International Journal of Engineering and Advanced Technology (IJEAT)
ISSN: 2249 – 8958 (Online), Volume-9 Issue-4, April 2020

# Validation of Prototype Research Software– Infant Prakriti Assessment (PRS-IPA): Inferences from A Cross Sectional Pattern

**Srivastava Niraj, Singh Praguna, Gehlot Sangeeta, Singh Sanjay, Singh B.M.**

***Abstract: Introduction: Prakriti determination in an infant helps to live more healthy and prosperous life by changing their rearing plan accordingly to prevent onset of related disorders in future. Validation under this study was planned to evaluate the agreement between Infant's Prakriti Assessment questionnaire (IPAQ) and PRS-IPA (Prototype Research Software-Infant Prakriti Assessment), a software for Prakriti assessment in infants.***

***Materials and methods: A cross sectional study was carried out in Sir Sunderlal Hospital BHU and data were analyzed through two step* Prakriti *determination process i.e. first, by Infant's Prakriti Assessment questionnaire (IPAQ) and second by PRS-IPA. Validation was done by Spearman's Rank Correlation Coefficient and Cohen's kappa coefficient.***

***Observations and Result: In this study, Cohen's* kappa coefficient *was found 0.955 which is highly significant. Prakriti assessed by PRS-IPA software is valid. Validation by Spearman's Rank Correlation coefficient was also found highly significant (p=0.000).***

***Discussion & Conclusion: The data, derived from spearman's and kappa suggest its validity and PRS-IPA can be used for the Prakriti assessment with accuracy in infants.***

***Keywords: Ayurveda, Prakriti, Physical constitution, PRS-IPA, Infant, questionnaire, Validation, Software.***

## I. INTRODUCTION

Ayurveda, 5000 years old system of medicine that has its origins from Vedic culture of India, explains the uniqueness of individuals by means of Prakriti (Physical constitution). According to this system Prakriti (Physical constitution) determines the predisposition with prognosis to diseases in addition to therapy and life-style regime.

Prakriti assessment with other factors of Dashavidha Pariksha provides total understanding of patient or healthy individuals [1].

Revised Manuscript Received on March 16, 2020.

* Correspondence Author

**Srivastava Niraj*,** Professor, Department of Kaumarbhritya / Balroga, Sardar Patel Institute of Ayurvedic Medical Sciences & Research Centre. Lucknow, Uttar Pradesh 226002, India. Mobile. No. 9473662858. Email:nirajimsbhu@gmail.com

**Singh Praguna,** Software developer, SAP Lab Bangalore, Karnataka.

**Gehlot Sangeeta,** Professor and Head, Department of Kriya Sharir, Faculty of Ayurveda, IMS, BHU, Varanasi, India.

**Singh Sanjay,** Professor, Department of Computer Science, IIT, BHU, Varanasi, India.

**Singh B. M.,** Professor and Head, Department of Kaumarbhritya/Balroga, Faculty of Ayurveda, IMS, BHU, Varanasi, India.

**Gehlot Sangeeta,** Professor and Head, Department of Kaumarbhritya/Balroga, Faculty of Ayurveda, IMS, BHU, Varanasi, India.



Prakriti is sum total of physical, physiological and psychological characteristics of any individual and represents the genotype [2]. Knowledge of Prakriti can be helpful for diagnosis of diseases [3], management of disease, [4] forecast the proneness for future disorders [5] and prevention from many chronic diseases. Knowledge of Prakriti can steer the parents for anticipation of expected disorders in their children [6].

Prakriti is a unique, but definite constant traits manifested in persons and these specific types of Doshika Prakriti can be identified in growing individuals [7].

Prakriti of an individual is fixed at the time of conception by predominance of Dosha in the Shukra (sperm) and Shonita [8] (ovum) but Acharya Charaka opines that it is not only dominance of Dosha in Shukra and Shonita but certain other factors like Kala-Garbhashaya (time factor and condition of uterus) Maturaaharavihara (diet and code of conduct of mother) and Panchamahabhuta vikara (condition of Panchamahabhuta) are also responsible for determination of Prakriti [9]. Prakriti assessment of any infants has a decisive role in maintenance of health and cure of the disease, which is the prime objective of Ayurveda [10]. In Ayurveda seven broad constitutions (Prakriti) have been described each with a varying degree of tendency to different diseases [11].

Information technology (IT) has a broad scope in up-gradation of academic, hospital and research sector of AYUSH. Information technology uses computers and software to manage patients' information. Ayurveda is restricted due to language factor for globalization; therefore there is urgent need of software in Ayurveda. Presently, questionnaire is most accepted tool to determine individual Prakriti (Physical constitution).

PRS-IPA (Prototype Research Software-Infant Prakriti Assessment) is software for Prakriti determination in infants which is prepared under the collaboration of Department of Kaumarbhritya/Bal Roga, Department of Kriya Sharir, and Department of computer science, IIT-BHU, Varanasi to save the time, reutilization of stored data for future use including individualized management and prevention of forthcoming Prakriti prone disorders [12]. Therefore, this study was planned to validate and evaluate the agreement between Infant's Prakriti Assessment questionnaire (IPAQ) and PRS-IPA (Prototype Research Software-Infant Prakriti Assessment), software for Prakriti assessment in infants.

## II. MATERIAL AND METHOD

**A.** Objective of study: Validation and reliability of newly developed software PRS-IPA (Prototype Research Software-Infant *Prakriti* Assessment).

**B.** Ethical clearance: The ethical committee clearance number was dean/2011-12/392-A dated on 12/12/2011

**C.** Population and Sample: A cross sectional study was carried out in Kaumarbhritya/Balroga, O.P.D., Sir Sunderlal Hospital, Institute of Medical Sciences (I.M.S), Banaras Hindu University (BHU) after obtaining approval from the institute ethical committee. 226 healthy infants were selected after written informed consent by parents after explaining about the study and its aims. After proper screening *Prakriti* assessment was done on 10$^{th}$ day of life (time of registration) in healthy state by Infant's *Prakriti* Assessment Questionnaire (IPAQ) and developed software PRS-IPA during research work. PRS-IPA software has same questions as in Infant's *Prakriti* Assessment Questionnaire (IPAQ).

**D.** Assessment of Prakriti by Questionnaire Performa: For this study, an Infant's *Prakriti* Assessment Questionnaire (IPAQ) was prepared on the basis of *Prakriti* characteristic mentioned in different textbooks of *Ayurveda* [13][14][15] [16] [17] [18] [19][20]. In questionnaire, only those *Doshika* characteristics were taken, which were possible to assess at infantile age group; while the other were excluded [21]. Infant's *Prakriti* Assessment questionnaire (IPAQ) was already validated by *Prakriti* assessing proforma of Department of Kriya Sharir [22]. Assessment was done after analysis of obtained data filled by questionnaire and physical examination of infants. All concerned characteristics were assessed by *Trividha Pariksha* of *Ayurveda* as *Darshan* (inspection), *Sparshana* (palpation) and *Prashna* (question) [23] [24].

**Infant's Prakriti Assessment questionnaire (IPAQ):**

**Table 1: Feeding habits**

| S.N. | Questions | Age of Assessment | *Vataja Prakriti* | *Pittaja Prakriti* | *Kaphaja Prakriti* |
|---|---|---|---|---|---|
| 1. | Baby like | From registration | 1. Variable | 1. Cold milk/Cold food | 1. Warm milk/Hot food |
| 2. | Condition of baby to feed | From registration | 2.Sometimes cry sometimes no cry | 2. Excessive cry | …… |
| 3. | Feeding per day | From registration | 3. Increased frequency with variable amount | 3. Increased frequency and amount | 2. Less than optimum |
| 4. | Quantity of intake per feed | From registration | 4. Irregular | 4. Fairly good | 3. Low intake |

**Table 2: Bowel and urine habits**

| S.N. | Questions | Age of Assessment | *Vataja Prakriti* | *Pittaja Prakriti* | *Kaphaja Prakriti* |
|---|---|---|---|---|---|
| 1. | Frequency of stool per day (in relation to consistency, smell and color) | From registration | - | Excess secretion of stool | - |
| 2. | Frequency of urine | From 3rd month | - | Excess urination | - |

**Table 3: Thirst habits**

| S.N. | Question | Age of Assessment | *Vataja Prakriti* | *Pittaja Prakriti* | *Kaphaja Prakriti* |
|---|---|---|---|---|---|
| 1. | Thirst (daily) | After 6 month | - | More in frequency | Less in frequency and tolerable |

**Table 4: Sweating habits**

| S.N. | Questions | Age of Assessment | *Vataja Prakriti* | *Pittaja Prakriti* | *Kaphaja Prakriti* |
|---|---|---|---|---|---|
| 1. | Sweating | After 3 month | - | More in volume and frequency | Less in volume and frequency |
| 2. | Smell of sweating | After 3 month | Variable | Foul smell | - |

**Table 5: Sleep habits**

| S.N. | Questions | Age of Assessment | *Vataja Prakriti* | *Pittaja Prakriti* | *Kaphaja Prakriti* |
|---|---|---|---|---|---|
| 1. | Period of sleep in hours | From registration | Less sleep | - | More sleep |

Table 6: Physical activity

| S.N. | Questions | Age of Assessment | *Vataja Prakriti* | *Pittaja Prakriti* | *Kaphaja Prakriti* |
|---|---|---|---|---|---|
| 1. | Activity level | After 3 month | Sometimes very active some time dull | - | Dull in activities |
| 2. | Tolerance to painful stimuli (Cold) | After 6 month | Low tolerance | No tolerance | High tolerance |
| 3. | Level of anger | After 9 month | Early onset of anger and early subside | Excess and quick onset of anger | Delayed onset of anger and late subside |
| 4. | Attachment | After 6 month | Earl attachment and early detachment | - | Delayed attachment and delayed detachment |
| 5. | Movement of joints, eye, lips, tongue, head, palm and sole | After 6 month | Light, fast, unsteady and early onset | - | Slow and steady |
| 6. | After bathe | After 3 month | - | Early becomes dry | Late becomes dry |

Table 7: Speech/Voice habits

| S.N. | Question | Age of Assessment | *Vataja Prakriti* | *Pittaja Prakriti* | *Kaphaja Prakriti* |
|---|---|---|---|---|---|
| 1. | Tendency to talk (as informed by mother) | After 6 month | Over talkative, irrelevant talk | ..... | Less talkative |
| 2. | Voice quality | After 3 month | Continuous rough weak, unpleasant and hoarse | - | Affectionate voice |
| 3. | Weather tolerance | After 3 month | Intolerance to cold | Intolerance to heat | Intolerance to cold |

Table 8: Disease Incidence

| S.N. | Question | Age of Assessment | *Vataja Prakriti* | *Pittaja Prakriti* | *Kaphaja Prakriti* |
|---|---|---|---|---|---|
| 1. | Incidence of disease | After 3 month | High incidence | - | Low incidence but chronic and severe form |
| 2. | Type of disease | After 3 month | Suffer with cold, shivering and stiffness | Ulceration in mouth | - |

Table 9: Like/Dislike:

| S.N. | Question | Age of Assessment | *Vataja Prakriti* | *Pittaja Prakriti* | *Kaphaja Prakriti* |
|---|---|---|---|---|---|
| 1. | Like/dislike | After 6 month | Music and scented area | Hate sunlight | ..... |
| 2. | Like and dislike feeding | After 6 month | Like sweet, pungent and hot food | Like sweet, bitter, astringent, cold food/drinks | Like pungent, bitter, astringent, hot and non-oily |

Table 10: Body parts:

| S.N. | Question | Age of Assessment | *Vataja Prakriti* | *Pittaja Prakriti* | *Kaphaja Prakriti* |
|---|---|---|---|---|---|
| 1. | Physique | From registration | Thin, Underdeveloped/ ugly | Delicate Body | Compact and stable body, all organs are well developed/Good looking |
| 2. | Skin texture | From registration | Rough and dry | Soft, moist skin with moles and pimples (neonatal acne vulgaris) | Thick, soft and oily |
| 3. | Skin color | From registration | Dusky, luster less and dark complexion | Coppery color | Fair color like *Durva, Indrayava* and *Priyangu* |
| 4. | Hair | After 6 month | Scanty, Thin, dry and dusky | Fine, soft, early greying or falling or no hair | Dark, thin, dense, oily. Hair are curly and blue like bees |
| 5. | Eye color | After 6 month | Dry, Dusky, not beautiful and like dead | Coppery color and rounded | Broad, beautiful and reddish at their end angles |
| 6. | Palm and sole | From registration | Rough and cracked | Coppery color | Thick and soft |
| 7. | Lips | From registration | Rough and unstable | Coppery color | Broad and thick |
| 8. | Body part | From registration | Calf muscles are small in size and hard | Joints and muscles are loose | Broad forehead, well developed, long arm and leg |
| 9. | Nail | From registration | Rough, hard, thin, small and dusky | Coppery color | Whitish, soft and shining |

Scores of *Vata*, *Pitta* and *Kapha* in infants were attained by using a 0/1 against V/P/K for each of the questions depending on a no or yes answer respectively. Cumulative scores of V, P and K are calculated through the percentage of manifested *Dosha* in infants. Criteria to define the *Prakriti* in infant, on the basis of *Dosha* percentage has been followed as per protocol [25].

### E. Assessment of Prakriti by computer-aided tool (PRS-IPA):

The developed software is a complete package for helping users/ Kaumarbhritya expert (Ayurvedic Pediatrician) in analyzing infants' *Prakriti*. Platform used for development of the software is Microsoft Visual Basic 2010, Express Edition, which is a part of Visual Studio 2010package and can run in higher version too. Many components and various methods were used for developing the software [26] [27] [28]. This software also uses same questionnaire as per manual method for determination of *Prakriti* in infants.

### F. Statistical analysis:

Validation of *Prakriti* assessment software (PRS-IPA) was done by Infant's *Prakriti* Assessment questionnaire (IPAQ), a newly developed Infants *Prakriti* Assessment Proforma. Validation was done by Spearman's Rank Correlation Coefficient and Cohen's kappa coefficient. Validation by Spearman's Rank Correlation coefficient was found highly significant. Level of agreement by Cohen's kappa coefficient is also significant. Kappa value was determined to perceive the consistency of results among the *Ayurvedic* pediatrician who assesses the *Prakriti* by using hard copy proforma and questionnaire designed in software (PRS-IPA).

## III. OBSERVATION & RESULT

Table 11: Validation of data gathered from the questionnaire inculcated in PRS-IPA with the manually congregated data by Spearman's rank correlation coefficient

| Registered Cases ( n=226) | Mean ± SD | Median | Range (Min– Max) | Correlation coefficient |
|---|---|---|---|---|
| V - Software (n = 226) | 24.96 ± 14.67 | 17.67 | 2.42 - 68.15 | 0.000 (HS) |
| V- Questionnaire (n = 226) | 26.73 ± 14.12 | 18.18 | 4.54 - 68.18 | |
| | | | | |
| P- Software (n = 226) | 37.1 ± 19.6 | 41.885 | 10.04 - 73.91 | 0.000 (HS) |
| P-Questionnaire (n = 226) | 37.97 ± 19.37 | 45.44 | 11.11 - 77.77 | |
| | | | | |
| K- Software (n = 226) | 42.69 ± 18.29 | 49.4 | 10.71 - 76.16 | 0.000 (HS) |
| K -Questionnaire (n = 226) | 42.48 ± 18.54 | 47.82 | 8.69 - 73.91 | |

**Kappa correlation:** - The kappa statistic is frequently used to test inter-rater reliability and it measures level Agreement.

| Value | Approx. Significance |
|---|---|
| 0.955 | p= 0.000 HS |

The mean ± SD of percentage of *Vata*, *Pitta* and *Kapha* was 24.96 ± 14.67, 37.1 ± 19.6 and 42.69 ± 18.29 respectively by software(PRS-IPA), while by Infant's *Prakriti* Assessment questionnaire (IPAQ), this was 26.73 ± 14.12, 37.97 ± 19.37 and 42.48 ± 18.54 respectively.

On applying correlation coefficient for assessment of *Prakriti* by software and questionnaire, significant correlation was observed in all the *Prakriti*. Details of median and minimum and maximum range of these data gathered from the software and by using Infant's *Prakriti* Assessment profoma can be seen from table number 1. When Cohen's *kappa coefficient* was applied to assess the validity of *Prakriti* assessment by software and questionnaire, its value was found 0.955 which is highly significant according to Fleiss's guidelines that means *Prakriti* assessed by PRS-IPA software is valid [29].

## IV. DISCUSSION

Knowledge of *Prakriti* (Physical constitution) may go a long way in health maintenance by making one aware of suitable and unsuitable substances applicable on a one-to-one basis [30]. Now, the concept of *Prakriti* has better understood in terms of its genomic and biochemical correlations and ensuing clinical applications [31] [32] [33] [34]. PRS-IPA (Prototype Research Software-Infant *Prakriti* Assessment) is a complete package aimed at helping users (pediatricians) in analyzing *Prakriti* of infants and also assisting in differentiating the physiological features from the pathological features through basic data analysis. The developed prototype software is a complete package which utilizes Microsoft Visual Basic 2010 Express and Microsoft Excel. Visual Basic is used as a platform for creating and working with the forms. Microsoft Excel is used for details of the patient. Results of this study suggest that newly designed tool tested in a fair number of samples is reasonably reliable and valid on statistical analysis. The *Prakriti* was first determined by Infant's *Prakriti* Assessment questionnaire (IPAQ) by manual method and after that *Prakriti* was determined by PRS-IPA software for each individual, then comparison between the IPAQ and PRS-IPA was made which revealed a highly significant agreement of 0.955 (95.5%) concordance.

## V. CONCLUSION

*Prakriti* has decisive role in restoration of health, which is a prime objective of *Ayurveda*. Based on the results, it may be concluded that PRS-IPA is a validated tool for *Prakriti* assessment in infants which shall be helpful for data storage, time saver and accurate analysis in its determination. The analysis of *Prakriti* of an infant based on the entered data will ensure the better planning for individualized management and forecast the possibility of *Prakriti* dependent diseases in future.

## ACKNOWLEDGEMENTS

Authors are thankful to all the parents of infants who have given consent for participated in the study.

**Source of Support:** None

**Conflicts of interest:** None Declared

## REFERENCES

1. Agnivesha, Charaka, Dridhabala, Charaka Samhita, Viman-Sthan 8/94, edited by Vaidya Jadavaji Trikamji Acharya.Varanasi:Chaukhambha, Surabharati Prakashana; 2008.
2. Kunte AM, Navare KS. Reprint edition. Ashtanga Hridaya of Vagbhatta with Sarvangasundara commentary of Arundutta. Sutra-Sthana; Chapter 1: Ayushkamiyadhyaya, Verse 9. Varanasi: Chaukhambha Sanskrita Sansthana; 2016.
3. Agnivesha, Charaka, Dridhabala, Charaka Samhita, Viman-sthan 6/16, 7/4, edited by Vaidya Jadavaji Trikamji Acharya.Varanasi: Chaukhambha Surabharati Prakashana; 2008.
4. Agnivesha, Charaka, Dridhabala, Charaka Samhita, Sutra-sthana, 10/11, edited by Vaidya Jadavaji Trikamji Acharya.Varanasi: Chaukhambha Surabharati Prakashana; 2008.
5. Vagbhatta, Ashtanga Hridaya, Sutra-sthan 1/10, edited by Anna Moreshwar Kunte. Varanasi: Chaukhamba Sanskrita Pratishthan, 2009.
6. Agnivesha, Charaka, Dridhabala, Charaka Samhita, Sutra-sthana, 7/4, edited by Vaidya Jadavaji Trikamji Acharya.Varanasi: Chaukhambha Surabharati Prakashana; 2008.
7. Agnivesha, Charaka, Dridhabala, Charaka Samhita, Viman-sthana, 8/95, edited by Vaidya Jadavaji Trikamji Acharya, Varanasi: Chaukhambha Surabharati Prakashana; 2008
8. Sushruta. Sushruta Samhita, English translation by Sharma P.V, Vol II, Sharir-sthan (4:64), Chaukhambha Vishvabharati , Varanasi. 2005
9. Agnivesha. Charaka Samhita, English translation by Sharma RK, Dash B. Vol-II, Viman-sthan (8:95), Chaukhambha Sanskrit series office, Varanasi. 2010
10. Agnivesha. Charaka Samhita, English translation by Sharma RK, Dash B. Vol-I, Sutra Sthan (7:41-44), Chaukhambha Sanskrit series office, Varanasi. 2010
11. Sushruta. Sushruta Samhita, English translation by Sharma P.V, Vol II, Sharir-sthan (4:62), Chaukhambha Vishvabharati , Varanasi. 2005.
12. Srivastava Niraj, Singh Praguna, Gehlot Sangeeta, Singh Sanjay, Singh B.M: Basics for the development of prototype research software relevant to infants' *Prakriti* assessment for Vikriti management and possible future disorders. Int. J. Res. Ayurveda Pharm. 8 (Suppl 1), 2017.

13. Agnivesha. Charaka Samhita, English translation by Sharma RK, Dash B. Vol-1, Viman Sthan (8:96-100), Chaukhambha Sanskrit series office, Varanasi. (2010)
14. Sushruta. Sushruta Samhita, English translation by Sharma P.V, Vol II, Sharir-sthana (4:64-76), Chaukhambha Vishvabharati , Varanasi. (2005)
15. Vagbhata. Astanga samgraha, English translation by Srikantha Murty KR, Vol-II, Sharir-sthana, (8/6-14), Chaukhambha Orientalia , Varanasi. (2001)
16. Vagbhata . Astanga Hridaya, English translation by Srikantha Murty KR, Vol-I, Sharir-sthana (3:85-103), Chaukhambha, Krishnadas Academy Varanasi. (2015).
17. Bhavmishra. Bhavprakasha, commentary and English translation by Sitaram Balusu, Chunekar KC ,Vol-I Purva-khanda 4:54-58, Chaukhambha Orientalia , Varanasi. (2006).
18. Sharangadharacharya. Sharngadhara Samhita English translation by Rao G. Prabhakar, 1st edition, Purva-khanda (6:21-23), Chaukhambha Sanskrit sansthan, Varanasi. (2013).
19. Harita. Harita Samhita English translation by Pandey Gyanendra , Vol-1, Pratham-sthana 5:17-22, Chaukhambha Sanskrit series office, Varanasi. (2016).
20. Bhela, Bhela Samhita. English translation by Krishnamurty K.H, Viman-sthana ,4:16-25, Chaukhambha Vishvabharati , Varanasi. (Reprint year 2008).
21. Srivastava Niraj, Gehlot Sangeeta and Singh B. M. Affiliation among Infantile Age, Morbidity and Prakriti (Physical Constitution): A Longitudinal Preliminary Study; | Vol 19 (1) | January 2019
22. Piyush Kumar Tripathi, Sangeeta Gehlot. "A Physio-anatomical study of Prakriti, ID- 21024805, www.luiu.com,2017.
23. Sushruta. Sushruta Samhita, English translation by Sharma P.V, Vol I, Sutra-sthan (10:4), Chaukhambha Vishvabharati , Varanasi. (2005).
24. Vagbhata. Ashtanga Samgraha, English translation by Srikantha Murty KR, Vol-I, Sutra sthana, (1/45.1), Chaukhambha Orientalia , Varanasi. (2001).
25. Srivastava N, Gehlot S, Singh S, Singh BM. Do the anthropometric parameters vary as per *Prakriti* (Physical constitution) of Infants; International Journal of Innovative Knowledge Concepts, 5(12) December, 2017
26. Halvorson, Michael 2010. Microsoft Visual Basic 2010 Step by Step. MicrosoftPress,2010
27. Mayo, Joe. Beginner's Guide Visual Studio. ISBN 13: 9780071668958. Publisher: Mc Graw- Hill Education, 2010.
28. Tylee, Lou. Learn Visual Basic 6.0.KID ware, 1998. http://www.kidwaresoftware.com/index.htm
29. FleisJ.L. Statistical methods for rates and proportions (2nd edition).NewYork:John Wiley.1981.
30. Pine D. Nashville, Tennessee: Introduction of Ayurveda to Chiropractic, Building a functional bridge, Proceedings of the Sacro Occipetal Technique Research Conference; 2011. pp. 86–101.
31. Acharya YT, editor. Vimana-Sthana 8/95, Varanasi: Chaukhambha Orientalia; 1997. Charak samhita; pp. 277–78.
32. Acharya YT, editor. Sharira-Sthana 4/65-76, Varanasi: Chaukhambha Sanskrit Sansthan; 2007. Sushruta-samhita; pp. 361–62.
33. Caldecott T. Ayurveda: The divine science of life. Elsevier Health Sciences. 2006:27–34.
34. Nambodiri N, editor. Varanasi: Chaukhambha Krishndas Academy; 2010. Ashtang Hridaya, 3/84-102; pp. 193–195.

## AUTHORS PROFILE


Dr. Niraj Sivastava

**Dr. Niraj Sivastava**, has completed his BAMS and MD (Ay) Kaumarbhritya/Balroga from Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University (BHU), Varanasi, India, in 2005 and 2008 respectively. He has completed the Ph.D (Kaumarbhritya) in supervision of Prof. B.M Singh in 2017 from Department of Kaumarbhritya, BHU, Varanasi, India. Currently he is working as a Professor in Department of Kaumarbhritya, at Saradar Patel Institute of Ayurvedic Medical Sciences & Research Centre. He has published 54 research papers in various journals, 10 chapters in book and 3 books. His area of expertise includes Prakriti assessment in children, Swarnaprashana etc.


Praguna Singh

**Praguna Singh, (**Software Engineer) has completed his B. Tech in Computer Science from Manipal Institute of Technology (MIT), Karnataka India, in June 2016. Currently he is working as a Developer in SAP Labs India Pvt. Ltd, Bengaluru, Karnataka, India. His area of expertise includes Programming Languages (C, C++, Java, Python, JavaScript, Nodejs, VB.Net, C#), Frameworks (UI5, Spring, React, Keras) and Platforms (Cloud Foundry, SAP Cloud Platform) etc.


Prof. Sangeeta Gehlot

**Prof. Sangeeta Gehlot,** is working as Professor & Head, Department of Kriya Sharira, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University (BHU) Varanasi, India. She has completed the MD (Ay) & Ph.D (Kriya-Sharir) from department of Kriya-Sharira, BHU, Varanasi, India. She has published more than 87 research papers in various national and international journals, 10 chapters in different books and has published 7 Books. Her area of expertise includes Prakriti, Exercise Physiology, Ayurveda Education, Diabetes mellitus. She has supervised 10 MD thesis and 13 Ph.D thesis.


Prof. Sanjay Singh

**Prof. Sanjay Singh,** is working as Professor in Department of Computer Science and Engineering, Indian Institute of Technology (IIT-BHU), Varanasi, UP, India. He has published 55 research papers in various journals, 12 chapter in book and 2 patents. His area of expertise includes watermarking scheme for image tampered detection and localization with recovery capability and soft biometrics based multimodal recognition system etc.


Prof. B.M Singh

**Prof. B.M Singh,** is working as Professor& Head, Department of Kaumarbhritya/Bal roga, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University (BHU) Varanasi, India. He has completed the MD (Ay) & Ph.D from department of Prasuti Tantra (Kaumarbhritya Unit), BHU, Varanasi, India. He has published more than 40 research papers in various national / international journals, 10 chapters in book and 4 books. His area of expertise includes Prakriti assessment in children, Childhood Asthma, management of cerebral palsy, Diarrhea etc.