanga, Balwantah*, *Snigdha Swara*, *Gambhir Swara*, *Sthuladirgha Santhi*, *Vritta Sandhi*, *Shruta.* The subjective and (objective Harvard step test) parameters of *Majja Sara* were adopted using the 0, 1, 2, 3 scoring system. Based on objective criteria, the objective tests (complete blood count, bone mineral density, Harvard step test, and measurements) were performed to develop the objective parameters.

1. INTRODUCTION

The examination of *Sara* indicates *Bala* of an individuals. *Acharya Charaka* has described the examination of *Sara* in *Dashavidha Atur Pariksha* (ten-fold examination). Judging the strength of persons just by looking at their external features may be erroneous. It is just like "*Pipillika Bhara Haranavat Siddhi*" which denotes that the small-looking ants can carry much more weight than its own weight.[1] *Sara* is the supreme quality of the *Dhatu,* or the result of properly nourished *Dhatu* (tissue quality). Each *Dhatu* synthesizes its own *Sara* individually and contributes to the formation of *Sarvadhatusara*. *Acharya Chakrapani* has described *Sara* as "*Vishudhataro Dhatu*" or "*Utkarsha Dhatu*," which means the essence of all *Dhatu*.[2] Every particular *Sara* is characterized by both physical as well as psychological parameters. *Sara* of every *Dhatu* always changes.

Sara's examination leads to the knowledge of both the status of that *Dhatu* and the mind. It is formed along with the formation of *Sthayi Dhatu*. The assessment of *Dhatu* and *Bala* of *Sharir* is done by *Sara Pariksha*. The eighth type, *Saar,* provided the person *Balamana* (strength), *Ayu* (life span), and *Saubhagya* (good fortune). *Acharya Vagbhatta* has only given the types of *Sara* without describing their characteristics. Besides these, qualities opposite to what are described in *Pravara Sara*, are indicative of the absence of the excellence of respective *Dhatu* in the individual, and individuals having excellence of these *Dhatu* of moderate *Madhyama Sara* nature, are processed of respective qualities in moderate intensity.[3] According to *Acharya Charaka*, *Majja Sarata* is associated with *Mriduanga* (soft organ), *Balvanta* (strong physique), *Snigdhavarna* (refulgence/unctuous complexion), and *Snigdhgambhirswara* (pleasant and impactful voice), *Sthuladirghavritta Sandhi* (prominent long and rounded joints).[4] Moreover, according to *Acharya Sushruta*, a man with a thin a sinewy body and who exhibits traits of strength and possesses a deep, resonant voice and a pair of large and handsome eyes and who is successful in every walk of life, should be looked upon as one in whom the principle of marrow preponderates.[5]

1.1. Aims and Objectives

The aim of this study was to develop the subjective as well as possible objective parameters to assess the *Majja Sarata* by a survey study.

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2. MATERIALS AND METHODS

There is a *Dashavidha Pariksha* of individuals for better assessment and judgment of *Bala.* To achieve this positive health, *Sara Parikshana* is useful, because it gives the perfect understanding of the *Balamana* of *Majja Sara* individuals. This study is an attempt to develop the objective parameters for the assessment of *Majja Sarata,* which is described in different treatises through anthropometric measurements and objective tests (complete blood count [CBC], Harvard test, and bone mineral density [BMD]).

In the survey study, a standard *Sara* proforma was prepared on the basis of the characteristics of *Sara* given by *Acharya*. A total of 600 healthy individuals of different *Sara* were registered on the basis of classical characteristics, which are mentioned in the *Sara* proforma at the National Institute of Ayurveda (NIA), Jaipur. The questionnaire was developed on the basis of *Majja Sara's* special characteristics. After that, 115 *Majja Sara* individuals were screened out, and among them, 100 *Majja Sara* persons were selected for the study. All the selected individuals were further investigated for inclusion and exclusion criteria. The detailed account of history was taken, and physical examination of each individual was undertaken on the basis of the proforma. The subjective parameters of *Majja Sara* were adopted for the scoring system. For the assessment of *Majja Sarata* following symptoms were assessed-*Mridvanga*, *Balwantah*, *Snigdha Swara*, *Gambhir Swara*, *Sthuladirgha Santhi*, *Vritta Sandhi*, *Shruta.* Based on objective criteria, the objective test was performed to develop the objective parameters on the selected healthy individuals. The measurements of the parameters were taken in cm by the measuring scale, Vernier-caliper, and relevant BMD test in camps organized at NIA Jaipur. The grading was given for the efficiency of the physical strength on the basis of the score of the Harvard step test. The correlation was done between subjective (*Bala*) and objective (Harvard step test). The analysis of *Majja Sara* Data, the Kolmogorov–Smirnov normality test for subjective parameters, and the Spearman correlation test for correlation of subjective (*Bala*) and objective (Harvard step test) were applied by GraphPad Instat 3.

2.1. Inclusion Criteria

- Person of either sex between 16 and 40 years of age
- Apparently healthy individuals are included
- The person who will be ready to sign the consent form.

2.2. Exclusion Criteria

- Person below 16 and above 40 years of age
- Person who suffering from any bone marrow disease
- Person with joint disease
- Person who is taking undergone any medication.

2.3. Assessment Criteria

2.3.1. Subjective parameters

2.3.1.1. Mridvanga
Mentioned in table 1 below.

2.3.1.2. Balwantah
Mentioned in table 2 below.

2.3.1.3. Snigdha Swara
Mentioned in table 3 below.

2.3.1.4. Gambhira Swara
Mentioned in table 4 below.

2.3.1.5. Sthuladirgha Sandhi
Mentioned in table 5 below.

2.3.1.6. Vritta Sandhi
Mentioned in table 7 below.

2.3.1.7. Shruta
Mentioned in table 6 below.

2.3.2. Objective parameter

2.3.2.1. Harvard step test
Mentioned in table 8 below.

2.3.2.2. BMD
Mentioned in table 9 below.

3. OBSERVATIONS AND RESULTS

The observation and result are mentioned in table 10, 11, 12 below.

3.1. Subjective Parameters

The incidence of *Majja Sara* maximum (79%) age is 21–30 years, and 45 were male and 55 were female. *Mridvanga's* character has 40 individuals in grade three, 39 were in grade two, and 15 were in grade one. The distribution of *Balwantah* was 43 as grade three, 35 as grade two, and 17 as grade one. The distribution of *Snigdha Swara* 35 was grade three, 34 were grade two, 20 were grade one, and 11 were grade zero. The distribution of *Gambhira Swara* 44 was as grade two, 28 were grade three, 19 were grade one, and nine were grade zero. The distribution of *Sthuldirgha Sandhi* 35 were grade two, 29 were grade three, 24 were grade one, and 12 were grade zero. The distribution of *Vritta Sandhi* 43 was grade three, 37 were grade two, 12 were grade one, and eight were grade zero. The distribution of *Vritta Sandhi* 39 was grade three, 37 were grade two, 17 were grade one, and seven were grade zero.

3.2. Objective Parameter

In the male, 29 were as between the normal range of hemoglobin for male (14–18 g/dL) and 43 were between the normal range of Female (11–15 g/dL), the 32 were between the normal range of total red blood cells for male (4.5–5.9 × 10^6/μL) and 46 were between the normal range of Total red blood cells for female (4–5.2 × 10^6/μL), 79 were between the normal range of neutrophil (45–74%**)**, 88 were between the normal range of lymphocyte (16–45%**)**, 84 were between the normal range of Monocyte (4–10%**)**, 98 were between the normal range of basophil (0–2%), and 88 were between the normal range of eosinophil (0–7%).

The data of the Harvard step test shows, 65 were of good, 25 were excellent, ten were average, and 0 individuals were poor degree of strength; all the data were the same for the correlation between the Harvard step test and *Bala.* The data of BMD shows that 20 were in the Osteopenia category, 12 were in the normal category, and eight were in severe osteopenia. Prevalence of circumference of Majja Sara individuals are mentioned in table 13.

4. DISCUSSION

This is found because the *Majja Dhatu* has predominance of *Jala Mahabhuta*[6] and predominance of *Snigdha Guna,* and is characterized by heaviness, coldness, tenderness, softness, slowness, lubrication, and the carrier of the nutrients to the nourishing organs. Hence, due to *Snigdhata,* the organs become *Mridvanga* and

Snigdhagambhiraswara. The *Balavantah* is due to *Kapha* and involves *Prithvi* and *Jala Mahabhuta* dominance,[7] and also the function of *Kapha* is *Balavanta*.[8] *Kapha Dosha* has *an Aashrayi* relationship with *Rasa*, *Mamsa*, *Meda*, *Majja*, and *Shukra Dhatu*. Increased or decreased functional status in one results in the same in the other.[9] *Bala* leads to *Sthairyartha Balavardhini*,[10] means a person having stability in mind and body leads to more powerful. According to *Acharya Charaka,* the *Vijjala Guna* of *Kapha Dosha* is responsible for the *Sthulata* (compactness) of all *Sandhi,* and the *Sara Guna* is responsible for the stability in the movements of joints in the body, which is incorporated in the *Sthuldirgha Sandhi*,[11] also, *Acharya Sharangdhara* mentioned that the dominancy of *Kapha Prakriti* individuals has *Sthulanga*, which means the *Sandhi* of those individuals was *Sthuldirgha*.[12] According to *Acharya Sushruta, Kapha Prakriti* has a character that is *Chirgrahi*,[13] and according to *Charaka,* the *Kapha Prakriti* has *Gambhir Buddhi*, which is incorporated in the *Shruta,* which is the character of *Majja Sarata*[14] Daniel J. Simons and Christopher F. Chabris have studied an equally distributed sample population and mentioned that male memory and recalling are more than female.[15] It might be that males are *Saumya Guna Pradhanya* and females are *Agneya Guna Pradhanya*.[16] *Dhriti* is the function of *Kapha Dosha*, and *Kapha* is made up of *Parthiva* and *Apya Mahabhuta*.[7]

According to modern science, erythropoiesis is performed inside the red bone marrow. The blood indices of CBC have their good quality due to this, the *Majja Sara* is in their good quality. *Acharya Gananath Sen* and *Sushruta* have described that *Majja* has two types. *Rakta* and *Peeta Majja*, *Rakta Majja* is *Sarakta Meda*, in *Nalakasthi* (long bones). A study was conducted by Ghate and Indrapurakar on CBC with different *Sarata*, that *Rakta Sarata* has a significant correlation with mean corpuscular hemoglobin concentration, mean corpuscular hemoglobin, and mean corpuscular volume, but not relevant correlation with *Majja Dhatu*.[17]

Balvantah is the *Lakshana* of *Mamsa, Majja, and Shukra Sara* individuals.[18] *Bala* should be measured by *Vyayam Shakti*.[19] By this phenomenon, the *Bala* is measured by pulse rate changes in a positive direction. The least change in pulse rate signifies good *Bala* and health. If the pulse is influenced by mild exertion, then the *Bala* is considered poor health or heart activity. Thus, *Majja*, *Mamsa, and Shukra* will have more *Bala* as compared to other *Dhatu Sarata*.

The correlation of subjective parameter (*Bala*) and objective parameter (Harvard step test) was also found to be an extremely significant correlation by applied after the Spearman correlation test.

Acharya Charaka has mentioned that the hollowness inside the *Asthi* is created by *Vayu* and filled with the unctuous substance called *Majja* (marrow). This is because *Pradhanya* of *Parthiva* and *Apya Mahabhuta*. According to *Acharya Charaka*, when the *Asthi* is weak or not compact, then the *Majja Kshaya* will occur. There is involvement of *Majjagni*, if *Agni* is weak, then the respective *Dhatu* does not get nurtured. *Majja* is the site for the production of blood cells and is found in the medullary cavities of long bones and the space of spongy bones. This unctuous substance is called *Majja* (bone marrow). Therefore, it can be correlated with the BMD test in *Majja Sara* individuals.

The anthropometric measurements for *Sthuldirghavritta Sandhi* and *Mahanetra* are the differentiative characteristics of *Majja Sarata*. When *Majja Dhatu Sadharmi-Amsha* comes in contact with *Majja Dhatwagni*, the *Ushna Guna* is converted into *Majja Dhatu*. According to *Acharya Charaka, Vayu Mahabhuta* is created the hollowness inside the *Asthi*, and *Majja Dhatu* fills that space; therefore, when the *Majja Dhatu* finds more space for filling inside the *Ashi Dhatu*, then *Majja Dhatu* is stronger, so the *Sandhi* are more *Sthuldirghavritta* due to the *Majja Dhatu*. The difference between anthropometric measurements is due to the *Pradhanata* of other *Mahabhuta*, which is present in *Rasa*, *Mamsa*, *Meda*, *Asthi*, and *Shukra Dhatu*, that is, *Prithvi* and *Apya Mahabhuta.*

5. CONCLUSION

With the above study, we draw the following conclusion:

1. Most of *Majja Sara's* individual surfaces of organs were soft in touch and denoted *Mridvanga*.
2. Most of the *Majja Sara* people were efficient at work and did not get exerted easily even after running.
3. *Majja Sara* individuals have a pleasant voice and light wording.
4. The voice breakage of *Majja Sara* individuals did not occur during shouting loudly or singing high-pitched songs.
5. The joints were robust and large in 88% of *Majja Sara* people.
6. Most of the *Majja Sara* individuals remember by listening to the things and have the capacity to memorize easily.
7. The maximum individuals of *Majja Sarata* were found between the normal ranges of CBC parameters/blood indices. This shows the positive correlation of *Majja Sarata* with CBC.
8. The statistical analysis showed that "there was an extremely significant correlation between *Bala* of *Majja Sarata* and efficiency of physical fitness by the Harvard step test." The individuals having a higher percentage of *Majja Sarata* possess excellent cardiac efficiency on the Harvard step test.
9. The study analyzed that the maximum individuals were found in the Osteopenia category. Individuals showing a higher percentage of *Majja Sarata* have better BMD. It turned up to be a more significant correlation between *Majja Sarata* and BMD.

6. ACKNOWLEDGMENTS

Nil.

7. AUTHORS' CONTRIBUTIONS

All the authors contributed equally to the design and execution of the article.

8. FUNDING

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9. ETHICAL APPROVALS

This study is cleared by the Institutional Ethical Committee

10. CONFLICTS OF INTEREST

Nil.

11. DATA AVAILABILITY

This is an original manuscript, and all data are available for only review purposes from the principal investigators.

12. PUBLISHERS NOTE

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REFERENCES

1. Trikamji Y. Agnivesh; charaka samhita, ayurved dipika commentary by shri chakrapanidutta. Viman sthan 8/115. Varanasi: Chaukhamba Surbharti Prakashan; 2007. p. 278.
2. Trikamji Y. Agnivesh; charaka samhita, ayurved dipika commentary by shri chakrapanidutta. Viman sthan 8/116. Varanasi: Chaukhamba Surbharti Prakashan; 2007. p. 278.
3. Trikamji Y. Agnivesh; charaka samhita, ayurved dipika commentary by shri chakrapanidutta. Viman sthan 8/112,113. Varanasi: Chaukhamba Surbharti Prakashan; 2007. p. 278.
4. Trikamji Y. Agnivesh; charak samhita, ayurved dipika commentary by shri chakrapanidutta. Viman sthan 8/108. Varanasi: Chaukhamba Surbharti Prakashan; 2007. p. 278.
5. Trikamji Y. Sushruta; sushruta samhita, nibandha sangraha commentary by dalhana. Sutra sthan 35/16. Varanasi: Chaukhamba Surbharti Prakashan; 2014. p. 152.
6. Trikamji Y. Sushruta; sushruta samhita, nibandha sangraha commentary by dalhana. Sutra sthan 15/10. Varanasi: Chaukhamba Surbharti Prakashan; 2014. p. 69.
7. Sharma S. Vriddha vagbhatta, astanga sangraha, sashilekha sanskrita commentary by indu. Sutra sthan 20/2. Varanasi: Chaukhamba Sanskrita Series Office; 2012. p. 156.
8. Trikamji Y. Agnivesh; charaka samhita, ayurved dipika commentary by shri chakrapanidutta edited by yadavji trikamji acharya. Sutra sthan 18/51. Varanasi: Chaukhamba Surbharti Prakashan; 2017. p. 109.
9. Paradakara HS. Vagbhatta, astanga hridayam, sarvangasundara and ayurveda rasayan commentary of arundutta and hemadri bhisagacharya. Sharir sthan 3/62. Varanasi: Chaukhamba Surbharti Prakashan; 1997. p. 396.
10. Trikamji Y. Agnivesh; charaka samhita, ayurved dipika commentary by shri chakrapanidutta. Sutra sthan 7/31. Varanasi: Chaukhamba Surbharti Prakashan; 2017. p. 50.
11. Trikamji Y. Agnivesh; charaka samhita, ayurved dipika commentary by shri chakrapanidutta. Viman sthan 8/96. Varanasi: Chaukhamba Surbharti Prakashan; 2017. p. 277.
12. Shastri PP. Sharangadhara samhita, dipika commentary by adhmalla and gudhartha dipika commentary by kashiram. pratham khanda 6/23. Uttar Pradesh: Chaukhamba Orientelia Varanasi; 2002. p. 74.
13. Trikamji Y. Sushruta; sushruta samhita, nibandha sangraha commentary by dalhana. Sharir sthan 4/72. Varanasi: Chaukhamba Surbharti Prakashan; 2015. p. 361.
14. Shastri PP. sharangadhara samhita, dipika commentary by adhmalla and gudhartha dipika commentary by kashiram. Purva khanda 6/23. Uttar Pradesh: Chaukhamba Orientelia Varanasi; 2002. p. 74.
15. Simons DJ, Chabris CF. What people believe about how memory works: A representative survey of the U.S. Population. PLoS One. 2011;6(8):e22757. doi: 10.1371/journal.pone.0022757
16. Trikamji Y. Sushruta; sushruta samhita, nibandha sangraha commentary by dalhana. Sharir sthan 3/3. Varanasi: Chaukhamba Surbharti Prakashan; 2014. p. 350.
17. Ghate U, Indrapurakar K. Study of dhatu sarata and its association with blood cell indices. Int J Res Ayurveda Pharm. 2014;5(3):309-14.
18. Trikamji Y. Agnivesh; carak samhita, ayurved dipika commentary by shri chakrapanidutta. Viman sthan 8/105, 108, 109. Varanasi: Chaukhamba Surbharti Prakashan; 2017. p. 248.
19. Trikamji Y. Agnivesh; carak samhita, ayurved dipika commentary by shri chakrapanidutta acharya. Viman sthan 4/8. Varanasi: Chaukhamba Surbharti Prakashan; 2017. p. 248.

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Subjective parameters

Table 1-1: Mridvanga

S. No.	Is the feeling status of the body surface soft in touch?	Grading
1	Rough	0
2	Slightly rough	1
3	Slightly soft	2
4	Soft	3

Table 2-1: Balwantah

S. No.	Exertion	Grading
1	Exertion during walking	0
2	Exertion during stepping upstairs	1
3	Exertion during running	2
4	No exertion	3

Table 3-2: Snigdha Swara

S. No.	Quality of voice?	Grading
1	Cracked voice	0
2	Normal voice	1
3	Soft	2
4	Pleasant	3

Table 4-3: Gambhira Swara

S. No.	Shout loudly or sing a high-pitched song without voice breakage?	Grading
1	No	0
2	Sometimes	1
3	Frequently	2
4	Always	3

Table 5-4: Sthuladirgha Sandhi

S. No.	Robustness, large, and prominence of Joints?	Grading
1	Frail and Small joints	0
2	Robust and Small Joints	1
3	Robust and large Joints	2
4	Robust, large, and prominent joints	3

Table 6-5: Vritta Sandhi

S. No.	Shape of *Sandhi*?	Grading
1	Flattened	0
2	Oval	1
3	Incomplete round	2
4	Complete round	3

Table 7-6: Shruta

S. No.	Remembering capacity?	Grading
1	No need for repetition	0
2	Remember in 1 time repetition	1
3	Remember in 2 time repetition	2
4	Remember in more than 2 time repetition	3

(B) Objective parameter

Table 8: Harvard step test

S. No.	Score (%)	Efficiency	Grading
1	Below 55	Poor	0
2	55–80	Average	1
3	81–90	Good	2
4	Over 90	Excellent	3

Table 9: BMD (Bone Mineral Density)

Category	T-Score	
	Range	Examples
Normal bone density	−1 and above	+0.5
		0
		−1.0
Low bone density (osteopenia)	Between−1 and−1.5	−1.1
Low bone density (severe osteopenia)	Between−1.5 and−2.4	−1.5
		−2.4
Osteoporosis	−2.5 and below	−2.5
		−3.0
		−4.0

Table 10: Different *Dhatu Sarata* among 600 individuals

S. No.	Name of *Pradhana Sara*	Total no. of Healthy individuals	Percentage
1	*Rasa Sara*	130	21.6
2	*Rakta Sara*	102	17
3	*Mamsa Sara*	74	12.3
4	*Meda Sara*	86	14.3
5	*Asthi Sara*	50	8.3
6	*Majja Sara*	115	19.1
7	*Shukra Sara*	47	7.8

Table 11: Subjective parameter among the 100 *Majja Sara* individuals

Parameters	Mean	SD	Sample size	SEM	KS Value	P value	Result
Mridvanga	2.13	0.8837	100	0.08837	0.2375	<0.0001	HS
Balwantah	2.16	0.8844	100	0.08844	0.2589	<0.0001	HS
Snigdha Swara	1.93	0.9975	100	0.09975	0.2180	<0.0001	HS
Gamhira Swara	1.81	0.9918	100	0.09918	0.2160	<0.0001	HS
Stuldirgha Sandhi	1.91	0.9112	100	0.09112	0.2593	<0.0001	HS
Vritta Sandhi	2.15	0.9252	100	0.09252	0.2508	<0.0001	HS
Shruta	2.08	0.09176	100	0.09176	0.2319	<0.0001	HS

Table 12: Correlation between subjective (*Bala*) and objective (Harvard step test) parameters

Parameters	Correlation coefficient (r) value	*P*-value	Result
Bala and Harvard step test	0.4348	<0.0001	ES

Table 13: Prevalence of circumference of *Majja Sara* individuals

S. No.	Circumference	Range (cm)	% of individuals
1.	Mid-arm circumference	25–30 cm	56
2.	Mid-thigh circumference	45–50 cm	50
3.	Elbow joint circumference	20–25 cm	56
4.	Knee joint circumference	30–35 cm	63
5.	Ankle joint circumference	20–25 cm	53
6.	Wrist joint circumference	12–15 cm	67
7.	Orbit circumference	2.5–3 cm	52
8.	Anteroposterior diameter of the Elbow joint	4.5–6.5 cm	72
9.	Medio-lateral diameter of the Elbow joint	7–8 cm	45