A Multicenter Retrospective Observational Study to Correlate Sharir Guna Computed Through Nadi Pariksha (Pulse Diagnosis) Using Electronic Nadi (Pulse) Recording Device Nadi Tarangini with Trends and Changes in Rutus (Seasons) for a Span of One Year in North-Western Zone of India.

Tejaswini S Bhale, Aniruddha Joshi, Shruti Kulkarni

1- Ayurvedic Physician (B.A.M.S., P.G.P.P., M.B.A. (University of Pune)
2- Ph.D. Indian Institute of Technology (IIT Bombay)
3- Clinical Nutritionist

ABSTRACT:

Background: The theory of Rutucharya (seasonal regimen) is described in Ayurveda by Acharyas (Ancient sages) according to the climatic changes (seasonal changes), its effect on Agni (Digestive fire), Bala (Strength), Tridosha (Vata, Pitta, Kapha) i.e. 3 humors. Guna (Sharir Guna, properties) and finally on Body and Mind.

Objectives: In a multi-centric retrospective observational study, we “empirically” studied the correlations between and validating the same with some of the sharir guna which reflects in nadi, for different Prakruti (body constitution) with rutus (seasons) as per ayurvedic text described to prediction and diagnose signs and symptoms of the diseases.

Materials and methods: We used Nadi Tarangini (a commercial wrist nadi recording system) to record nadi of 15,391 subjects across the north-west part of India throughout a span of one year. We further computed five pairs of guna (qualities) namely Guru - Laghu (Heavy - Light), Snigdha - Ruksha (Unctuous - Dryness), Manda - Tikshna (Blunt-Sharp), Sukshma - Sthula (Subtle-Bulky) and Mrudu - Kathina (Soft-Hard).

Results: For 15,391 subjects, we found significant correlation of the Guna flow throughout the span of 1 year captured using Nadi Tarangini, matching with the ancient texts such as, laghu guna increases from Varsha rutu, ruksha guna is high in Greeshma rutu and tikshna guna increases in Sharad rutu, correlating well with the electronic Nadi Tarangini findings.

Conclusion: We emphasized the data-based evidence, for the first time and importance of sharir guna in Rutucharya and nidan of dosha avastha and vyadhi (signs and symptoms of diseases) through Nadi pariksha. It will be helpful to avoid lifestyle-oriented disorders and better diagnosis through nadi pariksha and also can be validated and used for the purpose of research among the common populations.

Keywords: Nadi pariksha, Nidan, Sharir guna, Gurvadi guna, Rutucharya, Nadi Tarangini
INTRODUCTION

The science of Ayurveda includes the theory of dravya (substance), guna (qualities) and (action). In which every living and non-living substance (dravya), as well as the mind have definite attributes. These specific attributes or qualities are known as guna. The fundamentals of Ayurveda include the dosha, dravya, guna, and karma. Each guna that has an inheritance with dravya is called Samavaya (inheritance). Dravya can show its actions only because of guna.

Acharya Charak has described twenty gunas classified with their specific attributes into groups of 2 with 10 opposite pairs. These gunas are present everywhere so we can correlate, make some assumptions and find its effect on tridosha, dhatu (body tissues), mala(excretes) and mind with which we can find a personalized diet and lifestyle regimen specific to each Prakruti (Body constitution). Every season is dominated by one of tridosha, Vata, Pitta and Kapha and their properties. According to climatic conditions, guna shows accumulation or vitiation of tridosha which helps to predict or diagnose the signs and symptoms of diseases.

Every entity of the universe is formed with the combination of Panchmahabhuta (five basic elements in this universe): Pruthvi (earth), Aap (water), Tejas (fire), Vayu (air) and Aakash (ether). Each dosha has a specific correlation with these five elements. In other words, every entity, living or nonliving, organic or inorganic is panchabhautik with these five elements. In Ayurveda, the whole year is divided into Rutus (Seasons) which gives a prediction of vata complaints like joint pain, arthritis, dry skin, freckles, etc. This is the time to early diagnosis and treat the complaints before they fully change to disease form.

On the contrary, Visarga kaal (comprising Varsha, Sharad, Hemant rutu) is predominant of the moon and so manda and Sheeta guna(cold), Snigdha guna (moist/ unctuous), Guru guna (heaviness) finds in our body. We get energy from nature which in general increases our Jatharagni (digestive fire) and Bala (strength) too. In Varsha rutu, Pitta accumulation starts and peaks in Sharad rutu, showing Tikshna nadi. In Hemant and Shishir, Kapha accumulation starts by showing the Tikshna nadi. In Hemant and Shishir, Kapha melts with heat in the Vasant and its accumulation starts and peaks in Sharad rutu, showing rukshata in nadi. Vasant is the time when kapha symptoms like asthma, diabetes, allergic rhiinitis, obesity, PCOS, recurrent cold and cough are observed the most and should get treated with medicines and vamana panchakarma (Emesis). Dryness of vata is more in Greeshma rutu, which gives a prediction of vata complaints like joint pain, arthritis, dry skin, etc. This is the time to early diagnosis and treat the complaints before they fully change to disease form.

The body consists of tridosha, Saptadhatu (seven tissues) and Trimala (three excretes). And they have their traits qualities which show particular actions and effects on human beings according to Prakruti, age, seasons, geographical areas, food, etc.

**Effets of rutu on dosha:** There are six seasons mentioned in Ayurveda text which starts from the month of Chaitra and ends on Falgun. The 6 seasons are Shishir, Vasant, Greeshma, Varsha, Sharad, and Hemant (Winter, Spring, Summer, Rainy, Autumn, Early winter). Every season is dominated by some dosha and its properties. Vata dosha accumulates in Vasant rutu and aggregates in Greeshma and Varsha rutu. Pitta dosha accumulates in Varsha rutu and aggravates in Sharad rutu and Kapha dosha accumulates in Shishir and Hemant rutu and aggravates in Vasant rutu. In this paper, we study the observation of sharir gunas with respect to the rutus/seasons and lifestyle suggestions given.

**Rutucharya (Seasonal Regime):** We eat, exercise or sleep every day according to our likings and habits. However, ayurveda specifies Rutucharya and dinacharya (daily regimen) considering the effects of rutu, month, time on our body and to make sure the food is digested in the most efficient way for the full nourishment of body and mind and to balance tridosha. The whole year is divided into aadaan kaal (a period which takes away body energy/strength) and visarga kaal (a period which provides energy/strength to the body). In aadaan kaal (comprising Shishir, Vasant, and Greeshma rutu), the sun is very strong, it absorbs all moisture from the earth. So the tikshna (sharp), ushna (hot), and ruksha (dry) gunas increase in our body. Also, sharir bala reduces gradually. Kapha melts with heat in the Vasant and its aggravated shows guru, mrudu, snigdha (heavy, soft, unctuous) nadi. In Greeshma, with dryness in nature, vata accumulation starts showing rukshata in nadi. Vasant is the time when kapha symptoms like asthma, diabetes, allergic rhiinitis, obesity, PCOS, recurrent cold and cough are observed the most and should get treated with medicines and vamana panchakarma (Emesis). Dryness of vata is more in Greeshma rutu, which gives a prediction of vata complaints like joint pain, arthritis, dry skin, etc. This is the time to early diagnosis and treat the complaints before they fully change to disease form.

To describe in simple terms, the prominent guna in various rutu are:

1. **Aadan kaal (Shishir, Vasant, Greeshma):** Ushna, tikshna, ruksha, laghu
2. **Visarga kaal (Varsha, Sharad, Hemant):** Sheeta, guru, manda, mrudu, snigdha, sthula

And the prominent guna in various dosha are:

- **Vata:** Ruksha, laghu, sheeta, khara, sukshma, chala
- **Pitta**: Snigdha, tikshna, ushna, laghu, visram, saram, dravya.
- **Kapha**: Guru, manda, sheeta, snigdha, shlakshna, sandra, mrudu, sthira.

**Properties of guna**: There are a total of 40 gunas or qualities. Out of which 20 gunas are sharir or gurvadi gunas. They are in 10 pairs, one opposite to the other. Every guna stays with dravya and shows its action and effect. The 10 pairs are: guru - laghu, sheeta - ushna, snigdha - ruksha, manda - tikshna, sthira - sara, mrudu - kathina, vishad- pichhil, shlakshna - khara, sthulakshma and sandra- drava. In this paper, we have explained the guna which are computed in the report card of Nadi Tarangini. The below explanation and definitions of Gurvadi guna are given through Commentary in Ayurveda Rasayana of Ashtang Hrudyana by Hemadri.

**Guru - Laghu guna:**
Guru is the heavy guna, and contributes to gravity. It is the property of kapha dosha. It nourishes the body tissues, gives energy. It is predominant of aap (water) and pruthvi (earth) elements. Sheeta guna of Hemant and Shishir rutu blocks the agni inside and enhances the digestive fire. As kapha accumulates in Vasant rutu, guru guna finds it in nadi. It nourishes the mansa (muscle) and meda dhatu (Fatty tissues) or body tissues. In the imbalanced state, it gives heaviness to the body and doshas, and results in weak digestion or agnimandya.

Laghu guna gives lightness to body tissues and dosha. Tejas vayu and Aakash mahabhuta are present in laghu. It increases vata and decreases kapha. Laghu is the property of vata and pitta dosha. It enhances the meaning of deepan (enhances digestive fire). It easily digests the food and toxins/ pachana. Laghu guna is more common in Greeshma and Varsha rutu but the jala mahabhuta decreases its effect on laghu guna by decreasing the agni. In the imbalanced state, laghu guna does weight loss, tissue loss leading to abnormal loss of mansa and meda. It does the mala kshaya(Decreases feces formation), mutra shoshana ( Less formation of urine) and vatasanga (Bloating).

**Snigdha - Ruksha guna:**
Snigdha guna is the predominant jala mahabhuta. Snigdhta forms the oiliness, softness of dosha, dhatu and mala. Snigdha is the guna of kapha and pitta. In the visarg kaal, the Sun is on the lower side and the sheeta, manda, snigdha guna of the moon are predominant. In Sharad, Hemant and Shishir rutu, the snigdha guna is more in nature which gives us bala, strong agni. We could see and feel the snigdhata through our netra and twak dnyanendriya (eyes and skin). Snigdhata settles vata and pitta (shaman) and increases kapha (vruddhi). Snigdha guna does bhruhana i.e. it nourishes 7 malas too, it relieves constipation, bloating and painful micturition. Snigdhata enhances the quality and longevity of life, provides energy, strength to all indriyas (sensory and motor organs)and relieves diseases.

When imbalanced, it shows pitta prakop (provokes Pitta) and kapha sanchay (accumulation of kapha).

**Rukshata** means dryness. It is the property of vata dosha. It is predominant in vayu mahabhuta. Ruksha guna increases in Greeshma and Varsha rutu, showing rukshata in nadi. The imbalance in rukshata typically shows loss of appetite, dry and dull skin, joint pain, irritability, bloating, constipation, daurbalya, etc.

**Manda - Tikshna guna:**
Manda guna means dullness, slow. It is pruthvi and aap mahabhuta predominant. It settles vata and pitta and increases kapha. Manda guna increases in Hemant, Shishir and Vasant rutu. It nourishes the dhatu specially mansa and meda. In the imbalanced state, it hampers the function of 3 malas leading to constipation, dribbling micturition and bloating, less sweating.

**Tikshna guna** has the sharpness quality with penetrating action. It is the agni mahabhuta predominant guna of pitta dosha. In the month of Varsha rutu, pitta sanchay (accumulation of Pitta) starts, Sharad is pitta prakop kaal (pitta provokes) in which tikshna guna of pitta and sun are on the higher side. In Sharad rutu, tikshna guna is on the top. Tikshnata does fast and intense work in body tissues, dosha and malas. It settles vata, detoxifies kapha and increases pitta (vata shaman, kapha shodhana and pittakara). High tikshanta of pitta dosha leads to many pitta related symptoms like amlapitta (hyperacidity), ardhavabheda, suryavarta (migraine), Balonash, daurbalya (general debility), ojonash (loss of life), daha (burning). When imbalanced, it does the scraping action of mansa and meda dhatu. The hyper state of it is the breaking of body tissue or dhatu leading to loss of health and life.
Mrudu - Kathina guna:
Mrudu is the softness of dosha, dhatu and mala. It moistens the tissues and dosha. It is aap and aakash mahabhuta predominant. It settles vata and pitta and increases kapha. Mrudu guna increases in Vasant and Varsha rutu as it is aap mahabhuta predominant. Mrudu guna in nadi indicates a healthy state. In the imbalanced state, it gets moistened (klimnata) and provoked, showing pratishyaya (cold), kaas (Coughing), ang gaurav (Heaviness in body), hrullas (Nausea), chardi (vomiting) in Vasant rutu. In Varsha rutu, sandhi graha (osteoarthritis), shwas (asthma), kasa (coughing), etc are observed.

Kathina guna is hard quality and it is Pruthvi mahabhuta predominant. It settles kapha dosha. It binds and toughens the dosha. It is hard to keep in touch when felt in nadi. Kathina guna prominently denotes the asthi vikruti (bone deformity), jeerna vyadhi (chronic diseases) in the imbalanced state.

Sthula - Sukshma guna:
Sthula is the predominant Pruthvi mahabhuta. It blocks the Srotas (Organ systems). It settles vata dosha and provokes kapha. Sthula results in heaviness in the body, which denotes kapha vruddhi, aam (toxins)vruddhi, meda vruddhi. Sthulata in nadi denotes dosha being filled in srotas, obstructed pathology with aam. It hampers the dhatu poshan and excess dhatu poshan of similar guna of dhatu like mansa, meda, and asthi.

Sukshma guna is deeply situated, hard to locate but can be felt in nadi. It is aagni, vayu and aakash mahabhuta predominant. It aggravates vata and settles kapha. When imbalanced, it destroys the dhatus, bala. It aggravates in Varsha and Sharad rutu and less in Hemant, Shishir and Vasant. Sukshma guna indicated dhatu nash, chronicity of diseases, less strength of body, osteoporosis, osteoarthritis, etc.

MATERIALS AND METHODS:
In this paper, we have studied the variations of guna in different rutu throughout a year.

Study design: Multi-centric retrospective observational study
Study sample area: North - west of India
Sample size: 15,391

Table 1: Sample size wrt Age group
Year of data collection: January - December (2018)

Research methodology:

Figure 1. Steps involved in our research methodology for each of our subjects of the study.

Research Tools and Techniques:
1. Prakruti Questionnaire
2. Health and disease related Questionnaire
3. Informed consent form
4. Nadi Tarangini - nadi capturing device

Details of each of the above steps are explained below in this section. We used Nadi Tarangini[1,2] in our study which records tridosha (VPK) pulse pressure waves of every subject in real time and saves them for further analysis. It uses hardware comprising three pressure sensors to record the pulse on the wrist at vata, pitta and kapha locations; mimicking the way an ayurvedic vaidya (doctor) feels nadi manually. Nadi Tarangini’s methodology is shown in figure 2.

The product Nadi Tarangini has been in the market since early 2017, which is used in ayurvedic clinics, hospitals, colleges and camps. We studied the nadi data and reports collected on the server throughout a complete year to showcase, for the first time, how electronic Nadi computation and Artificial Intelligence or data science can significantly co-relate with gunas described in ancient texts about methods of Rutucharya. This also proves that ancient methods have a scientific basis and the observations in the texts mentioned hold truth till date.

In this study, we observed data of 15,391 subjects collected on the centralized server by various ayurvedic doctors at their clinics, hospitals, colleges or camps across India throughout a year. These are different subjects of different geographical areas, ages, genders, cultures, Prakruti across India. The criteria for the selection of the subjects were as follows:

Inclusion Criteria:
• Subjects of age from 18 years and above
• Both male and female
• Individuals as well as individuals with minor and major health symptoms

Exclusion Criteria:
• Hospitalized patients with life support
• Psychotic patients on medicines
• Pregnant and lactating women
• Patients on corticosteroid medications
Individuals on sleep medication
Those with chronic debilitating disorders

For every subject, the Prakruti was computed using a questionnaire-based method. Accordingly, out of the total 15,391 subjects, 4,068 subjects were of vata Prakruti, 9,283 subjects were of pitta Prakruti and 2,040 subjects were of kapha Prakruti. After Prakruti, every subject’s minimal medical information was noted down (height, weight, age, gender and symptoms) and also nadi data was recorded for 1 minute using Nadi Tarangini, as shown in Figure 2. The data at each of the VPK locations is saved on the server. Typical nadi data is shown in Figure 3.

From the stored nadi data at the server, the 10 nadi gunas of each subject were computed. The output was calibrated for nadi gunas with the help of associated ayurvedic vaidyas. Based on the calibration, each subject’s gunas were assigned a value between 0% (lowest) to 100% (highest), where value between 0% to 30% indicates low, between 40% to 60% indicates normal and value between 70% to 100% indicates high.

RESULTS AND DISCUSSION:
In this section, we discuss the results we observed in the guna parameter in all 15,391 subjects when studied throughout the year in the following manner. Table 2: Sample size w.r.t. Prakruti

In every month, for every guna, the average value was computed considering all the subjects of that month. And then these average values were plotted along the 12 months throughout one year as given in Table 3. The trends of the guna can be observed in Figure 4 and Table 4. Note that the trends of their respective opposite guna will be exactly opposite.

Laghuta (dark blue line): Laghu is light, movable, and destroys cell tissues. Laghu is the property/guna of Vata and Pitta Dosha. It accumulates in Greeshma Rutu and aggravates till Varsha rutu. Here in our study we have observed that laghuta present in nadi is low in Vasant as kapha aggravating and in Greeshma as vata accumulation starts. Laghuta increases in Varsha and Sharad which is observed on the higher side. In the months of Hemant and Shishir, laghuta starts increasing again to medium level as vata dosha aggravates in the body. Here we have validated that laghuta is increasing from May to July, stays the same till August. September, October, November and December are on the medium side. Here, our ancient references mentioned are matches with Greeshma and Hemant and Shishir rutu. As mentioned in the Rutucharya, everyone should follow their daily regimen, food selection and exercise pattern as per the existing rutu. Here, as laghuta increases from Greeshma to Varsha, one should have snigdh, laghu aahar, with Madhur, Amla (sweet and sour taste), Sheet (cold potency) veerya and Drava (liquid) aahar. Also, as sharir bala on the lower side should do slow and low pace exercise and yoga practices. In Hemant and Shishir as digestive fire is increasing, everyone should consume snigdh, guru food ingredients like meat, milk products, pure ghee and warm water. Also can practice heavy exercises and yoga. Should practice daily Abhyanga (oil body massage), Udvardhan Powder massage.

Mruduta (red line): Mruduta indicates soft touch of nadi. i.e. When we press mrudu nadi, it easily gets pressed. Mrudu is the guna of Kapha. From the trends, it can be observed that mruduta is low in two rutus Greeshma and Hemant. It increases from Varsha to Sharad as moisture in the rainy season and Pitta has drava (liquidity) and sara (fluidity) guna. In Shishir rutu as kapha sanchay starts the nadi becomes more mrudu. In our study we have validated that, mrudu guna of nadi is high at the end of Varsha, moderate in Sharad, Shishir and Vasant. This observation matches with rutu and guna descriptions from the ancient texts.

Sukshmata (green line): Sukshma nadi is thin and not easily found. It is usually empty and with less bala. It is primarily found in the vitiation of asthi/dhatu. It is the moderate in the first rutu of the year, Shishir up to Vasant. It moves in a negative direction from Vasant to Greeshma rutu. But it starts increasing from Varsha to Sharad. Again from Sharad starts decreasing and increases in Hemant. Ideally Sukshma is property of vata and pitta. It is more in Varsha and Sharad rutu. Vata aggravates in Varsha and Hemant. The descriptions match with the ancient texts. In Varsha rutu, one should have Amla rasa (sour taste), snigdh, laghu aahar like yava (Barley), Shali (Legumes) and easy to digest non vegetarian food like chicken, duck. Consume honey, fermented liquids which are Arishta kalpana. Should practice less exercises. Avoid day time sleep.

Tikshnata (Purple line): Tikshna is sharpness and prickling type of nadi. It enhances agni or digestive fire.
Tikshna is the Pitta guna. In our observations, tikshnata is increasing at the end of Varsha rutu and high in Sharad rutu. Ancient text also says that pitta accumulation starts in Varsha and provokes in Sharad rutu. It is moderate from Hemant and Shishir shows strong digestive fire Agni. Tikshna guna increases from Vasant to Greeshma and from Varsha to Sharad rutu, decreases from Greeshma to Varsha. In our study we observed that tikshnata is high in Sharad rutu. To follow rutucharya is the key to healthy life and preventing diseases. As Sharad rutu is pitta provoking one should follow food and exercise regimen as follows: Madhur rasa (sweet taste), laghu and Sheet guna aahar to consume. Relax and rejuvenate your body with a cold water tub bath (Avaghah). Avoid curd, day time sleep and Guru aahar (heavy to digest food) like meat. Should do body detoxification panchakarma, Virechana (Purgation)and Rakta mokshana (Bloodletting). 33(Fig 8)

Rukshata (Light blue line): Rukshata is dryness, a property of vata dosha. Rukshata is increasing from Shishir, Vasant and Greeshma rutu as in aadan kaal till Varsha, as the weather is dry and hot. Also, rukshata is increasing from Hemant to Shishir as cold temperature or sheet guna aggravates it. In Varsha rutu rukshata lower as humidity or dominance of aap mahabhuta settles the ruksha guna of vata which is high in Greeshma. Here, our findings match Greeshma, and Hemant, Shishir rutu12,19,27,29, 30 (Fig 9)

CONCLUSION

There are thousands of observations and rules noted down in Ayurveda. It is thus termed as the “science of life”. However, many rules are not followed today by common people, because most rules are not backed by today’s language of data based reasoning. In this study, for the first time, we proved that the rules provided in the traditional texts for gunas and its relevance with Rutucharya including dosha avastha (stages of dosha in body) and treatments correlates and can be significantly used for a larger population. The insights and the observations in the study validates the captured data by correlating the trends observed with respect to particular Gunas in a span of 1 year. Aadan kaal is predominant of ushna, tikshna, ruksha and mrudu. Visarga kaal is sheeta, guru, manda, snigdha predominant.

This is the first study of this kind, and in the future, we will further study for healthy people of different Prakruti, of different age groups and also of other geographical regions of India and the world to see whether it matches with the rules books of the local cuisine.

Thus the conducted study being first of its kind can be a future platform or medium for further studies to be carried out among different population groups with different Prakruti, age, geographical locations, food patterns, climate change in India and abroad to map significant correlations with the ancient texts, data science techniques to help predict & diagnose the future of human health, balance & stability.

UNIQUENESS AND INNOVATION OF THE STUDY: This is our innovative work, in which, we did the evidence based empirical study to observe the correlations between the ancient way of achieving balance in body and mind through Rutucharya (seasonal regimen), states of tridosha (three humors) and today’s language of data based statistics; and show through observations that Rutucharya and tridosha, gunas has a scientific basis have a significant and scientific correlations.

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Conflict of Interest – None
Source of Finance & Support - Nil

REFERENCES

1 A. Joshi, Nadi Tarangini: a pulse based diagnostic system. In 29th Annual International Conference of the IEEE EMBS, pages 2207-2210, 2007


7. Garde GK, translator, Sarth Vagbhata, New edition, Sutra sthana, chapter 1, verse no.18, Pune, Proficient publishing house, 2009, p. 3


23 Tripathi B, Editor, Charaka Samhita of Agnivesha, Sutrasthan, Chapter 1, Verse 61, 6th ed, Varanasi: Chaukhambha Surbharati Prakashan; 1999; p.33.


28. Tripathi B, Editor, Charaka Samhita of Agnivesha, Sutrasthan, Chapter 6, Verse 41, 6th ed, Varanasi:
Tejaswini et al. “A Multicenter Retrospective Observational Study to Correlate Sharir Guna Computed Through Nadi Pariksha (Pulse Diagnosis) Using Electronic Nadi (Pulse) Recording Device Nadi Tarangini with Trends and Changes in Rutus (Seasons) for a Span of One Year in North-Western Zone Of India.”: 2022; 5 (3):15-27

Chaukhambha Surbharati Prakashan; 1999; p.158.


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Figure 1. Steps involved in our research methodology for each of our subjects of the study.

| Clinical examination | • Prakruti Questionnaire  
|                      | • Clinical Examination form |
| Data                | • Nadi captured using Nadi Tarangini  
|                      | • Nadi data saved on centralized cloud server |
| Analysis            | • Guna are computed for every nadi  
|                      | • Guna is studied for with Prakruti, vikruti and rutus |

Figure 2. Manual nadi pariksha is done at VPK locations on the wrist using index, middle and ring fingers respectively. Nadi Tarangini mimics the methodology using three pressure sensors which are used at the three locations to record nadi data in real time.
Figure 3. Sample nadi data of 10 seconds long (out of recorded 1 minute) using Nadi Tarangini. The three colors blue, red and green respectively represent data collected using pressure sensors at vata, pitta and kapha locations.

Figure 4. Variations in the sharir guna over 12 months. Different colors indicate the averaged trends of guna over 12 months.

Fig 5 Variations in the Laghuta
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**Fig 6** Variations in the Mruduta (red line):

![Graph of Mruduta variations over the year](image1)

**Fig 7** Variations in the Sukshmata

![Graph of Sukshmata variations over the year](image2)

**Fig 8** Variations in the Tikshanta

![Graph of Tikshanta variations over the year](image3)
Tejaswini et al. “A Multicenter Retrospective Observational Study to Correlate \textit{Sharir Guna} Computed Through \textit{Nadi Pariksha} (Pulse Diagnosis) Using Electronic Nadi (Pulse)Recording Device \textit{Nadi Tarangini} with Trends and Changes in \textit{Rutus} (Seasons) for a Span of One Year in North-Western Zone Of India.”: 2022; 5 (3):15-27

![Graph of Rukshata]

\textit{Fig 9} Variations in the \textit{Rukshata}

\begin{table}
\centering
\caption{Sample size wrt Age group}
\begin{tabular}{|l|l|}
\hline
Age group & sample size \\
\hline
18 to 25yrs & 1843 \\
26-55yrs & 8655 \\
Above 55 yrs & 4895 \\
\hline
\end{tabular}
\end{table}

\begin{table}
\centering
\caption{Sample size w.r.t. Prakruti}
\begin{tabular}{|l|l|}
\hline
\textit{Vata Prakruti} & 4068 \\
\textit{Pitta Prakruti} & 9283 \\
\textit{Kapha Prakruti} & 2040 \\
\hline
\end{tabular}
\end{table}
Table 3: Available Data w.r.t. 12 months

Data available for 12 months

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<thead>
<tr>
<th>Month</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample</td>
<td>1653</td>
<td>1798</td>
<td>1996</td>
<td>1607</td>
<td>1470</td>
<td>875</td>
<td>897</td>
<td>949</td>
<td>786</td>
<td>837</td>
<td>879</td>
<td>888</td>
</tr>
</tbody>
</table>

Table 4. Variations in the sharir guna over 6 rутu.

<table>
<thead>
<tr>
<th>Vasant</th>
<th>Greeshma</th>
<th>Varsha</th>
<th>Sharad</th>
<th>Hemant</th>
<th>Shishir</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feb-Mar</td>
<td>Apr-May</td>
<td>Jun-Jul</td>
<td>Aug-Sept</td>
<td>Oct-Nov</td>
<td>Dec-Jan</td>
</tr>
<tr>
<td>Laghuta</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td>Mruduta</td>
<td>Medium</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Sukshmata</td>
<td>Medium</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Tikshna</td>
<td>Medium</td>
<td>High</td>
<td>Medium</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Rukshata</td>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
<td>Medium</td>
<td>High</td>
</tr>
</tbody>
</table>