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MAPPING *PRAKRITI* PROFILES IN *VATARAKTA*: A CROSS-SECTIONAL STUDY

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Abstract-

This study explores the role of *Ayurveda*, with a focus on the concept of *Prakriti*, in understanding *Vatarakta*, a condition closely related to Gout. *Ayurveda's* holistic framework, which balances the *Doshas—Vata, Pitta, and Kapha*—provides valuable insights into the physiological, psychological, and environmental factors influencing health. The findings indicate that *Vatarakta* is most prevalent in individuals aged 40 to 50 years, with a notably higher incidence in males, aligning with research linking elevated uric acid levels and metabolic factors to gender differences. The condition is also more common in rural areas, potentially due to limited healthcare access, delayed diagnoses, and dietary habits high in purine-rich foods, underscoring the need for better healthcare access and dietary awareness in rural populations.

The study further highlights the significant role of diet in the development of *Vatarakta*. Both vegetarian and mixed diets, particularly those with high purine content from plant-based foods, contribute to elevated uric acid levels, thereby increasing the risk of *Vatarakta*. The distribution of *Prakriti* types reveals a predominance of *Vata*-dominant constitutions, with *Tridoshaj* individuals exhibiting the most severe symptoms, followed by *Vata-Pitta* and *Vata-Kapha* types, while individuals with a purely *Vata* constitution show milder symptoms. Symptom severity correlates with *Prakriti*, particularly in areas such as *Svayathu, Stabdha, and Kathinya*.

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These findings emphasize the iportance of personalized management strategies, considering *Prakriti* to prevent and treat *Vatarakta* effectively, while addressing dietary habits and healthcare access, especially in rural areas.

Keywords- *Prakriti*, *Vatarakta*, Uric acid, Rural, Severity, *Dosha*

Introduction-

Ayurveda, derived from *'Ayur'* meaning life and *'Veda'* meaning wisdom *Ayurveda* is the 'SCIENCE OF LIFE'. *Ayurveda* is a component of the *Atharva Veda.* It pertains to the states of health and disease. It encompasses both preventive and therapeutic dimensions of human illnesses, rendering it a holistic science with a personalized approach. Consequently, it is ideal for formulating routine lifestyle interventions for individuals in both healthy and pathological

conditions.

Ayurveda posits that each human is distinct in physiological, psychological, and physical aspects, a concept referred to as the person's *Prakriti. Prakriti* is a fundamental idea determined at the moment of conception. The predominant *Dosha* at the time of the union of *Shukra* and *Shonita* determines the *Doshika* constitution [1]. It represents the functions of the body through anatomy, physiology, and individual behavior. *Prakriti* refers to phenotypic and genotypic composition[2]. *Prakriti* comprises seven types*:* three corresponding to each *Dosha—Vataj*, *Pittaj,* and *Kaphaj;* three representing combinations of two *Doshas (Dwandwaj);* and one resulting from the interplay of all three *Doshas (Sama Doshaj). Sama Doshaj* is regarded as exemplary due to the homeostatic equilibrium of *Dosha;* each *Prakriti* possesses distinct physical and mental attributes that are entirely contingent upon the influence of *Dosha*[3].

Prakriti refers to a normal or natural state, wherein no *Doshas* should dominate the bodies of persons. Individuals exhibiting dominance of one or more *Doshas* cannot be characterized as possessing normal bodily states[4]. Therefore, the appropriate terminology is *Vatala* (predominantly *Vata*), *Pittala* (predominantly *Pitta*), and *Sleshma* (predominantly *Kapha*). Individuals of the *Vatala*, *Pittala*, and *Slesmala* kinds are predisposed to *Vatika, Paittika*, and *Slaismika* disorders, respectively, which manifest with considerable severity in these specific individuals[5].

Vatarakta, also referred to as *Vatashonita, Khudd-Vata, VataBalasa,* and *Adhya Vata. Vatarakta* is a condition resulting from the disturbance of both *Vata* and *Rakta Doshas.* Vitiated *Rakta* obstructs aggravated *Vata*, thereby exacerbating the condition of *Vata.* Consequently, inducing the condition *Vatarakta*[6]. *Vatarakta* comprises two phases: *Uttana Vatarakta* and *Gambhir Vatarakta. Gambhir Vatarakta* primarily impacts *Asthi Dhatu* and induces *Ruja* that disseminates as *Aakhur Visha.* The characteristics of *Gambhir Vatarakta* can be associated with Gout. Gout is a prevalent condition of uric acid metabolism that may result in recurring joint inflammation, deposition of uric acid crystals in tissues, and joint damage if ignored.

Monosodium urate (MSU) crystals in joints and other locations, resulting in tophi. Gout arises from a sustained increase in uric acid levels and general acidity in the blood[7].

The reasons consist of overproduction (10-15%) and poor excretion (80-90%) of uric acid. It is more prevalent in middle age, with men exhibiting more susceptibility than women. Gout may manifest in menopausal women. Its prevalence is rising; furthermore, it may indicate undetected comorbidities such as obesity, metabolic syndrome, diabetes mellitus, hypertension, cardiovascular disease, and renal illness[8].

Material and Methods Material:

The study utilizes a variety of resources:

1. **Ancient Literature**: References from the *Vedas*, *Upanishads*, and *Ayurvedic* texts (*Brihattrayee* and *Laghutrayee*), including *Charak Samhita, Sushruta Samhita, Ashtanga Samgraha, Ashtanga Hridaya, Sharangdhara Samhita, Bhavaprakash, and Madhav Nidana,* along with their respective commentaries by scholars like *Chakrapani*, *Dalhana*, *Indu*, *Arundatta*, and others.

2. **Modern Literature**: Books on Gout and medical pathology, including *Textbook of Medical Laboratory Technology* by Praful B. Godkar, *Pathologic Basis of Disease* by Robbins & Cotran, *Harrison's Principles of Internal Medicine*, and *Davidson's Principles & Practice of Medicine*.

3. **Contemporary *Ayurvedic* Literature**: *Sarira-Kriya-Vijnana (A Textbook of Physiology in Ayurveda)* by Nandini Dhargalkar.

4. **Journals & Published Articles**: Studies offering critical analysis and contemporary understanding of the association between *Prakriti* and *Vatarakta*.

Methods:

Aim & Objectives:

- To assess the association between *Prakriti* types and the severity of *Vatarakta*, aiming to identify specific *Prakriti* profiles associated with higher disease severity.

- To classify *Vatarakta* based on classical *Ayurvedic* symptoms and use the ACR/EULAR scoring criteria for Gout diagnosis[9].

- To evaluate *Prakriti* using Dr. Kishor Patwardhan's proforma[10].

Study Design: Cross-sectional study.

Duration: 12 months.

Sample Size: 100 participants.

Inclusion Criteria-

- Individuals aged 20-50 years of either gender.
- Individuals who consent in writing to participate in the study.
- Individuals presenting with clinical features of *Vatarakta*, irrespective of gender and socio- economic status.
- Individuals presenting clinical features of gouty arthritis with hyperuricemia.

Exclusion Criteria-

- Mentally unstable individuals.
- Individuals who have or have had a past history of a malignant tumor.
- Pregnant and lactating women.
- Individuals with auto-immune disorders of joints, infective and reactive arthritis.
- Individuals with severe toxicity, ulceration, progressive gangrenous changes.

Ethics Committee Approval : CBP- IEC/2022/KS/MD/26

Assessment Criteria:-

- *Vatarakta lakshan*a mentioned in *Charak Samhita.*
- ACR-EULAR Gout classification criteria[9].
- Assessment of *Prakriti* by using *Prakriti* proforma by Dr. Kishor Patwardhan[10].

Observations & Results-

1. Age Group: *Vatarakta* predominantly affects individuals in the middle-age category, with the highest occurrence in those aged 40 to 50 years. This suggests that middle age is a critical period for the onset of the condition.

2. Gender Prevalence: The condition shows a higher prevalence among males compared to females, aligning with existing research indicating that men are more susceptible to developing *Vatarakta* due to factors like higher uric acid levels.

3. Geographical Distribution: *Vatarakta* is more common among individuals residing in rural regions compared to urban settings. This may be due to differences in diet, lifestyle, and access to healthcare between rural and urban populations.

4. Dietary Habits: There is a predominance of vegetarianism among the patients, although a significant portion consumes a mixed diet. This highlights the role of dietary factors, such as purine intake, in the development of *Vatarakta*.

5. Distribution of *Vatarakta* Cases according to *Prakriti*

The distribution of *Prakriti* among *Vatarakta* cases shows that 8 patients (8.0%) had a *Vata* constitution, with no cases of purely *Pitta* or *Kapha* constitutions. The majority, 43 patients (43.0%), had a *Vata-Pitta* combination, followed by 33 patients (33.0%) with a *Vata-Kapha* constitution. Additionally, 16 patients (16.0%) were classified as *Tridoshaj*. This indicates a predominance of *Vata*-dominant constitutions in *Vatarakta* cases.

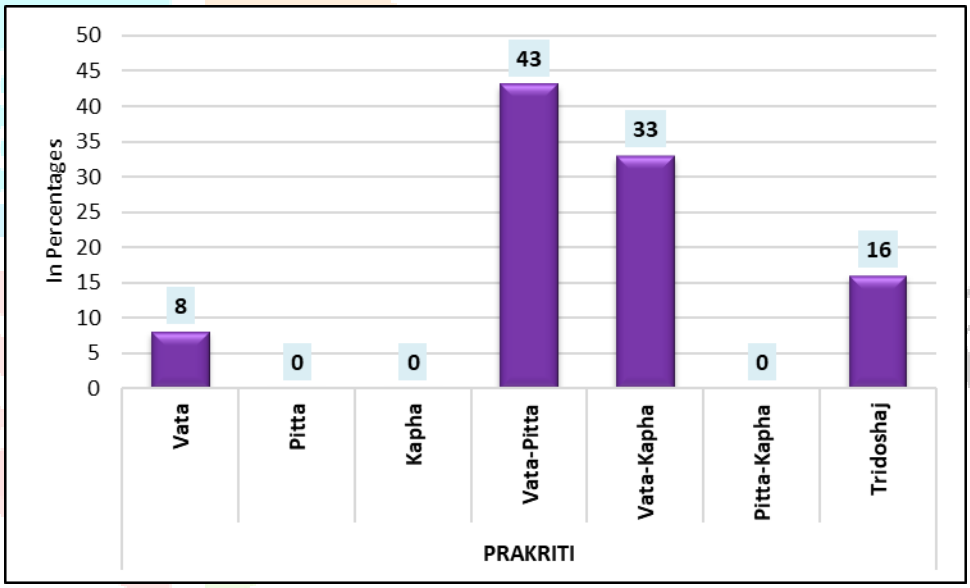

figure 1. distribution of *vatarakta* cases according to *prakriti*

6. Distribution of *Vatarakta* Cases according to Severity of Gout

The severity of gout among the cases was as follows: 59 patients (59.0%) had mild gout, 38 patients (38.0%) had moderate gout, and 3 patients (3.0%) had severe gout. No cases of very severe gout were recorded, indicating that most patients experienced mild to moderate forms of the condition.

7. Comparison of *Vatarakta* Score across Different *Prakritis*

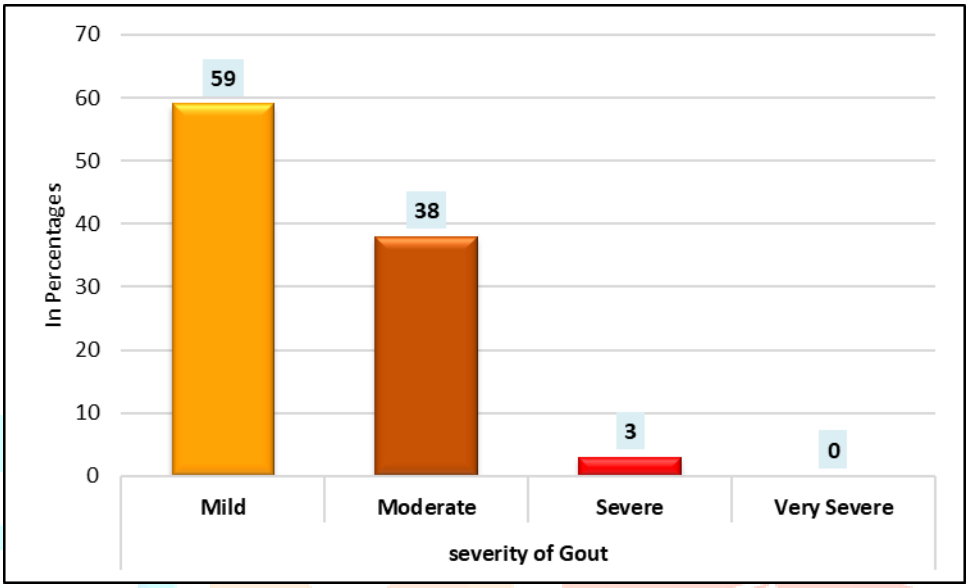

figure 2. distribution of *vatarakta* cases according to severity of gout

The comparison of *Vatarakta* scores across different *Prakriti* types showed significant variations. Patients with a *Vata* constitution had a mean score of 4.00 ± 1.07, while those with *Vata-Pitta* and *Vata-Kapha* constitutions had higher scores of 6.53 ± 2.28 and 6.76 ± 2.03, respectively. The highest mean score of 11.81 ± 2.56 was found in individuals with a *Tridoshaj* constitution. The overall mean *Vatarakta* score was 7.25 ± 3.02. ANOVA analysis revealed a significant difference across groups (F-value = 31.33, $p < 0.001$), indicating that *Vatarakta* severity varies significantly with *Prakriti*.

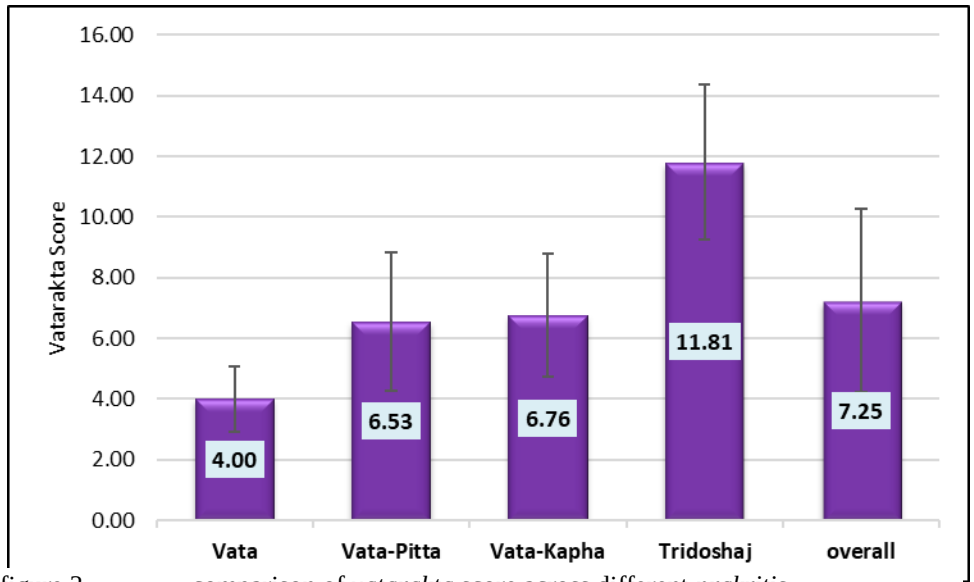

figure 3. comparison of *vatarakta* score across different *prakritis*

8. Post Hoc Paired Comparisons of *Vatarakta* Scores across Different Pairs of *Prakritis*

Post hoc paired comparisons of *Vatarakta* scores across different *Prakriti* types revealed significant differences. The comparison between *Vata* and *Vata-Pitta* showed a mean difference of -2.53 (SE = 0.84, p = 0.017), with *Vata* having a lower score. A similar result was observed between *Vata* and *Vata-Kapha*, with a mean difference of -2.76 (SE = 0.86, p = 0.010). The most significant difference was between *Vata* and *Tridoshaj*, with a mean difference of -7.81 (SE = 0.94, $p < 0.001$). No significant difference was found between *Vata-Pitta* and *Vata-Kapha* (mean difference = -0.22, SE = 0.51, p = 0.971). However, significant differences were found when comparing *Vata-Pitta* to *Tridoshaj* (-5.28, SE = 0.64, $p < 0.001$) and *Vata-Kapha* to *Tridoshaj* (-5.05, SE = 0.66, $p < 0.001$).

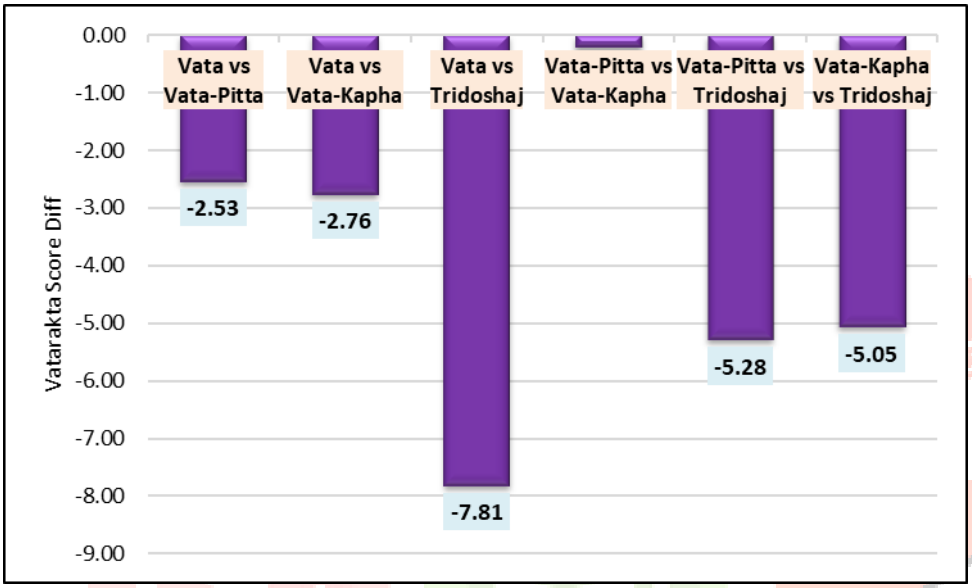

figure 4. post hoc paired comparisons of *vatarakta* scores across different pairs of *prakritis*

9. Association of Severity of *Vatarakta* Score with *Prakriti*

The association between the severity of *Vatarakta* and *Prakriti* types showed significant disparities. Individuals with a *Vata* constitution had only mild severity, with 100% (n=8) in the mild category. The *Vata-Pitta* group showed more variation, with 72.1% (n=31) mild and 27.9% (n=12) moderate. The *Vata-Kapha* group had 60.6% (n=20) mild and 39.4% (n=13) moderate. The *Tridoshaj* group exhibited higher severity, with 81.3% (n=13) moderate and 18.8% (n=3) severe. No cases of mild or very severe gout were found in the *Pitta*, *Kapha*, or *Pitta-Kapha* groups.

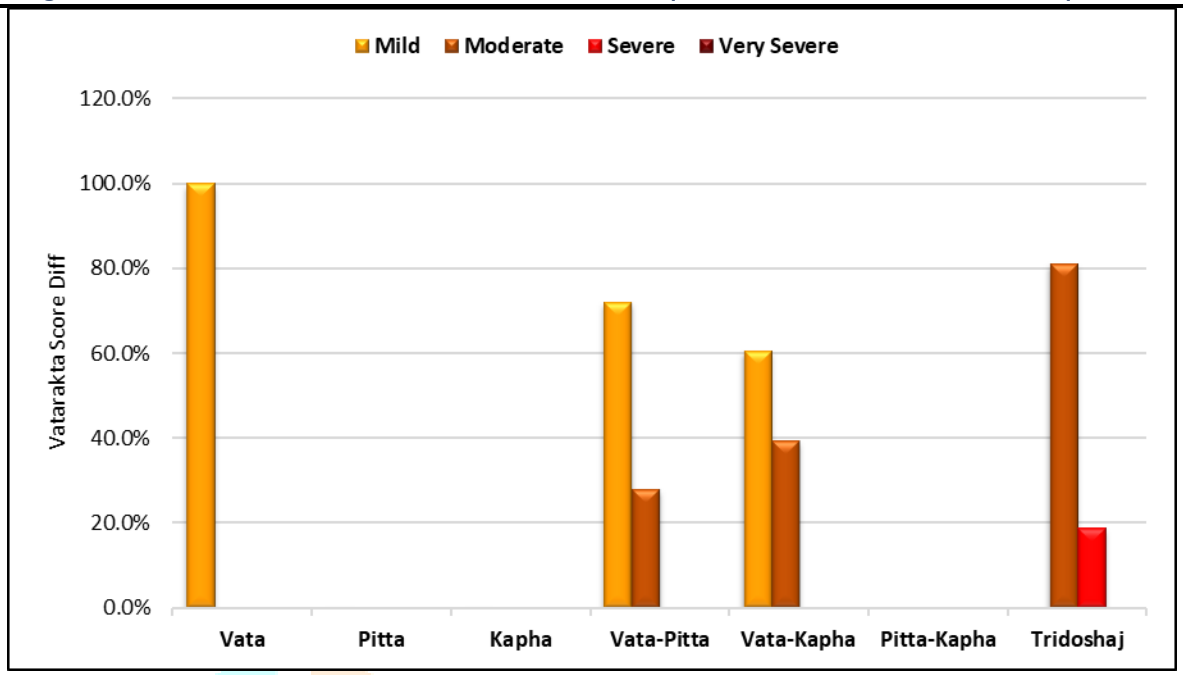

figure 5. showing association of severity of *vatarakta* score with *prakriti*

10. Comparison of *Vatarakta* Symptom Scores across Different *Prakritis*

The comparison of *Vatarakta* symptom scores across different *Prakriti* types revealed significant differences. The Kruskal-Wallis test indicated substantial variation in symptom severity.

- ***Svayathu*** showed a clear increase in severity from *Vata* (0.88) to *Tridoshaj* (2.38) with a chi-square of 34.6 ($p < 0.001$).
- ***Stabdha*** also demonstrated increased severity from *Vata* (0.38) to *Tridoshaj* (1.75) with a chi-square of 37.8 ($p < 0.001$).
- ***Kathinya*** scores increased from *Vata* (0.50) to *Tridoshaj* (1.56) with a chi-square of 19.1 ($p < 0.001$).
- ***Bhrshartimaan*** had the highest score in *Tridoshaj* (1.94) with a chi-square of 46.5 ($p < 0.001$).
- ***Twak Vaivarnya*** and ***Daha*** showed significant differences, with *Vata* scoring zero and *Tridoshaj* showing higher scores (0.88 and 0.31 respectively).
- ***Toda*** and ***Sphurna*** did not show significant differences.
- ***Paka*** had significant variation (chi-square = 18.6, $p < 0.001$).

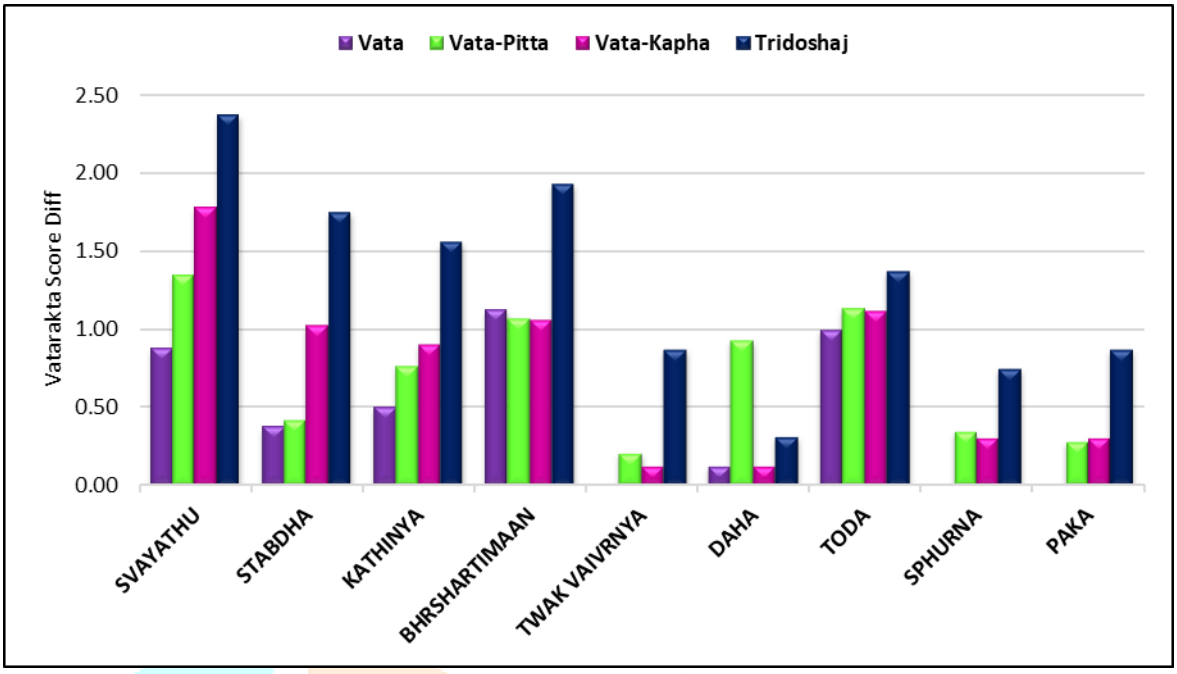

figure 6. showing comparison of *vatarakta* symptom scores across different *prakritis*

Discussion-

1. The study indicates that *Vatarakta* primarily affects individuals in the 40 to 50 years age group, which may be due to metabolic changes, lifestyle factors, and accumulated physical stress over time. As individuals age, the body's ability to maintain *Dosha* balance, especially *Vata*, declines, leading to aggravation of *Vata*. This imbalance can result in the deposition of uric acid crystals in joints, a hallmark of Gout and *Vatarakta*, making middle- aged individuals more susceptible to the condition.
2. The study shows a higher prevalence of *Vatarakta* in males, which is consistent with existing research linking higher uric acid levels, purine-rich food consumption, and metabolic factors to increased risk in men. Hormonal differences also play a role, as estrogen in women helps protect against uric acid buildup. However, the increased prevalence of *Vatarakta* in females post-menopause suggests that age-related hormonal changes may also contribute to the condition in women.
3. The study shows a higher occurrence of *Vatarakta* in rural areas compared to urban settings, potentially due to factors such as limited healthcare access, delayed diagnoses, and poorer management of health conditions in rural populations. Additionally, traditional diets in rural regions, which may be rich in purine-rich foods, could contribute to the increased prevalence of *Vatarakta*. These factors highlight the need for better healthcare access and dietary awareness in rural populations to manage and prevent *Vatarakta*.
4. The findings reveal that *Vatarakta* patients predominantly follow a vegetarian diet, though many also consume a mixed diet. While vegetarianism is often linked to a lower risk of gout due to reduced intake of purine-rich animal products, the presence of *Vatarakta* in vegetarians suggests that other dietary factors, like excessive consumption of purine-rich plant-based foods (e.g., legumes and lentils), may contribute to the

condition. Individuals with a mixed diet are more likely to consume purine-rich foods from both animal and plant sources, potentially raising uric acid levels and increasing the risk of *Vatarakta*. This highlights the importance of dietary management in preventing and managing *Vatarakta*.

5. The distribution of *Prakriti* among *Vatarakta* cases reveals a clear predominance of *Vata*- dominant constitutions. Only 8.0% of patients had a purely *Vata* constitution, with no cases of purely *Pitta* or *Kapha* constitutions. The majority of patients had a *Vata-Pitta* combination (43.0%), followed by *Vata-Kapha* (33.0%), and 16.0% were classified as *Tridoshaj*. This suggests that *Vata*, either alone or in combination with other *doshas*, plays a significant role in the manifestation of *Vatarakta*.

6. The severity of gout in the study indicates that most patients experienced mild to moderate forms of the condition, with 59.0% having mild gout and 38.0% experiencing moderate gout. Only 3.0% had severe gout, and no cases of very severe gout were recorded. This suggests that gout was generally less severe in the studied population, possibly due to early diagnosis or effective management. The absence of very severe cases may also reflect the sample's overall health or treatment interventions in place.

7. The comparison of *Vatarakta* scores across different *Prakriti* types revealed significant differences in severity. Patients with a *Vata* constitution had the lowest mean score, while those with *Vata-Pitta* and *Vata-Kapha* constitutions had moderately higher scores. The highest scores were found in individuals with a *Tridoshaj* constitution, suggesting that these individuals experience more severe *Vatarakta* symptoms. ANOVA analysis confirmed a significant variation in scores across *Prakriti* groups (F-value = 31.33, $p < 0.001$), highlighting the influence of *Prakriti* on *Vatarakta* severity.

8. Post hoc paired comparisons of *Vatarakta* scores revealed significant differences across various *Prakriti* types. *Vata* individuals had significantly lower scores compared to *Vata- Pitta*, *Vata-Kapha*, and especially *Tridoshaj*, with the largest difference observed between *Vata* and *Tridoshaj*. No significant difference was found between *Vata-Pitta* and *Vata- Kapha*. However, significant differences were observed when comparing both *Vata-Pitta* and *Vata-Kapha* to *Tridoshaj*. These findings emphasize the marked impact of the *Tridoshaj* constitution on *Vatarakta* severity.

9. The severity of *Vatarakta* was significantly associated with *Prakriti* types. Individuals with a *Vata* constitution had only mild severity, while those with *Vata-Pitta* and *Vata-Kapha* showed more variation, with some experiencing moderate severity. The *Tridoshaj* group exhibited the highest severity, with a significant proportion experiencing moderate or severe forms of *Vatarakta*. No severe cases were observed in the *Pitta, Kapha*, or *Pitta- Kapha* groups. The strong association between *Prakriti* and severity (chi-square = 40.82, $p < 0.001$) suggests that specific *Prakriti* types are more likely to experience moderate or severe *Vatarakta*.

10. The comparison of *Vatarakta* symptom scores across different *Prakriti* types revealed significant variations in symptom severity. The Kruskal-Wallis test showed that the severity of symptoms increased from *Vata* to *Tridoshaj* in several areas, including *Svayathu, Stabdha, Kathinya, Bhrshartimaan, Twak Vaivarnya*, and *Daha*, all with statistically significant differences ($p < 0.001$). The *Tridoshaj* group consistently exhibited the highest symptom severity, particularly in *Bhrshartimaan*. However, symptoms like *Toda* and *Sphurna* did

not show significant differences. Overall, these findings emphasize that *Prakriti* plays a significant role in the manifestation and severity of *Vatarakta* symptoms.

The findings of the present study, which indicate a predominance of *Vata-Pitta* among individuals diagnosed with *Vatarakta*, are consistent with existing literature highlighting *Prakriti*-based susceptibilities across various pathological conditions. Several studies have demonstrated significant associations between specific *Prakriti* types and disease predisposition. Chauhan et al. observed a higher prevalence of *Kapha* and *Pitta Prakriti* among patients with type 2 diabetes mellitus, suggesting that inherent metabolic characteristics of these constitutional types may contribute to the pathogenesis of metabolic disorders[11]. Similarly, Ghodke et al. reported that individuals with *Pitta* predominance exhibited enhanced platelet aggregation associated with CYP2C19 gene polymorphisms, indicating a potential link between *Prakriti* and cardiovascular risk as well as drug responsiveness[12]. In oncology, Tiwari et al. identified *Pitta Prakriti* as a dominant phenotype in breast cancer patients, which was postulated to be associated with pro-inflammatory and hypermetabolic tendencies[13]. In the domain of neuropsychology, Sharma et al. found that individuals with *Pitta* dominance showed increased psychological stress responses, correlating *Prakriti* with vulnerability to stress-related neurological conditions[14]. Furthermore, Rotti et al. demonstrated differential DNA methylation patterns in inflammatory gene loci across *Vata*, *Pitta*, and *Kapha Prakriti* types, with *Vata* and *Pitta* individuals exhibiting epigenetic profiles suggestive of heightened autoimmune susceptibility[15]. These findings collectively support the hypothesis that *Prakriti* represents a biologically relevant framework for understanding individual variations in disease predisposition and progression. The results of the present study contribute to this growing body of evidence by elucidating the potential role of *Ayurvedic* phenotyping in the clinical characterization of *Vatarakta*, a disorder marked by inflammatory and metabolic dysregulation.

Conclusion-

In conclusion, this study underscores the critical role of *Ayurveda*, particularly the concept of *Prakriti*, in understanding the development and severity of *Vatarakta*, a condition closely associated with Gout. *Ayurveda's* holistic approach, which emphasizes the balance of the *Doshas*— *Vata*, *Pitta*, and *Kapha*—offers valuable insights into the physiological, psychological, and environmental factors influencing health. The findings suggest that *Vatarakta*, which involves the imbalance of both *Vata* and *Rakta Doshas*, is most prevalent in individuals aged 40 to 50 years, with a marked increase in males, aligning with existing research linking uric acid metabolism and metabolic factors to gender differences.

Additionally, the study reveals a higher occurrence of *Vatarakta* in rural areas, which could be attributed to factors such as limited healthcare access, delayed diagnoses, and traditional dietary habits rich in purine-rich foods. This highlights the need for increased healthcare awareness and access in rural populations to manage and prevent conditions like *Vatarakta*. Furthermore, dietary habits, including vegetarian and mixed diets, play a significant role in the development of the condition. The excessive intake of purine-rich plant-based foods

in vegetarians and mixed diets may contribute to elevated uric acid levels, increasing the risk of *Vatarakta*.

The distribution of *Prakriti* types in the study shows a clear predominance of *Vata*-dominant constitutions, which may contribute significantly to the manifestation of *Vatarakta*. The severity of the condition varies across *Prakriti* types, with the *Tridoshaj* group experiencing the most severe symptoms, followed by *Vata-Pitta* and *Vata-Kapha* groups. Interestingly, individuals with a purely *Vata* constitution experienced the mildest symptoms. This finding further emphasizes the influence of *Prakriti* in determining both the severity and nature of *Vatarakta* symptoms.

Additionally, the study suggests that the overall severity of *Vatarakta* is strongly linked to *Prakriti*, with *Tridoshaj* individuals showing the most severe forms of the condition. Post hoc comparisons reveal significant differences in symptom severity, particularly in areas like *Svayathu*, *Stabdha*, *Kathinya*, and *Bhrshartimaan*, further supporting the idea that individuals with a *Tridoshaj* constitution are at a higher risk of experiencing more intense manifestations of the condition. These results underline the importance of a personalized approach in the prevention and treatment of *Vatarakta*, emphasizing the need for lifestyle interventions tailored to the individual's unique *Prakriti*.

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