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Effectiveness of *Sathavareechinnaruhadi Kashaya* and *Varyadi Kashaya* in the Management of Acute Gouty Arthritis- A Comparative Clinical Trial

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Abstract:
Background: Acute Gouty Arthritis is a metabolic inflammatory disorder associated with hyperuricemia and deposition of monosodium urate crystals, producing acute pain, swelling, burning sensation, tenderness and restricted joint movement. These manifestations closely resemble *Paithika Vatarakta* described in Ayurveda. The present study evaluated two Ayurvedic formulations for their clinical and biochemical effects in Acute Gouty Arthritis.
Aim: To evaluate and compare the effectiveness of *Sathavareechinnaruhadi Kashaya* and *Varyadi Kashaya* in the management of Acute Gouty Arthritis with special reference to *Paithika Vatarakta.*
Materials and Methods: An interventional, open-label, comparative, parallel-group clinical trial was conducted. A total of 80 patients fulfilling the diagnostic and eligibility criteria were enrolled and allocated into two groups of 40 each. Group A received *Sathavareechinnaruhadi Kashaya*, while Group B received *Varyadi Kashaya* for 30 days, with assessment at regular intervals.
Study Group and Assessment: Patients aged 18–70 years with newly diagnosed Acute Gouty Arthritis and hyperuricemia were included. Subjective parameters comprised *Sandhishula* (pain), *Sandhi Shotha* (swelling), *Daha* (burning sensation) and *Sparshasahatwa* (tenderness). Objective parameters included serum uric acid, Visual Analogue Scale (VAS) and range of joint movement.
Results: Both groups demonstrated statistically significant improvement in clinical parameters and reduction in serum uric acid. Group A showed greater improvement, including 70.08% reduction in pain, 69.03% reduction in swelling and 68.27% improvement in burning sensation. Inter-group analysis demonstrated significant differences favouring Group A for pain, swelling, burning sensation, tenderness and several movement parameters.
Conclusion: Both formulations were effective and well tolerated; however, *Sathavareechinnaruhadi Kashaya* demonstrated comparatively superior clinical efficacy in Acute Gouty Arthritis with special reference to *Paithika Vatarakta.*

Keywords: Acute Gouty Arthritis, Hyperuricemia, *Vatarakta, Paithika Vathasonitha, Kashaya*.

1. INTRODUCTION

Gout is a metabolic inflammatory disorder characterized by persistent hyperuricemia and deposition of monosodium urate crystals in joints and periarticular tissues, leading to acute inflammatory arthritis. [1,2] It is one of the most common inflammatory arthropathies worldwide, with an increasing prevalence. [1] The global burden of gout has increased substantially over recent decades. [3] Available epidemiological estimates indicate that gout affects approximately 1–4% of the global population, with an estimated incidence of 0.1–0.3%. [1,3] Both incidence and prevalence tend to increase with advancing age. [1] The increasing burden has been observed alongside rapid urbanization, economic development, and changes in dietary and lifestyle practices. [3] Factors such as sedentary behaviour, unhealthy dietary patterns, obesity, alcohol consumption and associated metabolic disturbances may further contribute to the development and progression of hyperuricemia and gout. [1,2]

Acute Gouty Arthritis can be correlated with *Paithika Vatarakta* based on the close similarity in their clinical manifestations and underlying pathological processes. [1,2,4–6] In Acute Gouty Arthritis, deposition of monosodium urate crystals within the joints produces an acute inflammatory response characterized by severe pain, swelling, tenderness, redness, local warmth and restricted joint movement. [1,2] These manifestations can be correlated with the features of *Paithika Vatarakta*, where the predominant involvement of *Pitta* and *Rakta* produces *Raga* (redness), *Daha* (burning sensation), *Ushnata* (local heat) and *Shotha* (swelling), while aggravated *Vata* accounts for intense pain and impaired joint function. [4–6]

The correlation can be further understood as follows: severe joint pain in gout corresponds to *Vata* aggravation; redness, warmth and burning sensation correspond to *Pitta-Rakta* vitiation; joint swelling and tenderness reflect the inflammatory involvement of *Pitta* and *Rakta*; and restricted joint movement is consistent with aggravated *Vata* localized in the *Sandhi*. [4–6] The characteristic involvement of peripheral joints, particularly those of the feet, also shows clinical similarity with *Vatarakta*. [4–7] Thus, the acute inflammatory phenotype of gout can be interpreted as predominantly *Pitta-Rakta* involvement superimposed on *Vata* vitiation. [4–6]

According to the Ayurvedic concept of *Vatarakta*, vitiated *Rakta* obstructs the normal movement of aggravated *Vata*, resulting in their mutual interaction and localization in the joints. [4–7] Therefore, the combination of *Vata*-related severe pain and *Pitta-Rakta*-related inflammatory manifestations provides the principal basis for correlating Acute Gouty Arthritis with *Paithika Vatarakta*. This correlation also provides a rationale for therapeutic approaches directed towards pacifying *Vata*, *Pitta* and *Rakta* while addressing the acute inflammatory manifestations of the disease. [4–7]

Sathavareechinnaruhadi Kashaya and *Varyadi Kashaya* were selected because both formulations possess properties relevant to the management of *Paithika Vatarakta*, but their therapeutic emphasis differs. [8–10] *Sathavareechinnaruhadi Kashaya*, comprising *Shatavari*, *Guduchi*, *Amalaki*, *Bala*, *Ikshu*, *Kokilaksha* and *Yashtimadhu*, was selected for its predominantly *Vata-Pitta Shamaka*, *Rakta Prasadaka*, *Shothahara* and *Vedanasthapana* actions. [8–10] These properties are particularly relevant to the acute manifestations of pain, swelling, burning sensation and tenderness.

Varyadi Kashaya contains *Shatavari* and *Guduchi* which having *Deepana*, *Pachana*, *Shothahara*, *Pittahara* and *Mutrala* actions. [8–10] These properties were considered relevant to the correction of *Agnimandya* and *Ama*, modulation of *Pitta-Rakta* involvement, reduction of inflammation and promotion of urinary elimination. The formulation was therefore expected to act on both the underlying metabolic disturbance and the acute inflammatory manifestations. [8–10]

Thus, the two formulations were selected to provide a comparative therapeutic approach: *Sathavareechinnaruhadi Kashaya* primarily addressing *Pitta-Rakta*-predominant inflammation and tissue protection, while *Varyadi Kashaya* emphasizes *Agni* correction, *Ama Pachana*, inflammation control and elimination. [8–10] Their selection was therefore based on their complementary actions in the proposed *Samprapti* of *Paithika Vatarakta*. [4–10] The study specifically describes a comparative evaluation of these two formulations in Acute Gouty Arthritis.

Despite the increasing burden of Acute Gouty Arthritis and the availability of conventional therapeutic options, recurrent acute attacks, associated metabolic disturbances and the limitations of prolonged pharmacological therapy highlight the need for effective and well-tolerated therapeutic approaches. [3,11–13] From the Ayurvedic perspective, the close clinical resemblance of Acute Gouty Arthritis with *Paithika Vatarakta* provides a rationale for exploring Ayurvedic formulations that address both the acute inflammatory manifestations and the underlying *Samprapti*. [4–10]

Although *Sathavareechinnaruhadi Kashaya* and *Varyadi Kashaya* possess properties relevant to the management of *Paithika Vatarakta*, clinical evidence regarding their efficacy in Acute Gouty Arthritis is limited. [8–10] In particular, there is a need to evaluate their effects on major clinical manifestations such as pain, swelling, burning sensation, tenderness and restriction of joint movement, along with objective parameters such as serum uric acid. [1,5,11,12]

Therefore, the present study was undertaken to evaluate and compare the efficacy of *Sathavareechinnaruhadi Kashaya* and *Varyadi Kashaya* in the management of Acute Gouty Arthritis with special reference to *Paithika Vatarakta*. The comparative assessment was intended to determine the relative therapeutic effectiveness of both formulations and to explore their potential role in providing symptomatic relief while addressing the associated metabolic disturbance.

2. MATERIALS AND METHODS

Study Design

The clinical study is an interventional, open label, comparative clinical trial, parallel group trial.

Sample Size

40 patients will be taken for the study in each group i.e. total of 80 patients for the study.

Study Centre:-

The Trail was conducted at the Glocal University Mirzapur, Saharanpur, Uttarpradesh, 247121, India

Grouping

- Group A – *Sathavareechinnaruhadi Kashaya* (40 patients)
- Group B – *Varyadi Kashaya* (40 patients)

Table no. 1 Showing Ingredients of the *Sathavareechinnaruhadi kashaya*

S.No.	Ingredients	Botantical Name	Rasa	*Guna*	*Virya*	*Vipaka*	*Part Used*	*Action*
1	*Satavari*	Asparagus racemosus	*Madhur, Tikta*	*Guru, Snigha*	*Shita*	*Madhura*	*Root*	*Vatapittahara*
2	*Guduchi*	Tinospora cordifolia	*Tikta Kashaya*	*Laghu*	*Ushna*	*Madhura*	*Stem*	*Tridoshasamak and Dahaprasamana*

3	*Amalaka*	Emblica officinalis	*Panchrasa*	*Guru, Ruksha*	*Shita*	*Madhur*	*Fruit*	*Tridoshasamana and Dahaprasamana*
4	*Bala*	Sida cordifolia	*Madhura*	*Laghu, Snigdha, Pichila*	*Shita*	*Madhura*	*Root*	*Vatapittahara*
5	*Ikshu*	Saccharum officinarum	*Madhur*	*Guru, Snigdha*	*Shita*	*Madhura*	*Root*	*Vatapittahara*
6	*Kokilaksha*	Asteracanta longifolia	*Madhura*	*Guru, Snigdha, Pischila*	*Shita*	*Madhura*	*Seed*	*Vatapittahara*
And *prakshepa dravya* is *Yastimadhu.*								

Table no. 2 Showing Ingredients of *Varyadi Kashaya*

S.no	Ingredients	Botantical Name	*Rasa*	*Guna*	*Virya*	*Vipaka*	*Part used*	*Action*
1	*Satavari*	Asparagus racemosus	*Madhur, Tikta*	*Guru, Snigha*	*Shita*	*Madhura*	*Root*	*Vatapittahara*
2	*Guduchi*	Tinospora cordifolia	*Tikta, Kashaya*	*Laghu*	*Ushna*	*Madhura*	*Stem*	*Tridoshasamak and Dahaprasaman*

Duration

- The total duration of the study is 2 years
- Total duration of the medicine is 30 days with review after 10 days.

Inclusion Criteria

1) The patients with informed consents.
2) Patient having sign and symptoms of Acute Gouty Arthritis with hyperuricemia are considered for the present study.
3) Newly diagnosed cases of Acute Gouty Arthritis w.s.r to *Paithika Vathasonitha* .

4) Patients of 18- 70 years of age.
5) All genders.

Exclusion Criteria

1) Patients below 18 and above 70years of Age.
2) Chronic cases of Gouty Arthritis.
3) Patients associated with other metabolic disorder and systemic Disorders.
4) Patients of autoimmune joint disorder except RA.
5) Patients suffering from carcinoma.
6) Pregnant and lactating mother.
7) Patient suffering from Chronic Kidney Disease

INVESTIGATIONS

1) CBC
2) RFT(For avoiding the chronic kidney disease)
3) SERUM URIC ACID(Before and After treatment)
4) ESR
5) RA
6) LFT
7) URINE ROUTINE
8) CRP

3. ASSESSMENT CRITERIA

SUBJECTIVE PARAMETERS:-

1) Pain *(Sandhisula)*
2) Warm *(Daha)*
3) Swelling *(Sandhi Shotha)*
4) Tenderness *(Sparshasahatwa)*

OBJECTIVE PARAMETERS:-

1) Serum Uric Acid
2) VAS Grading for symptoms
3) Range of Movement

Statistical Analysis:-

The collected data were compiled, tabulated and statistically analyzed. Descriptive statistics, including mean, standard deviation, frequency and percentage, were used for data presentation. For intragroup analysis, the **Paired *t*-test** and **Wilcoxon Signed-Rank test** were applied, while intergroup comparisons were performed using the **Unpaired *t*-test** and **Mann–Whitney *U* test**, as appropriate.

The level of statistical significance was interpreted as follows:

- $p > 0.05$ – Not significant
- $p < 0.05$ – Significant
- $p < 0.01$ – Highly significant

- $p < 0.001$ – Extremely significant

4. OBSERVATION AND RESULTS

OBSERVATION

A total of 80 patients fulfilling the predefined inclusion criteria and meeting the required subjective and objective assessment parameters were enrolled in the study. The participants were equally allocated into two groups:

Group A: *Sathavareechinnaruhadi Kashaya* – 40 patients

Group B: Varyadi Kashaya – 40 patients

Of the 80 patients screened, all 80 were included in the study. No dropouts were recorded, and all 80 participants completed the study, with 40 patients in each group. The collected data were subsequently compiled, analyzed and presented below.

Table no.3 Showing the distribution of patients by *Ahara*

Ahara	Group A	Group B	Total	Percentage
Mix	22	21	43	53.75
Veg	18	19	37	46.25
Total	40	40	80	100.00

Out of 80 subjects, 43 subjects (53.75%) were consuming mixed (*Samisha) ahara* , while 37 subjects (46.25%) use to consume vegetarian food.

Graph no.1 Showing the distribution of patients by *Ahara*

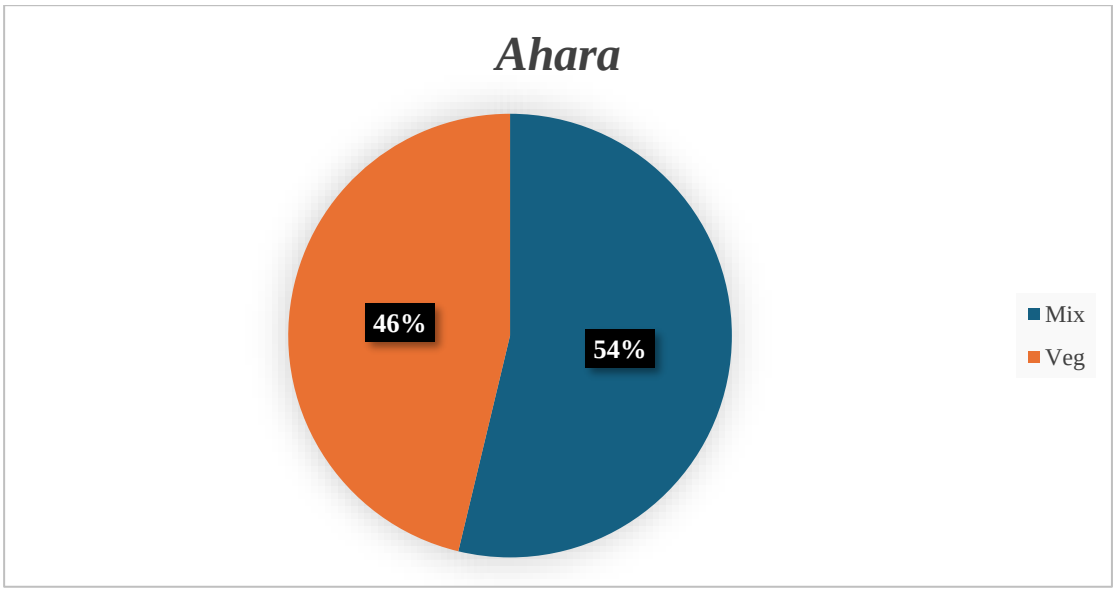


Table No.4 Showing *Ahara rasa* Wise Distribution

Ahara Rasa	Group A	Group B	Total	Percentage (%)
Madhura	2	2	4	**5.00**
Amla	5	5	10	**12.50**
Lavana	7	9	16	**20.00**
Katu	17	16	33	**41.25**
Tikta	5	3	8	**10.00**
Kashaya	4	5	9	**11.25**
Total	**40**	**40**	**80**	**100.00**

Out of 80 subjects in the present study, 33 subjects (41.25%) had *Katu* predominance, 16 subjects (20.00%) had *Lavana* predominance, 10 subjects (12.50%) had *Amla* predominance, 9 subjects (11.25%) had *Kashaya* predominance, 8 subjects (10.00%) had *Tikta* predominance, and 4 subjects (5.00%) had *Madhura* predominance.

Graph no.2 Showing the distribution of patients by *Ahara rasa*

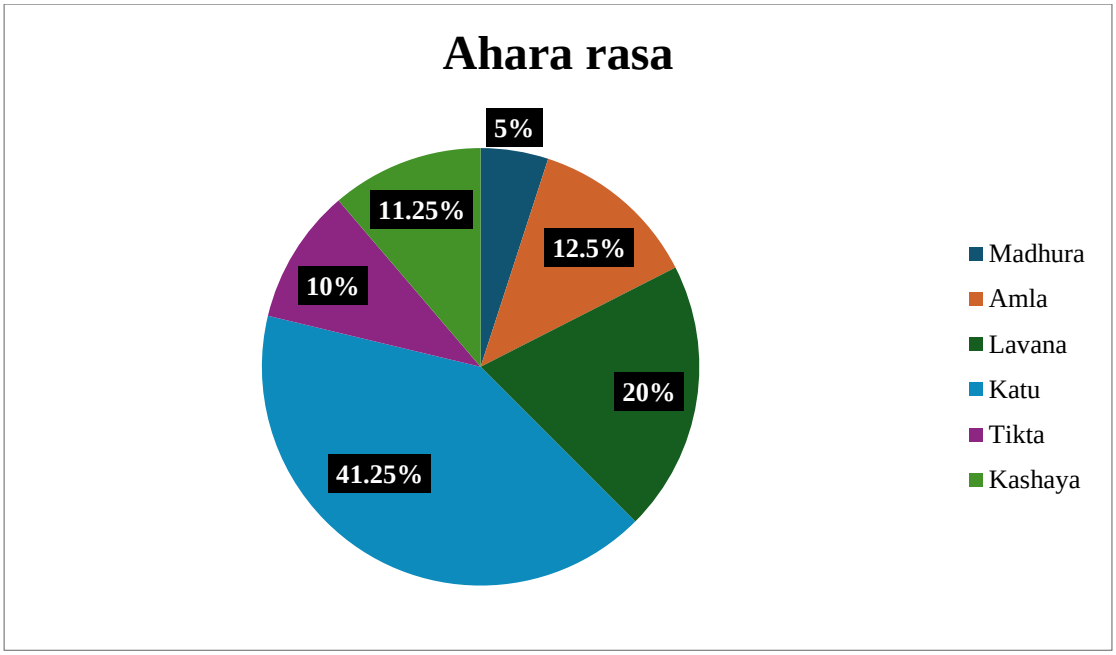


Table no. 5 Showing the distribution of patients by *Satmya*

Satmya	Group A	Group B	Total	Percentage
According to Rasa Satmya				
Pravara/Sarva rasa	6	6	12	15
Madhyam/3-4 rasa	7	10	17	21.25
Avaram/1-2 rasa	9	6	15	18.75
According to Guna Satyma				

Ruksha	9	10	19	23.75
Snigdha	9	8	17	21.25
Total	40	40	80	100.00

Out of 80 subjects, 19 subjects (23.75%) had Rukṣa Satmya, 17 subjects (21.25%) had Snigdha Satmya, 17 subjects (21.25%) had Madhyama (3–4 Rasa) Satmya, 15 subjects (18.75%) had Avara (1–2 Rasa) Satmya, and 12 subjects (15.00%) had Pravara (Sarva Rasa) Satmya.

Graph no.3 Showing the distribution of patients by *Satmya*

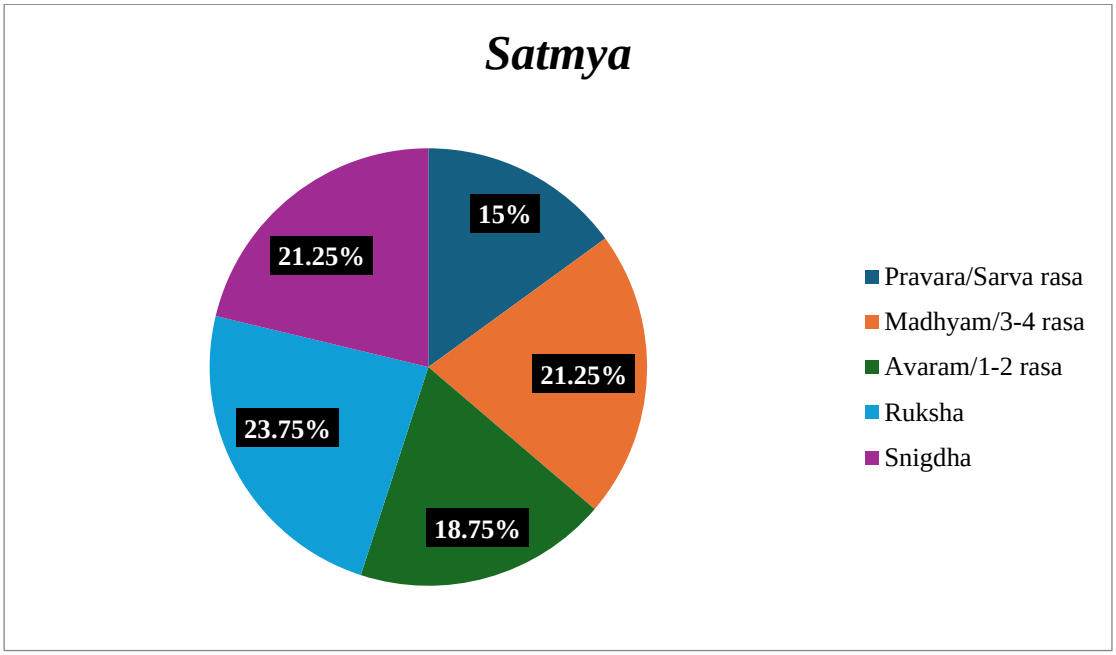


Table no.6 Showing the distribution of patients by *Agni*

Agni	Group A	Group B	Total	Percentage
Tikshna Agni	8	12	20	25.00
Vishama Agni	9	8	17	21.25
Sama Agni	9	11	20	25.00
Manda Agni	14	9	23	28.75
Total	40	40	80	100.00

Out of 80 subjects, 23 subjects (28.75%) had *Manda Agni*, 20 subjects (25%) had *Tikshna Agni*, 20 subjects (25%) had *Sama Agni*, and 17 subjects (21.25%) had *Vishama Agni*.

Graph no.4 Showing the distribution of patients by *Agni*

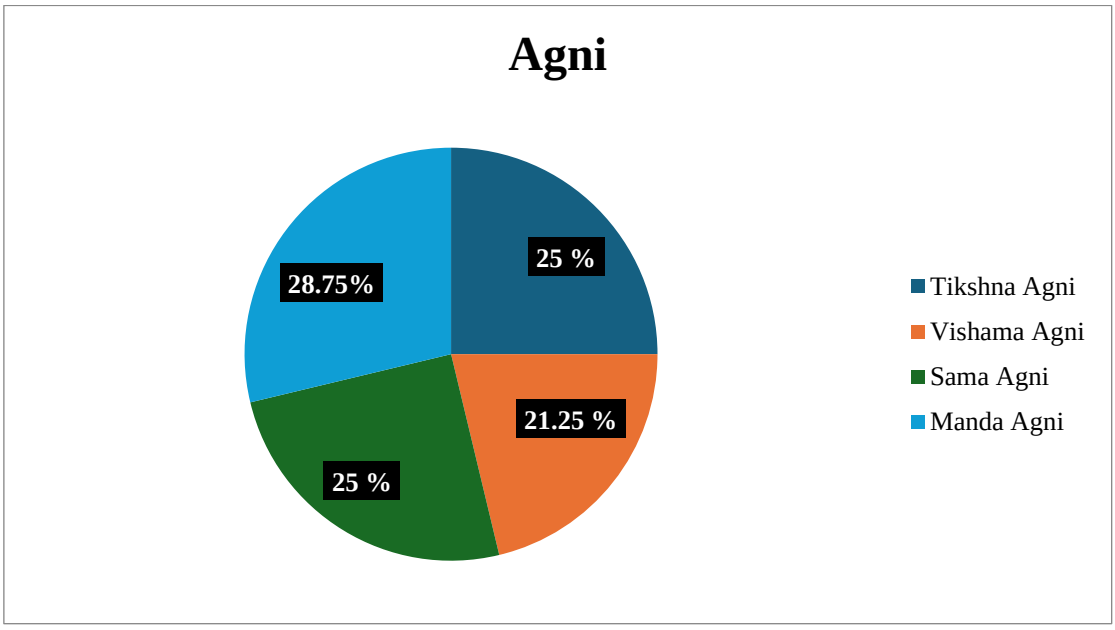


Table no.7 Showing the distribution of patients by *Kostha*

Kostha	Group A	Group B	Total	Percentage
Mridhu Kostha	9	12	21	26.25
Krura Kostha	18	13	31	38.75
Madhyam Kostha	13	15	28	35.00
Total	40	40	80	100.00

Regarding *Koshtha* 28 subjects (35%) had *Madhyam Kostha*, 21 subjects(26.25%) had *Mridhu Kostha* and 31 Subjects (38.75%) had *Krura Kostha*.

Table no.5 Showing the distribution of patients by *Koshtha*

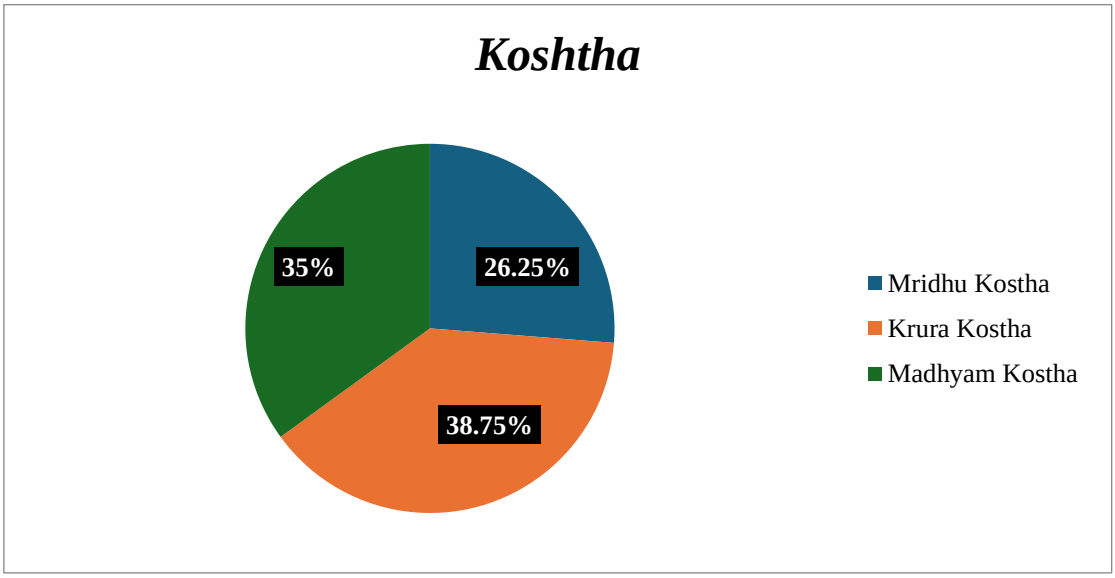


Table no.8 Showing the distribution of patients by Habit

Habit	Group A	Group B	Total	Percentage
Day sleep	11	13	24	30.00
Smoking	0	4	4	5.00
Tea/Coffee	12	13	25	31.25
Alcohol	9	6	15	18.75
Tobacco	3	0	3	3.75
None	5	4	9	11.25
Total	40	40	80	100.00

Out of 80 subjects in the present study, 25 subjects (31.25%) had the habit of tea/coffee consumption, 24 subjects (30.00%) had the habit of day sleep, 15 subjects (18.75%) had the habit of alcohol consumption, 9 subjects (11.25%) had no such habits, 4 subjects (5.00%) had the habit of smoking, and 3 subjects (3.75%) had the habit of tobacco consumption.

Graph no.6 Showing the distribution of patients by Habit

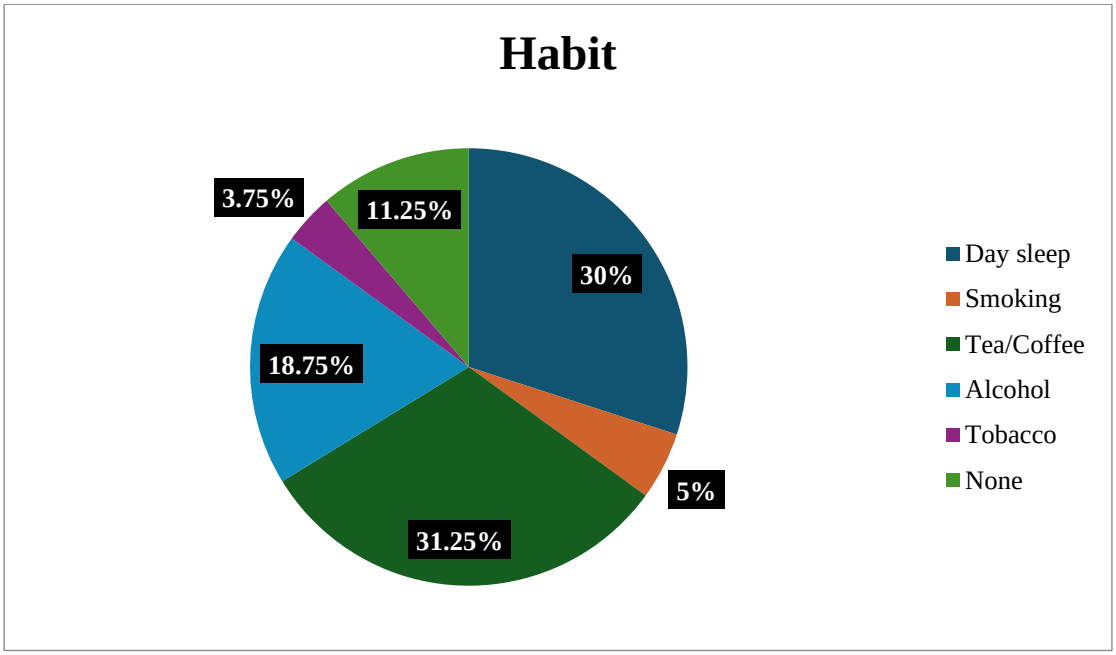


Table no.9 Showing the distribution of patients by Addiction

Addiction	Group A	Group B	Total	Percentage
Alcohol	9	6	15	18.75
Day Sleep	7	6	13	16.25
None	9	10	19	23.75

Tea and coffee	12	13	25	31.25
Smoking	0	4	4	5.00
Supari	0	1	1	1.25
Tobacco	3	0	3	3.75
Total	40	40	80	100.00

Out of 80 subjects in the present study, 25 subjects (31.25%) had the habit of tea and coffee consumption, 19 subjects (23.75%) had no addiction, 15 subjects (18.75%) had the habit of alcohol consumption, 13 subjects (16.25%) had the habit of Day Sleep, 4 subjects (5.00%) had the habit of smoking, 3 subjects (3.75%) had the habit of tobacco consumption, and 1 subject (1.25%) had the habit of supari chewing.

Graph no.7 Showing the distribution of patients by Addiction

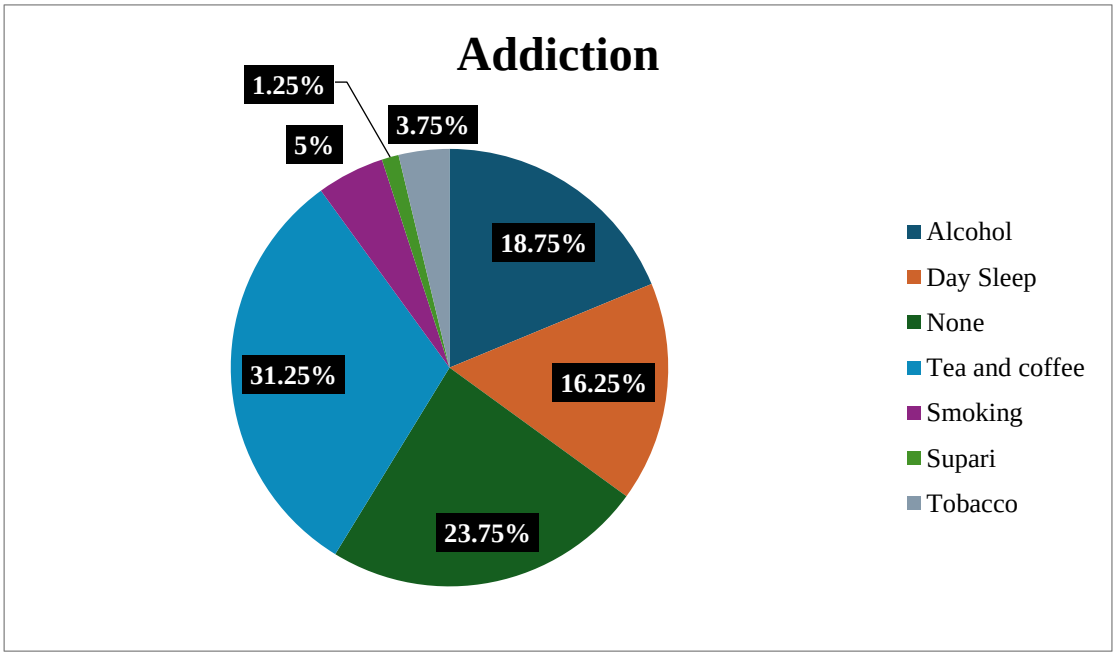


Table no.10 Showing the distribution of patients by *Nidra*

Nidra	Group A	Group B	Total	Percentage
Alpa	11	13	24	30.00
Ati	11	8	19	23.75
Sukha	13	9	22	27.50
Vishama	5	10	15	18.75
Total	40	40	80	100.00

Out of 80 subjects, 24 Subjects (30%) had *Alpa Nidra*, 22 Subjects (27.50%) had *Sukha Nidra* ,19 Subjects (23.75%) had *Ati Nidra,* and 15 Subjects (18.75%) had *Vishama Nidra.*

Graph no. 8 Showing the distribution of patients by Nidra

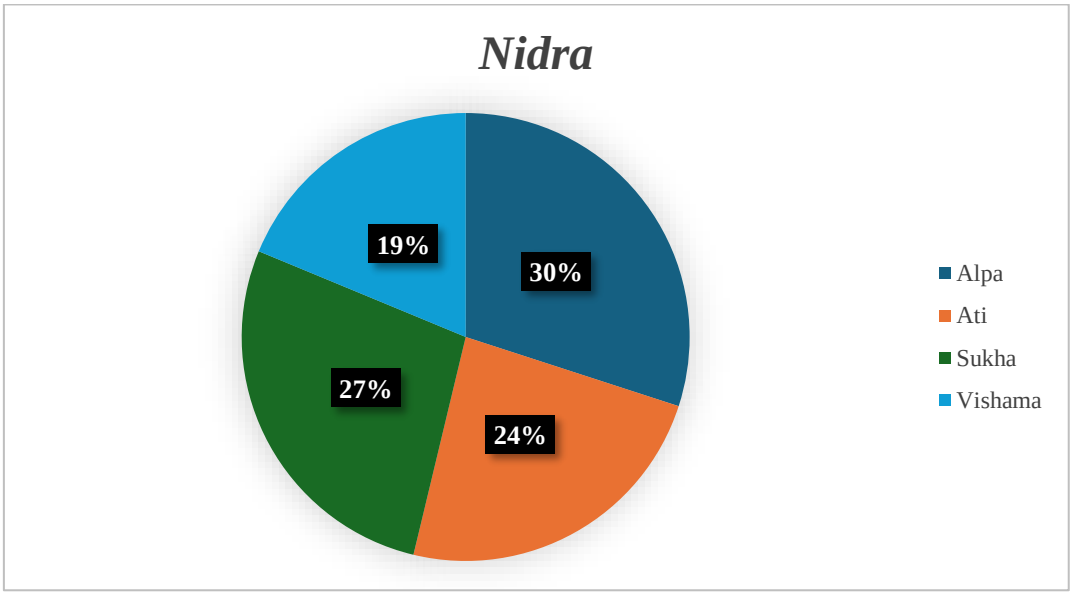


Table No.11 Showing *Prakruti* Wise Distribution

Prakruti	Group A	Group B	Total	Percentage
Vata-Pittaja	9	8	17	21.25
Pitta-Kaphaja	9	7	16	20.00
Pittaja	7	9	16	20.00
Vata-Kaphaja	7	8	15	18.75
Kaphaja	4	5	9	11.25
Vataja	4	3	7	8.75
Total	**39**	**41**	**80**	**100.00**

Out of 80 subjects studied, 17 subjects (21.25%) possessed *Vata-Pittaja Prakruti*, 16 subjects (20%) had *Pitta-Kaphaja Prakruti*, 16 subjects (20%) had *Pittaja Prakruti*, 15 subjects (18.75%) had *Vata-Kaphaja Prakruti*, 09 subjects (11.25%) had *Kaphaja Prakruti*, and 07 subjects (8.75%) had *Vataja Prakruti*. The predominance of *Vata-Pittaja* and *Pittaja Prakruti* suggests a greater predisposition to *Pitta* and *Rakta* disorders. Since *Paithika Vatarakta* is a *Pitta*-predominant *Vatarakta* involving the vitiation of *Rakta*, individuals with these *Prakruti* types may be more susceptible to the disease.

Graph no. 9 Showing the distribution of patients by *Prakruti*

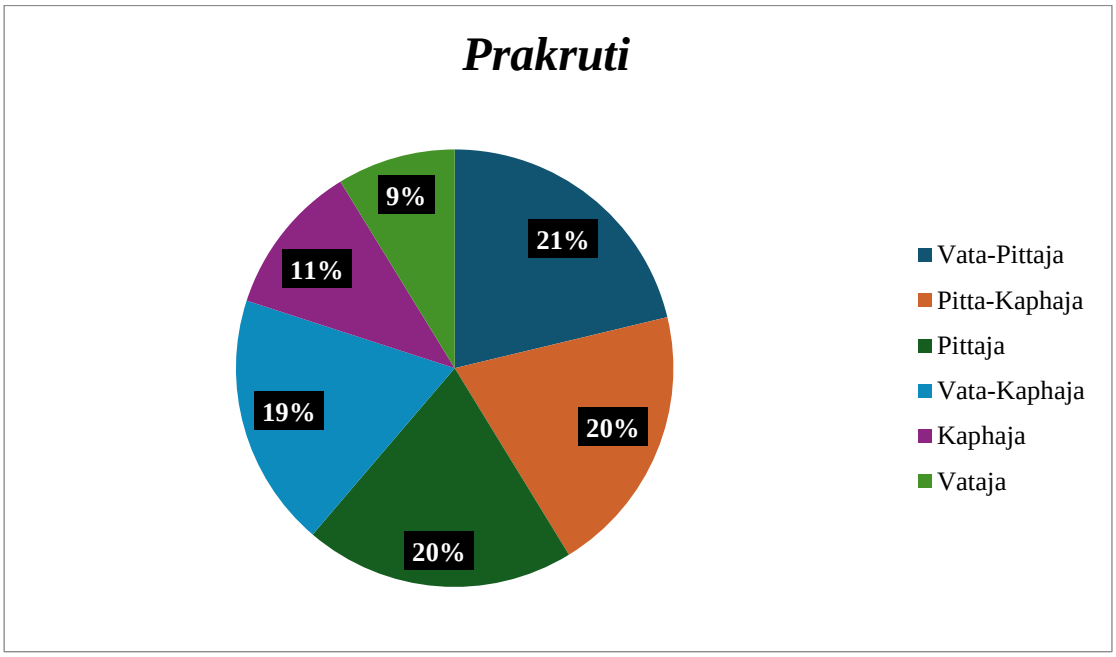


Table no. 12 Showing the distribution of patients by *Vyayama Shakti*

Vyayam Shakti	*Group A*	*Group B*	*Total*	*Percentage*
Avara	9	13	22	27.50
Madhayama	17	20	37	46.25
Pravara	14	7	21	26.25
Total	40	40	80	100.00

Out of 80 subjects, 37 Subjects (46.25%) were related with *Madhayama Vyayama Shakti*, 22 subjects(27.50%) were related with *Avara Vyayama shakti* and 21 subjects(26.25%)were related with *Pravara Vyayama shakti.*

Graph no.10 Showing the distribution of patients by *Vyayama Shakti.*

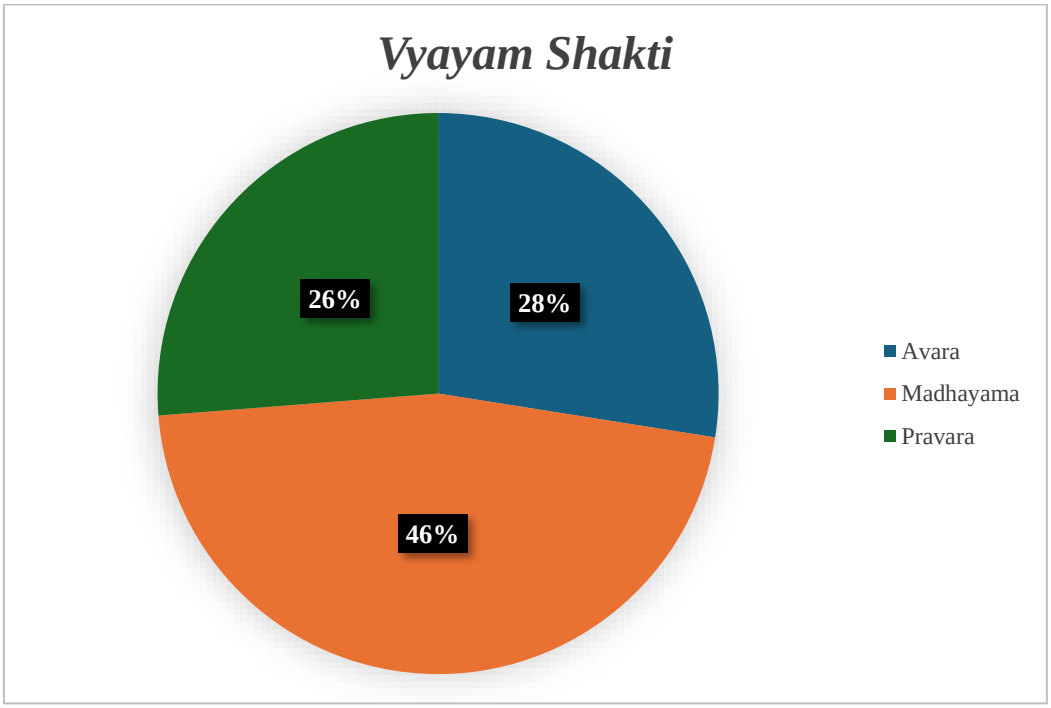


Table no. 13: Showing the distribution of patients by Objective and Subjective Parameters in Group A

Group A	Mean		Median		SD		Wilcoxon W	P-Value	% Effect	Result
Category	BT	AT	BT	AT	BT	AT				
Sandhisula	3.18	0.95	3.00	1.00	0.75	0.75	-5.521b	0.00000003	70.08	Sig
Sandhi Shotha	2.83	0.88	3.00	1.00	0.78	0.72	-5.553b	0.00000003	69.03	Sig
Daha	2.60	0.83	2.00	1.00	0.84	0.75	-5.655b	0.00000002	68.27	Sig
Sparshasahatwa	2.55	0.65	3.00	1.00	0.55	0.70	-5.488b	0.00000004	74.51	Sig
Flexion	3.45	1.03	3.00	1.00	0.99	0.95	-5.581b	0.00000002	70.29	Sig
Extension	2.95	0.75	3.00	1.00	1.06	0.84	-5.596b	0.00000002	74.58	Sig
Abduction	3.00	0.73	3.00	1.00	0.93	0.85	-5.709b	0.00000001	75.83	Sig
Rotation	2.88	0.63	3.00	0.00	0.97	0.74	-5.506b	0.00000004	78.26	Sig

1 Interpretation of Group A (Wilcoxon Signed Rank Test with Mean ± SD)

The intra-group comparison in Group A using the Wilcoxon Signed Rank Test revealed a statistically highly significant improvement in all assessed parameters when comparing Before Treatment (BT) and After Treatment (AT) values.

• ***Sandhisula*** decreased from **3.18 ± 0.75 (BT)** to **0.95 ± 0.75 (AT)**, showing a **70.08% improvement**, which was statistically highly significant (**p < 0.001**).

• ***Sandhi Shotha*** reduced from **2.83 ± 0.78** to **0.88 ± 0.72**, indicating a **69.03% reduction**, which was statistically highly significant (**p < 0.001**).

• ***Daha*** decreased from **2.60 ± 0.84** to **0.83 ± 0.75**, showing a **68.27% improvement**, which was statistically highly significant (**p < 0.001**).

• ***Sparshasahatwa*** reduced from **2.55 ± 0.55** to **0.65 ± 0.70**, with a **74.51% improvement**, which was statistically highly significant (**p < 0.001**).

2 RANGE OF MOVEMENTS:

• **Flexion difficulty** decreased from **3.45 ± 0.99** to **1.03 ± 0.95**, demonstrating a **70.29% reduction**, which was statistically highly significant (**p < 0.001**).

• **Extension difficulty** reduced from **2.95 ± 1.06** to **0.75 ± 0.84**, showing a **74.58% improvement**, which was statistically highly significant (**p < 0.001**).

• **Abduction difficulty** decreased from **3.00 ± 0.93** to **0.73 ± 0.85**, indicating a **75.83% improvement**, which was statistically highly significant (**p < 0.001**).

• **Rotation difficulty** reduced from **2.88 ± 0.97** to **0.63 ± 0.74**, demonstrating the highest improvement of **78.26%**, which was statistically highly significant (**p < 0.001**).

Overall, the findings suggest that the treatment administered in Group A produced statistically highly significant improvement the parameters, indicating considerable therapeutic efficacy.

Graph no. 11: Showing the distribution of patients by Objective and Subjective Parameters in Group A

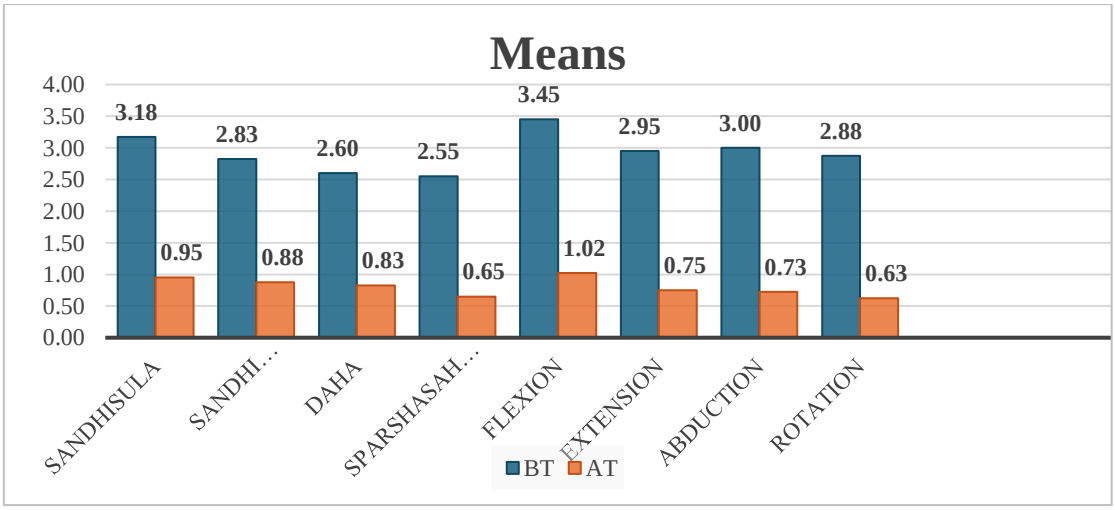
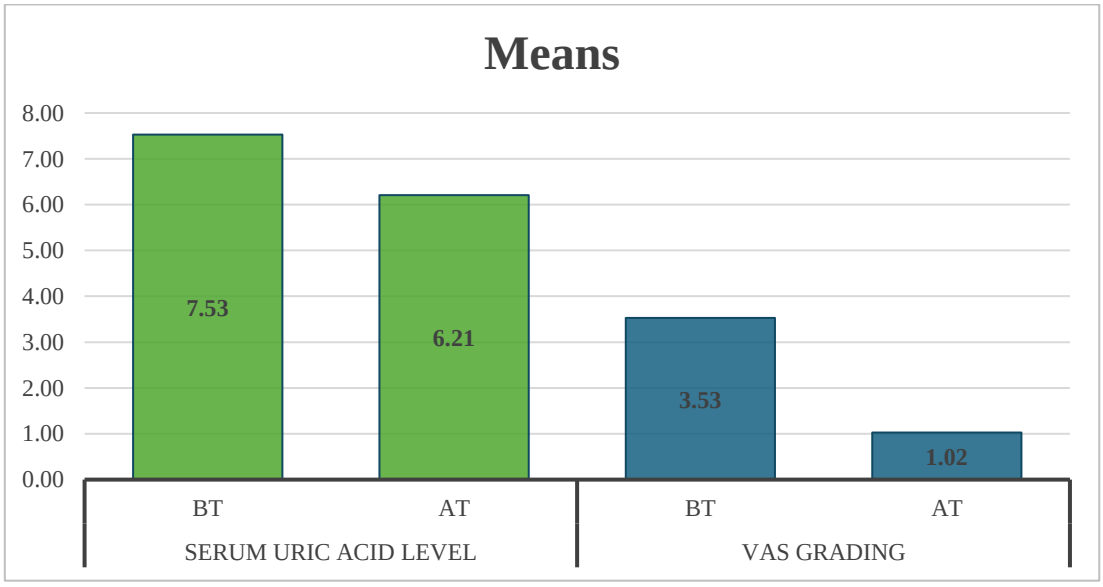


Table no. 14: Showing the distribution of patients by Subjective Parameters in Group A

Parameter	Group A	Mean	N	SD	SE	P-Value	t	% Effect	Results
Serum Uric Acid level	BT	7.53	40	1.13	0.18	0.00000	16.156	17.56	Sig
	AT	6.21	40	0.97	0.15				
VAS grading	BT	3.53	40	0.88	0.14	0.00000	15.612	70.92	Sig
	AT	1.03	40	0.77	0.12				

Graph no. 12: Showing the distribution of patients by Subjective Parameters in Group A



The change in serum uric acid level and VAS grading was significant in group A.

Table no. 15 Showing the distribution of patients by Objective and Subjective Parameters in Group B

Group B	Mean		Median		SD		Wilcoxon W	P-Value	% Effect	Result
Category	**BT**	**AT**	**BT**	**AT**	**BT**	**AT**				
Sandhisula	3.10	1.53	3.00	2.00	0.78	0.85	-5.266b	0.00000003	50.81	Sig
Sandhi Shotha	2.78	1.63	3.00	1.50	0.92	0.98	-5.526b	0.00000003	41.44	Sig
Daha	2.13	0.78	2.00	1.00	0.85	0.66	-5.386b	0.00000007	63.53	Sig
Sparshasahatwa	2.18	1.03	2.00	1.00	0.78	0.80	-4.815b	0.00000147	52.87	Sig
Flexion	3.28	1.75	3.00	2.00	0.91	1.13	-5.255b	0.00000015	46.56	Sig

Extension	3.00	1.35	3.00	1.00	1.04	0.95	-5.314b	0.00000011	55.00	Sig
Abduction	3.43	1.43	3.00	1.00	1.03	1.06	-5.258b	0.00000015	58.39	Sig
Rotation	3.33	1.75	3.00	2.00	0.92	0.90	-4.831b	0.00000136	47.37	Sig

3. Interpretation of Group B (Wilcoxon Signed Rank Test with Mean ± SD)

The intra-group comparison in Group B using the Wilcoxon Signed Rank Test revealed a statistically highly significant improvement in all assessed parameters when comparing Before Treatment (BT) and After Treatment (AT) values.

• ***Sandhisula*** decreased from **3.10 ± 0.78 (BT)** to **1.53 ± 0.85 (AT)**, showing a **50.81% improvement**, which was statistically highly significant (**p < 0.001**).

• ***Sandhi Shotha*** reduced from **2.78 ± 0.92** to **1.63 ± 0.98**, indicating a **41.44% reduction**, which was statistically highly significant (**p < 0.001**).

• ***Daha*** decreased from **2.13 ± 0.85** to **0.78 ± 0.66**, showing a **63.53% improvement**, which was statistically highly significant (**p < 0.001**).

• ***Sparshasahatwa*** reduced from **2.18 ± 0.78** to **1.03 ± 0.80**, with a **52.87% improvement**, which was statistically highly significant (**p < 0.001**).

4. RANGE OF MOVEMENTS:

• **Flexion** difficulty decreased from **3.28 ± 0.91** to **1.75 ± 1.13**, demonstrating a **46.56% reduction**, which was statistically highly significant (**p < 0.001**).

• **Extension** difficulty reduced from **3.00 ± 1.04** to **1.35 ± 0.95**, showing a **55.00% improvement**, which was statistically highly significant (**p < 0.001**).

• **Abduction** difficulty decreased from **3.43 ± 1.03** to **1.43 ± 1.06**, indicating a **58.39% improvement**, which was statistically highly significant (**p < 0.001**).

• **Rotation difficulty** reduced from **3.33 ± 0.92** to **1.75 ± 0.90**, demonstrating a **47.37% improvement**, which was statistically highly significant (**p < 0.001**).

Overall, the findings suggest that the treatment administered in Group B produced statistically highly significant improvement in the parameters, indicating considerable therapeutic efficacy.

Graph no. 13 Showing the distribution of patients by Objective and Subjective Parameters in Group B

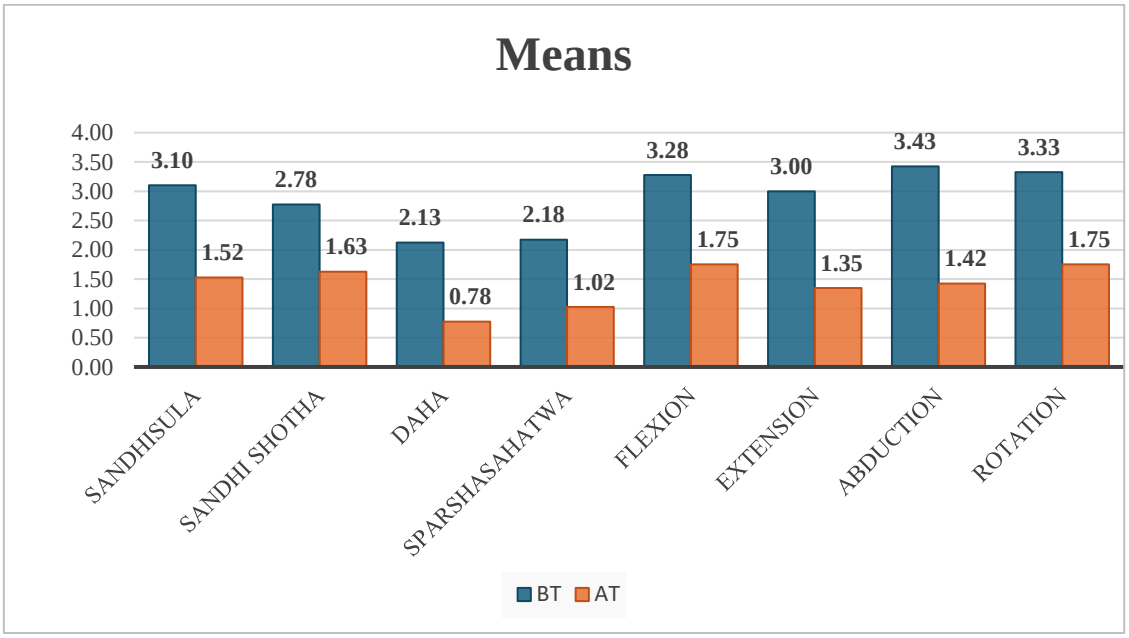
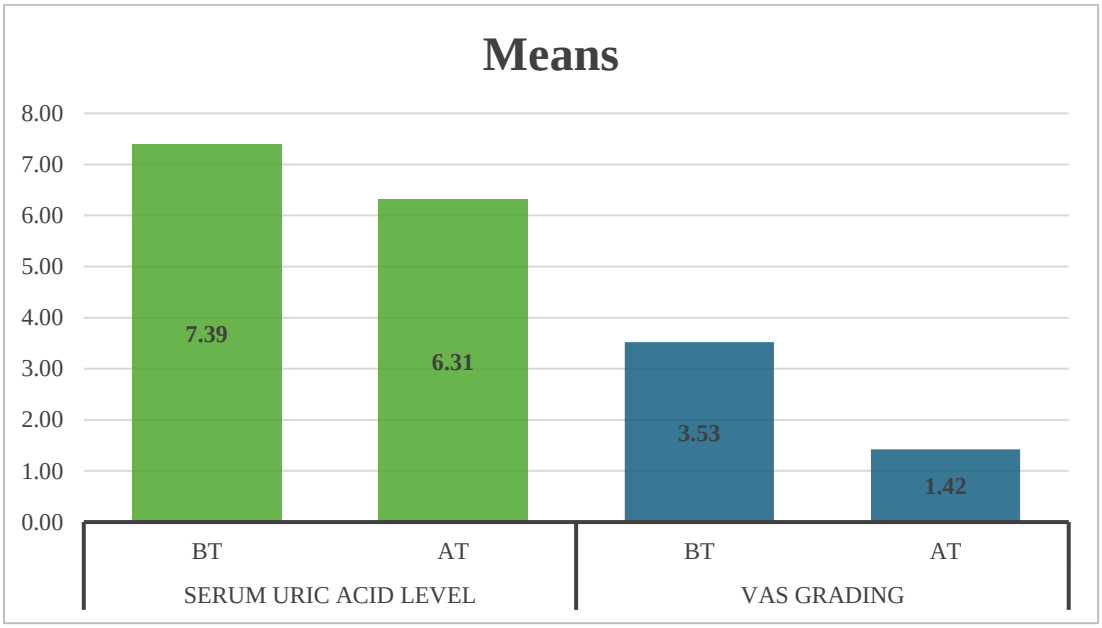


Table no.16 Showing the distribution of patients by Objective Parameters in Group B

Parameter	Group B	Mean	N	SD	SE	P-Value	t	% Effect	Results
Serum Uric Acid level	BT	7.39	40	0.85	0.13	0.00000	13.74	14.59	Sig
	AT	6.31	40	0.72	0.11				
VAS grading	BT	3.53	40	0.96	0.15	0.00000	14.755	59.57	Sig
	AT	1.43	40	0.81	0.13				

Graph no. 14 Showing the distribution of patients by Objective Parameters in Group B



The change in serum uric acid level and VAS grading was significant in group B.

Table no.17 Showing the distribution of patients by Inter-Group Comparison between Group A and Group B

Category	Group	Mean Rank	Sum of Ranks		Mann Whitney U	P-value	Result
Sandhisula	A	40	47.9	1916	504	0.0030	Sig
	B	40	33.1	1324			
	Total	80					
Sandhi Shotha	A	40	52.13	2085	335	0.0010	Sig
	B	40	28.88	1155			
	Total	80					
Daha	A	40	46.51	1860.5	559.5	0.0120	Sig
	B	40	34.49	1379.5			
	Total	80					
Sparshasahatwa	A	40	49.35	1974	446	0.0010	Sig
	B	40	31.65	1266			
	Total	80					
Flexion	A	40	50.04	2001.5	418.5	0.0010	Sig
	B	40	30.96	1238.5			
	Total	80					
Extension	A	40	46.75	1870	550	0.0110	Sig
	B	40	34.25	1370			
	Total	80					
Abduction	A	40	42.8	1712	708	0.3290	NS

	B	40	38.2	1528			
	Total	80					
Rotation	A	40	46.95	1878	542	0.0100	Sig
	B	40	34.05	1362			
	Total	80					

5. Inter-Group Comparison between Group A and Group B (Mann-Whitney U Test)

The inter-group analysis was performed using the Mann-Whitney U test to compare the effectiveness of interventions between Group A and Group B. Each group consisted of 40 participants.

• ***Sandhisula*** showed a statistically significant difference between groups (**U = 504, p = 0.003**), with Group A having a higher mean rank (**47.90**) compared to Group B (**33.10**), indicating better improvement in Group A.

• ***Sandhi Shotha*** demonstrated a statistically significant difference (**U = 335, p = 0.001**), where Group A (**Mean Rank = 52.13**) showed superior improvement compared to Group B (**28.88**).

• ***Daha*** showed a statistically significant difference (**U = 559.5, p = 0.012**), with Group A (**46.51**) having a higher mean rank than Group B (**34.49**), suggesting better therapeutic response in Group A.

• ***Sparshasahatwa*** demonstrated a statistically significant difference (**U = 446, p = 0.001**), with Group A (**49.35**) showing greater improvement compared to Group B (**31.65**).

• **Flexion** difficulty showed a statistically significant difference (**U = 418.5, p = 0.001**), with higher mean rank observed in Group A (**50.04**) than Group B (**30.96**), indicating superior effectiveness in Group A.

• **Extension** difficulty demonstrated a statistically significant difference (**U = 550, p = 0.011**), where Group A (**46.75**) showed better improvement than Group B (**34.25**).

• **Abduction** difficulty showed no statistically significant difference between the groups (**U = 708, p = 0.329**). The mean ranks of Group A (**42.80**) and Group B (**38.20**) were comparable, indicating similar improvement in both groups.

• **Rotation** difficulty demonstrated a statistically significant difference (**U = 542, p = 0.010**), with Group A (**46.95**) showing higher mean rank than Group B (**34.05**), suggesting better efficacy in Group A.

Overall, the inter-group comparison indicates that Group A showed significantly better improvement than Group B in most clinical parameters.

Table no.18 Showing the distribution of patients by Inter-Group Comparison between Group A and Group B

Parameter	Group	N	Mean	SD	Mean Difference	Std. Error Difference	t	P-Value	Results
Serum Uric acid level	A	40	7.53	1.13	0.14	0.22	0.625	0.534	NS
	B	40	7.39	0.85					
VAS Grading	A	40	6.21	0.97	-0.10	0.19	-0.543	0.588	NS
	B	40	6.31	0.72					

There was no statistically significant difference in Serum uric acid level and VAS grading between the two groups.

Table no.19 Showing the distribution of parameter by effect in Inter-Group Comparison between Group A and Group B

Parameter	% Effect	
	Group A	Group B
Sandhisula	70.08	50.81
Sandhi Shotha	69.03	41.44
Daha	68.27	63.53
Sparshasahatwa	74.51	52.87
Flexion	70.29	46.56
Extension	74.58	55.00
Abduction	75.83	58.39
Rotation	78.26	47.37
Serum Uric Acid Level	17.56	14.59
VAS grading	70.92	59.57

Graph no.15 Showing the distribution of parameter by effect in Inter-Group Comparison between Group A and Group B

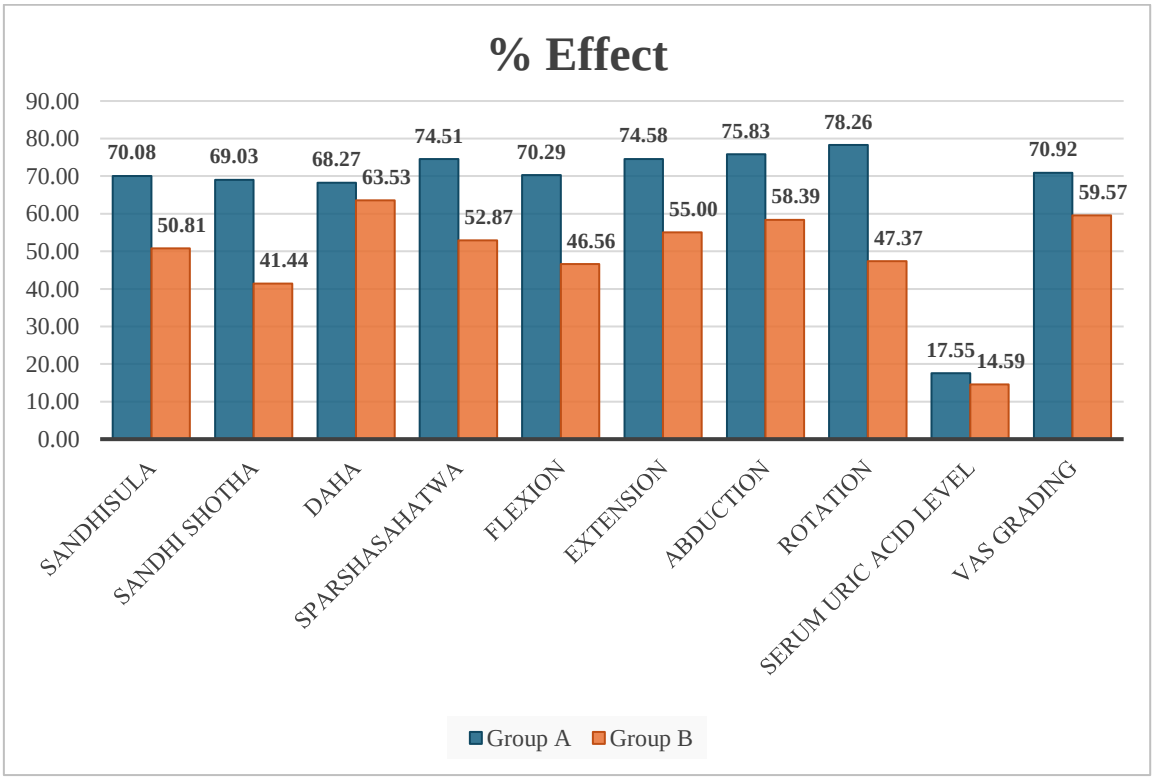
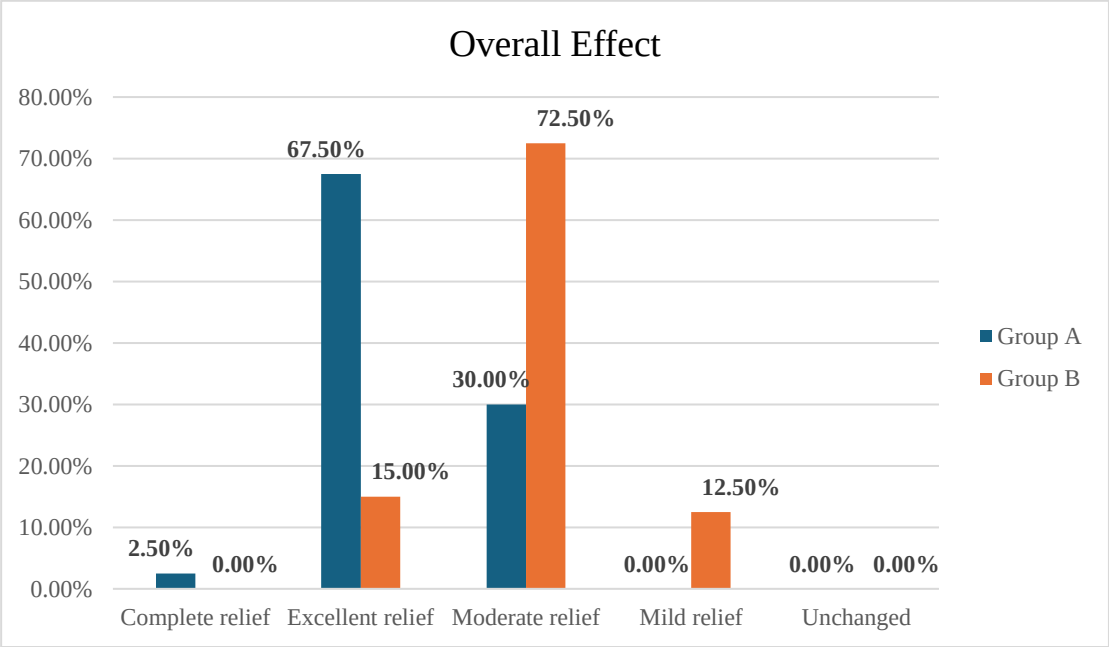


Table.no.20: Showing the distribution of overall effect in Inter-Group Comparison between Group A and Group B

Overall Effect	Group A (No.)	Group A (%)	Group B (No.)	Group B (%)
Complete relief	1	2.50%	0	0.00%
Excellent relief	27	67.50%	6	15.00%
Moderate relief	12	30.00%	29	72.50%
Mild relief	0	0.00%	5	12.50%
Unchanged	0	0.00%	0	0.00%
Total	**40**	**100.00%**	**40**	**100.00%**

Graph.no.16: Showing the distribution of overall effect in Inter-Group Comparison between Group A and Group B.



These findings indicate superior efficacy of *Sathavareechinnaruhadi Kashaya* over *Varyadi Kashaya.*

5. DISCUSSION

Sathavareechinnaruhadi Kashaya acts through a multimodal mechanism by addressing both the inflammatory process and the underlying metabolic disturbance responsible for Acute Gouty Arthritis. From the Ayurvedic perspective, *Paithika Vatarakta* develops due to *Agnimandya*, formation of *Ama*, vitiation of *Pitta* and *Rakta* followed by obstruction of *Vata* leading to *Vata-Rakta Sammurchana*. The formulation possesses predominantly *Tikta*, *Madhura* and *Kashaya Rasa*, *Sheeta Virya* and *Madhura Vipaka* which help pacify aggravated *Pitta* and *Vata* while purifying vitiated *Rakta*. The *Deepana* and *Pachana* properties improve impaired *Agni*, digest *Ama* and restore normal metabolism. The *Raktaprasadana*, *Raktashodhana*, *Shothahara* and *Vedanasthapana* actions interrupt the pathogenesis (*Samprapti Vighatana*) by reducing inflammation, alleviating pain and tenderness preventing further vitiation of *Rakta* and promoting tissue repair. The *Mutrala* property of ingredients such as *Kokilaksha*

and *Ikshu* facilitates elimination of metabolic waste through urine, thereby supporting the removal of accumulated *Kleda Rupa Mala* and maintaining normal urinary function.

From the modern perspective, the formulation contains phytoconstituents such as flavonoids, phenolic compounds, saponins, glycosides and antioxidants that exhibit potent anti-inflammatory, antioxidant, immunomodulatory and nephroprotective activities. These constituents may inhibit activation of the NLRP3 inflammasome and suppress the release of pro-inflammatory cytokines including interleukin-1β (IL-1β), tumour necrosis factor-alpha (TNF-α) and interleukin-6 (IL-6), thereby reducing acute inflammatory responses triggered by monosodium urate crystal deposition. The antioxidant activity minimizes oxidative stress within inflamed joints, while nephroprotective and mild diuretic actions facilitate renal excretion of uric acid, contributing to reduction in serum uric acid levels. Ingredients such as Guduchi, Amalaki, Yashtimadhu, Shatavari, Bala, Ikshu and Kokilaksha collectively provide anti-inflammatory, analgesic, antioxidant, immunomodulatory and uricosuric effects, thereby reducing pain, swelling, tenderness and restriction of joint movement while restoring normal metabolic function. Thus, Sathavareechinnaruhadi Kashaya not only provides symptomatic relief but also corrects the underlying Dosha imbalance and metabolic derangement responsible for Paithika Vatarakta, which is reflected clinically by significant improvement in symptoms along with reduction in serum uric acid levels.

Varyadi Kashaya exerts its therapeutic effect in Acute Gouty Arthritis by correcting the metabolic abnormalities responsible for hyperuricemia and inflammation. From the Ayurvedic perspective, *Paithika Vatarakta* develops due to *Agnimandya*, *Ama* formation and vitiation of *Pitta*, *Rakta* and *Vata*. The formulation possesses *Deepana* and *Pachana* properties that improve *Agni*, digest *Ama* and restore normal metabolism, while it's *Pittahara*, *Raktaprasadana*, *Shothahara* and *Mutrala* actions reduce inflammation and promote the elimination of metabolic wastes.

From the modern perspective, Varyadi Kashaya contains Shatavari and Guduchi which contains flavonoids, phenolic compounds, tannins and saponins with anti-inflammatory, antioxidant, nephroprotective and xanthine oxidase inhibitory activities. These phytoconstituents reduce uric acid synthesis, enhance renal uric acid excretion and suppress NLRP3 inflammasome activation along with pro-inflammatory cytokines such as IL-1β, TNF-α and IL-6. Consequently, oxidative stress, pain, swelling, tenderness and restriction of joint movement are reduced. Thus, Varyadi Kashaya primarily acts by correcting metabolic dysfunction, lowering serum uric acid and controlling crystal-induced inflammation in Paithika Vatarakta.

Both treatment groups produced statistically significant improvement in the clinical manifestations of Acute Gouty Arthritis and demonstrated reduction in serum uric acid levels after 30 days of treatment. However, Group A treated with *Sathavareechinnaruhadi Kashaya* showed greater improvement in subjective parameters including *Sandhishoola*, *Sandhi Shotha*, *Daha*, *Sparshasahatva*, Visual Analogue Scale (VAS) and range of joint movement compared to Group B receiving *Varyadi Kashaya*. The superior clinical outcome observed in Group A indicates that both formulations effectively interrupt the pathogenesis of *Vatarakta*, but *Sathavareechinnaruhadi Kashaya* provides comparatively better control of acute inflammation along with correction of hyperuricemia. The combination of anti-inflammatory, antioxidant, immunomodulatory, analgesic and uricosuric properties likely contributed to its enhanced therapeutic efficacy.

The superior efficacy of *Sathavareechinnaruhadi Kashaya* may be attributed to its unique combination of ingredients possessing complementary pharmacological actions. *Shatavari* and *Yashtimadhu* provide potent anti-inflammatory, antioxidant and tissue-protective effects, while *Guduchi* acts as an

immunomodulator and suppresses inflammatory cytokines. *Amalaki* contributes strong antioxidant activity and supports renal function, whereas *Kokilaksha* exhibits mild diuretic and uricosuric properties that facilitate urinary excretion of uric acid. *Bala* and *Ikshu* help restore damaged tissues, reducing inflammation-induced functional impairment. Collectively, these actions not only suppress acute inflammation but also improve oxidative balance, enhance renal clearance of uric acid, protect joint tissues, and restore metabolic homeostasis. In contrast, although *Varyadi Kashaya* effectively improves metabolism and reduces uric acid, its comparatively lesser tissue-protective actions may explain its relatively lower clinical efficacy in relieving acute inflammatory symptoms.

No serious adverse drug reactions or treatment related complications were observed during the study period, indicating that both Sathavareechinnaruhadi Kashaya and Varyadi Kashaya are safe and well tolerated when administered under medical supervision. Unlike non-steroidal anti-inflammatory drugs (NSAIDs), which primarily provide symptomatic relief by inhibiting cyclooxygenase enzymes and prostaglandin synthesis but are associated with gastrointestinal irritation, peptic ulceration, renal impairment, cardiovascular complications and frequent recurrence after discontinuation, the Ayurvedic formulations offer a more comprehensive therapeutic approach. They reduce inflammation, decrease serum uric acid, improve metabolic function, support renal excretion of uric acid and provide antioxidant and immunomodulatory benefits without producing significant adverse effects. Therefore, these Kashayas not only relieve acute symptoms but also target the underlying metabolic pathology of gout, making them suitable as safer long-term therapeutic options for the management of Acute Gouty Arthritis.

6. CONCLUSION

Modern evidence suggests that gouty arthritis is a metabolic inflammatory disorder caused by hyperuricemia and monosodium urate crystal deposition, leading to acute joint inflammation and recurrent attacks. The findings of the present study demonstrate that both *Sathavareechinnaruhadi Kashaya* and *Varyadi Kashaya* are effective in the management of Acute Gouty Arthritis with special reference to *Paithika Vatarakta*. Both formulations produced significant improvement in clinical symptoms and reduction in serum uric acid levels, indicating their potential role in addressing both the inflammatory and metabolic components of the disease.

According to *Ayurveda*, *Paithika Vatarakta* may be correlated with gouty arthritis based on similarities in *Nidana, Samprapti* and clinical manifestations. Both *Kashayas* effectively alleviated cardinal symptoms such as *Sandhishoola, Sandhi Shotha, Daha, Sparshasahatva* and restriction of joint movements. However, comparative analysis revealed that *Sathavareechinnaruhadi Kashaya* produced greater improvement than *Varyadi Kashaya* in reducing pain, swelling, tenderness, burning sensation, limitation of joint movement, Visual Analogue Scale (VAS) score and serum uric acid levels. The superior efficacy of *Sathavareechinnaruhadi Kashaya* may be attributed to its combined anti-inflammatory, antioxidant, immunomodulatory, uricosuric and *Vata-Pitta Shamaka* actions, which provide more comprehensive control over the disease process.

No significant adverse effects were observed with either formulation during the study, indicating that both Kashayas are safe and well tolerated when administered under medical supervision. Unlike non-steroidal anti-inflammatory drugs (NSAIDs), which mainly provide symptomatic relief and may be associated with gastrointestinal, renal and cardiovascular adverse effects during prolonged use, these Ayurvedic formulations offer a broader therapeutic approach by reducing inflammation, lowering serum uric acid levels, correcting metabolic imbalance and supporting long-term disease management. Therefore,

Sathavareechinnaruhadi Kashaya may be considered a more effective Ayurvedic therapeutic option than Varyadi Kashaya for the management of Acute Gouty Arthritis. It also has the potential to serve as a safer alternative or complementary treatment to NSAIDs in appropriately selected patients under the supervision of a qualified physician.

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