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AN OPEN LABELLED RANDOMIZED CONTROLLED CLINICAL STUDY ON THE EFFECT OF RASONADI KASHAYA IN JANU SANDHIGATA VATA W.S.R TO OSTEOARTHRITIS

Chetana B. D.[1*] and Shrilatha Kamath T.[2]

[1]PG Scholar, Department of Kayachikista, Sri Dharmasthala Manjunatheshwara College of Ayurveda, Udupi.

[2]HOD- Professor, Department of Kayachikista and Manasaroga, Sri Dharmasthala Manjunatheshwara College of Ayurveda, Udupi.

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***Corresponding Author**
Chetana B. D.
PG Scholar, Department of Kayachikista, Sri Dharmasthala Manjunatheshwara College of Ayurveda, Udupi.

ABSTRACT

*Vata vyadhi*s are commonly seen in old age developed due to *dhatu kshaya* (degeneration). *Vyana vayu* gets vitiated due to various *nidanas*, takes *sthanasamsharaya* in *janu pradesha* and causes *Janu Sandhigata Vata*. This leads to *shoola, shopha, vata poorna sparsha* and *karma hani* of *Janu Sandhi*. Various treatment modalities like *snehana, snigdha sweda, mrudu virechana, basti, upanaha* etc are adopted to reduce symptoms and improve functional ability of knee joint. Use of effective treatment methods including *shamanoushadhi's* (oral medication) is essential for successfully managing *vyadhi lakshana* and arresting progression which is need of the hour. **Objective:** To evaluate the effect of *Rasonadi kashaya* on *Janu sandhigata vata*. **Methodology:** The subjects suffering from osteoarthritis screened under strict diagnostic, inclusion and exclusion criteria were selected from SDM Ayurveda College. Total 30 patients were divided into 2 groups, 15 in each group based on RCT study design. Group A were treated with the *Rasna Panchaka Kashaya* and Group B were treated with *Rasonadi Kashaya* for a period of 30 days. The outcomes were measured on Day 0, Day 30 and Day 60 for *Janusandhi Shula, Shopha, Prasarana akunchana vedana, Vatapoorna druti sparsha*, Alteration in gait, Morning Stiffness, Range of Movement, WHO - QOL Scale for arthritis and IKDC SKF scale. **Result:** Group A showed 6.66% of subjects had maximum improvement, 13.33% had moderate improvement, 60% had mild improvement and 20% had

minimum improvement. In contrary, Group B showed 13.33% patients had moderate improvement, 73.33% had mild improvement and 13.33% had minimum improved. This shows that Group A was comparatively more effective than Group B. The patients were assessed and found statistically significant. **Conclusion:** Both *Rasna Panchaka* and *Rasonadi Kashaya* helps in reducing disease symptoms and prevents disease progression. *Rasna Panchaka Kashaya* group showed better results than *Rasonadi Kashaya* group.

KEYWORDS: *Janu Sandhigata Vata*, *Vata Vyadhi*, Osteoarthritis, Degenerative Disorder, *Rasonadi Kashaya*.

INTRODUCTION

Human body due to various biological and mechanical stresses undergo continuous process of destruction. *Vriddha avastha* not only refers to biological age nearing to death but it also includes chronological age which is nearing deterioration. It is dominated by *Vata dosha* and there will be depletion of *dhatu*, *indriya*, *bala*, *virya* etc. *Dhatukshaya janya nidanas* (due to *kupita vata*), *pitta prakruti*, lavana and *kshara sevana* leads to *akala jara* (early ageing). *Gati sangha*, *asthi parva bheda*, *sthambha*, *sandhi vedana*, *sandhi vishlesha* are some *jara lakshanas* that commonly occur in all patients above 50 years of age.[1] *Sandhigata vata* is one such disorder which is seen predominantly in older age group.

Janu sandhigata vata occurs due to *dooshana* of the *asthi*, *majja* and *sandhi* by *prakupita vyana vata* following longstanding *nidanas*. The symptoms include *sandhi shoola* (pain), *shopha* (localised swelling), *hanti sandhi* (difficulty in joint movements) and *vata poorna sparsha* (crepitus of the knee joint).[2] It can be correlated to Osteoarthritis of Knee in the contemporary science.

Osteoarthritis is a chronic, progressive, musculoskeletal disorder which causes gradual loss of cartilage in weight bearing joints, narrowing of joint space, increased joint friction, stiffness of the joint, painful and impaired movement. The disease progresses with age, increases rapidly after 50 years. Radiographically confirmed knee OA is estimated to be of 181.2 per 100,000 people which is up to 18.12%. Studies have reported that prevalence rates of osteoarthritis to be 28.7%.[3] It is caused not only due to degeneration of the joint structures that already has occurred but it is due to continued imbalance between the articular and tissue damage and repair.[4]

Management of OA is still a major challenge due to its degenerative and progressive nature. Even though many researches have been carried out to understand the disease progress, very little is understood about the line of treatment that is practically effective. Use of NSAID's only show symptomatic relief in pain and swelling. There are presently no drugs that halt disease progression or reverse pathological changes in the entire joint and most patients with end-stage knee OA require surgical treatment. The scientific, rational and effective treatment of knee OA remains a challenge in clinical practice even with rigorous research works and updates.[5]

Treatment mainly focusses on *sthanika* and *abhyantara snehana, swedana, mridu virechana* and *bahya kramas* which help in reducing *shoola* and *shopha*. *Sarva vatahara chikitsa* principles according to *vata vyadhi rogadhikara* is implemented for management of *Sandhigata Vata*.[6] After thorough observation made on results obtained from various clinical research studies, it can be concluded that *Shamana chikitsa* is almost equally helpful in treatment of *Janu Sandhigata Vata* as compared to *Shodhana*. The trial drug under this study is composed of *vata shamana, shothahara, shoola prashamana* and *rasayana* effects. Hence, the objective of the study is to evaluate the effect of *Rasonadi Kashaya* in patients suffering from *Janu Sandhigata Vata*.

MATERIALS AND METHODS

1. Source of Data

Diagnosed patients of osteoarthritis were selected for the research, willing to sign the consent form irrespective of caste, creed, sex from OPD & IPD of SDM Ayurveda Hospital, Udupi. Medicines were obtained from SDM Ayurveda Pharmacy, Udupi.

2. Method of Collection of Data

The subjects suffering from osteoarthritis were screened under strict diagnostic, inclusion and exclusion criteria will be selected for the study. Eligible subjects after signing a detailed informed consent were registered for clinical trial. Registered participants were treated with the medication as per the plan of intervention. The outcome measures were assessed at baseline and after the completion of the treatment.

3. Study Design: It is an open randomised clinical trial with pre and post-test design.

- Study type: Interventional with pre and post-test design.
- Estimated enrolments: 30 participants.

- Allocation: Permuted Block Randomization.
- End point classification: Efficacy study.
- Intervention model: Randomized Controlled Trial.
- Masking: Open label.
- Primary purpose: Treatment.

4. Intervention

Subjects were assigned into two groups 15 members each based on Permuted Block Randomization.

Table 1: showing intervention given in Group A and Group B.

Category	Group A	Group B
Drug Administered	*Rasna Panchaka Kashaya*	*Rasonadi Kashaya*
Route of administration	Oral	Oral
Dose	50ml	50ml
Time of administration	Twice daily before food	Twice daily before food
Anupana	Nil	Nil

Duration of clinical study: Intervention: 30 days. Follow up: 30 days. Total duration: 60 days.

DIAGNOSTIC CRITERIA

Patients having signs and symptoms of *Janu Sandhigata Vata* fitting into NICE Clinical Guidelines CG 177 for Osteoarthritis.[7]

- Age group of 45-70 years
- Has activity related joint pain
- Either no morning stiffness or morning stiffness no longer than 30 minutes

Table 2: showing inclusion and exclusion criteria for selection of patients.

Inclusion criteria	Exclusion criteria
Subjects who fit into diagnostic criteria mentioned above Subjects who have radiological evidence of Osteoarthritis- Mild, moderate and medium arthrosis according to Jager Wirth Radiological scale for knee osteoarthritis Subjects who are willing to sign the consent form to participate in the research	Infective arthritis Patients with Rheumatoid arthritis, Tubercular arthritis, Systemic lupus erythematous, Psoriatic arthritis, Gouty arthritis, and patients with skin rashes Patients with other systemic illness which will interfere the study

ASSESSMENT CRITERIA: All assessment parameters were documented before and after treatment on 0th, 30th, 60th day and analysed.

Table 3: showing Primary Outcomes of the research study.

Primary Outcomes	Grade 0	Grade 1	Grade 2	Grade 3	Grade 4
Janu Sandhi Shula- VAS Scale	0	0-25	25-50	50-75	75-100
Janu Stabdhata – WOMAC Stiffness Score	None	Mild	Moderate	Severe	Extreme
WHO QOL Scale	General, Physical and Limitations to Physical Health				
IKDC SKF Scale	Knee Function before and after treatment				

Table 4: showing Secondary Outcomes of the research study.

Secondary Outcomes	Grade 0	Grade 1	Grade 2	Grade 3	Grade 4
Knee Joint Swelling	0cm	0-35cm	35-40cm	40-45cm	45-50cm
Joint Crepitus	None/Single Crack	Fine crepitus	Course Crepitus	-	-
Range of Movement - Goniometer	$>130^0$	130^0-120^0	120^0-110^0	110^0-100^0	100^0-90^0
Alteration in gait	Nil	Slight limping	Limping slows pace	Difficulty to walk	Unable to walk
Peri Articular Tenderness	Nil	Pt says joint is tender	Pt wince on palpation	Pt withdraws due to pain	Patient doesn't allow to touch

RESULTS

In this study 30 patients suffering from *Janu Sandhigata Vata* were selected after they fit the diagnostic criteria. Patients were divided into 2 groups based on RCT and were administered with *Rasna Panchaka Kashaya* and *Rasonadi Kashaya* respectively for Group A and Group B. A detailed analysis was conducted before, during and after the treatment. The scored parameters Pain, Knee Crepitus, Tenderness, Stiffness of Knee, Alteration in Gait, WHO QOL and IKDC Scores of both left and right knee were added and the sum was considered for statistics. Measured values of Range of movement (Flexion) and Swelling of both left and right knee were added and the sum was considered for statistics. Parameters were statistically analysed on 0th, 30th day using paired 't' test for numerical data and Wilcoxon signed-rank test for ordinal data within the groups. Numerical data between the groups were assessed through unpaired 't' test and ordinal data through Mann-Whitney 'U' Test.

Effect on Sandhi Shoola: Out of 30 patients, all patients had Janu Sandhi Shoola. In group A, mean score of *Sandhi Shoola* which was 5.133 has been reduced to 3.333 after the treatment and was statistically significant with P value <0.001. In group B, the mean score of

Sandhi Shoola which was 5.667 has been reduced to 3.733 after the treatment and was statistically significant with P value <0.001. Group A showed an improvement of 35.12% and Group B showed an improvement of 34.12%. There is no marked difference of effect on *Shoola* between two groups.

Table 5: comparing the effect on *Sandhi Shoola* before and after treatment within the group.

	Mean (Lt+Rt) BT	AT	BT-AT (Lt+Rt)	% of relief		SD (Lt+Rt)	SE (Lt+Rt)	Median (Lt+Rt)	Z	P
Group A	5.133	3.333	1.803	35.12	BT	1.922	0.496	6.000	3.354	<0.001
					AT	1.589	0.410	4.000		
Group B	5.667	3.733	1.934	34.12	BT	1.952	0.504	6.000	3.464	<0.001
					AT	1.534	0.396	4.00		

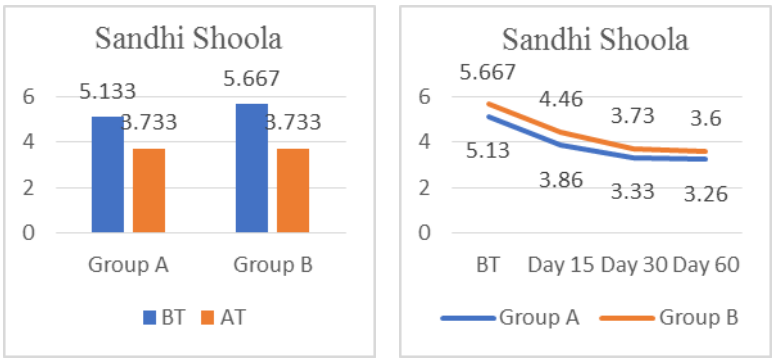
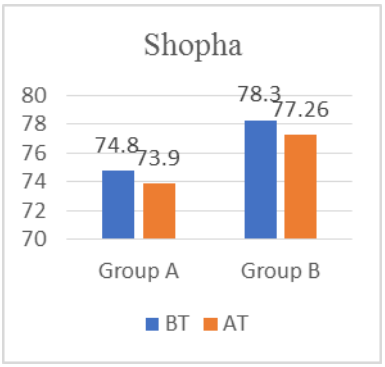


Figure 1, 2 showing the effect on *Sandhi Shoola* before and after treatment and changes in *Sandhi Shoola* BT, Day 15, Day 30 and Day 60 respectively.

Effect on Shotha: out of 30 patients, 22 patients presented with Janu Sandhi Shopha. In group A, the mean score of *Shopha* which was 74.800 has been reduced to 73.900 after the treatment and was statistically significant with P value 0.004. In group B, the mean score of *Shopha* which was 78.3cm has been reduced to 77.267cm after the treatment and was statistically significant with P value <0.001. Group A showed an improvement of 1.2% and Group B showed an improvement of 1.4% after the treatment.

Table 6: comparing the effect on *Shopha* before and after treatment within the group.

	Mean (Lt+Rt) BT	AT	BT-AT (Lt+Rt)	% of relief		SD (Lt+Rt)	SE (Lt+Rt)	Median (Lt+Rt)	t value	P
Group A	74.800	73.9	0.9	1.2	BT	10.506	2.713	76.00	3.473	P= 0.004
					AT	10.121	2.613	73.00		
Group B	78.367	77.267	1.1	1.4	BT	8.901	2.298	78.000	5.601	P= <0.001
					AT	8.631	2.229	76.00		



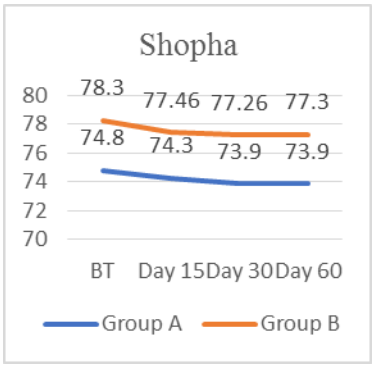
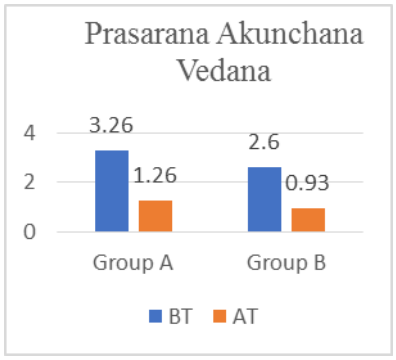


Figure 3, 4 showing the effect on *Shopha* before and after treatment and changes in *Shopha* BT, Day 15, Day 30 and Day 60 respectively.

Effect on Prasarana Akunchana Vedana: Out of 30 patients all had complaints of prasarana akunchana vedana (activity related pain). In Group A, the mean score of *Prasarana Akunchana Vedana* which was 3.26 has been reduced to 1.26 after the treatment and was statistically significant with P value <0.001. In group B, the mean score of *Prasarana Akunchana Vedana* which was 2.6 has been reduced to 0.93 after the treatment and was statistically significant with P value <0.001. Group A showed an improvement of 61.34% and Group B showed an improvement of 64.23%.

Table 7: comparing the effect on *Prasarana Akunchana Vedana* before and after treatment within the group.

	Mean (Lt+Rt) BT	AT	BT-AT (Lt+Rt)	% of relief		SD (Lt+Rt)	SE (Lt+Rt)	Median (Lt+Rt)	t value	P
Group A	3.26	1.26	2	61.34	BT	1.624	0.419	3.000	3.336	P = <0.001
					AT	1.223	0.316	1.00		
Group B	2.6	0.93	1.67	64.23	BT	1.242	0.321	2.000	3.246	P= <0.001
					AT	8.631	2.229	76.00		



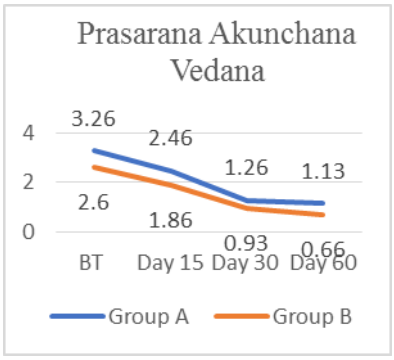


Figure 5, 6: showing the effect on *Prasarana Akunchana Vedana* before and after treatment and its changes on BT, Day 15, Day 30 and Day 60 respectively.

Effect on Alteration in Gait: Out of 30 patients, 27 of them had alteration in gait due to OA knee. In group A, the mean score of alteration in gait which was 2.46 has been reduced to 1.26 after the treatment and was statistically significant with P value 0.002. In group B, the mean score of alteration in gait which was 2.13 has been reduced to 1.00 after the treatment and was statistically significant with P value <0.001. Group A showed an improvement of 48.7% and Group B showed an improvement of 53.05%.

Table 8: comparing the effect on Alteration in Gait before and after treatment within the group.

	Mean(Lt+Rt) BT	AT	BT-AT (Lt+Rt)	% of relief		SD (Lt+Rt)	SE (Lt+Rt)	Median (Lt+Rt)	t value	P
Group A	2.46	1.26	1.2	48.7	BT	1.685	0.435	2.00	2.972	P= 0.002
					AT	1.580	0.408	1.00		
Group B	2.13	1	1.13	53.05	BT	1.187	0.307	2.000	3.017	P <0.001
					AT	0.926	0.239	1.000		

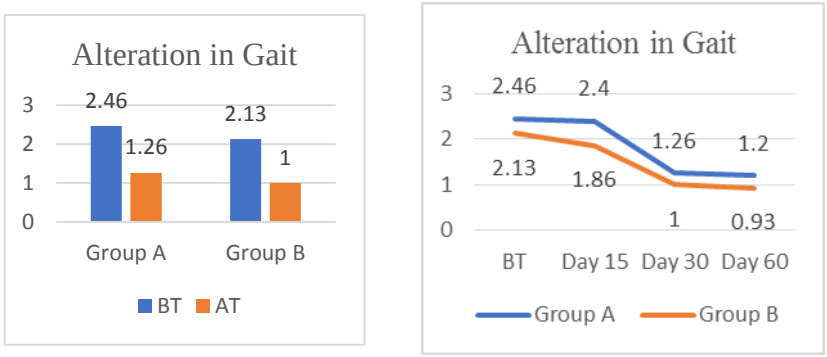
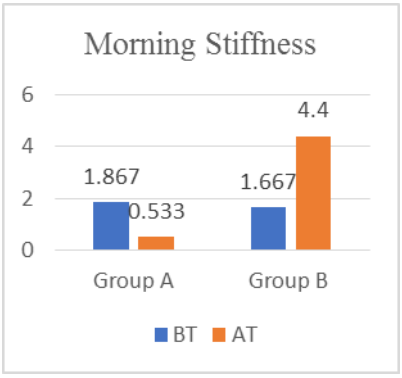


Figure 7, 8 showing the effect on Alteration in Gait before and after treatment and its changes on BT, Day 15, Day 30 and Day 60 respectively.

Effect on Morning Stiffness: Out of 30 patients, 21 patients had morning stiffness. In group A, the mean score of Morning Stiffness which was 1.86 has been reduced to 0.53 after the treatment and was statistically significant with P value <0.001. In group B, the mean score of Morning Stiffness which was 1.667 has been reduced to 0.733 after the treatment and was statistically significant with P value 0.004. Group A showed an improvement of 71.45% and Group B showed an improvement of 56.02%.

Table 9: comparing the effect on Morning Stiffness before and after treatment within the group.

	Mean(Lt+Rt) BT	AT	BT-AT (Lt+Rt)	% of relief		SD (Lt+Rt)	SE (Lt+Rt)	Median (Lt+Rt)	t value	P
Group A	1.867	0.533	1.334	71.45	BT	1.685	0.435	2.00	2.979	P= <0.001
					AT	1.302	0.336	0.000		
Group B	1.667	0.733	0.934	56.02	BT	1.543	0.398	2.000	2.724	P = 0.004



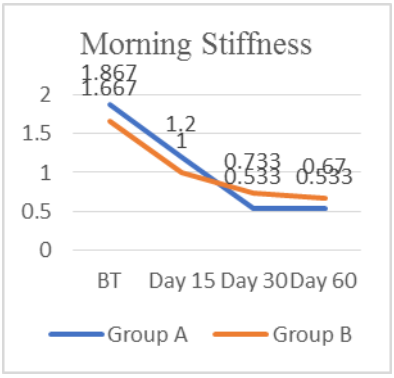


Figure 9, 10 showing the effect on Morning Stiffness before and after treatment and its changes on BT, Day 15, Day 30 and Day 60 respectively.

Effect on Range of Movement: Out of 30 patients, 26 were having sandhi hanti (reduced ROM). In group A, the mean score of Range of Movement which was 193.867 has been increased to 206.333 after the treatment and was statistically significant with P value 0.004. In group B, the mean score of Range of Movement which was 214.333 has been improved to 220.6 after the treatment and was statistically significant with P<0.001. Group A showed an improvement of 6.43% and Group B showed an improvement of 2.92%.

Table 10: comparing the effect on Range of Movement before and after treatment within the group.

	Mean(Lt+Rt) BT	AT	BT-AT (Lt+Rt)	% of relief		SD (Lt+Rt)	SE (Lt+Rt)	Median (Lt+Rt)	t value	P
Group A	193.867	206.333	12.466	6.43	BT	52.105	13.454	210.000	3.446	P = 0.004
					AT	48.161	12.435	215.000		
Group B	214.333	220.600	6.267	2.92	BT	42.631	11.007	220.000	4.502	P = <0.001
					AT	42.000	10.844	225.000		

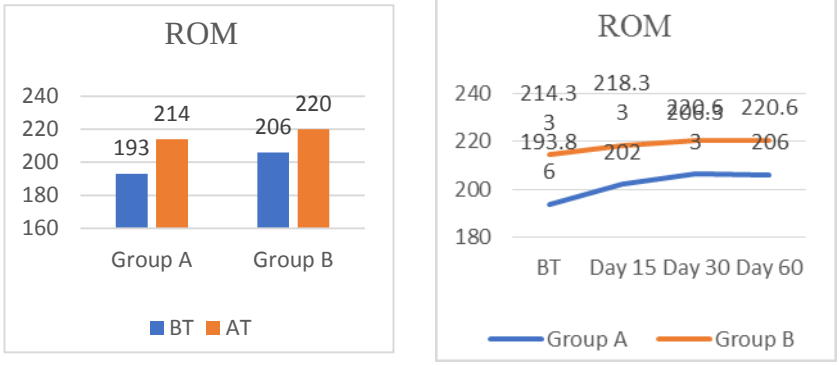


Figure 11, 12 showing the effect on Range of Movement before and after treatment and its changes on BT, Day 15, Day 30 and Day 60 respectively.

Effect on IKDC SKF Score: All subjects were assessed for IKDC SKF Scale. In group A, the mean score of IKDC SKF Scale which was 36.420 has been increased to 52.340 after the treatment and was statistically significant with P<0.001. In group B, the mean score of IKDC SKF Scale which was 41.827 has been improved to 53.253 after the treatment and was statistically significant with P value <0.001. Group A showed an improvement of 15.92% and Group B showed an improvement of 11.42%.

Table 11: comparing the effect on IKDC SKF Scale before and after treatment within the group.

	Mean (Lt+Rt) BT	AT	BT-AT	% of relief		SD (Lt+Rt)	SE (Lt+Rt)	Median (Lt+Rt)	Z	P
Group A	36.420	52.340	15.92	15.92	BT	13.001	3.357	31.000	3.408	P = <0.001
					AT	14.896	3.846	50.600		
Group B	41.827	53.253	11.42	11.42	BT	15.385	3.972	37.900	3.408	P = <0.001
					AT	14.950	3.860	49.300		

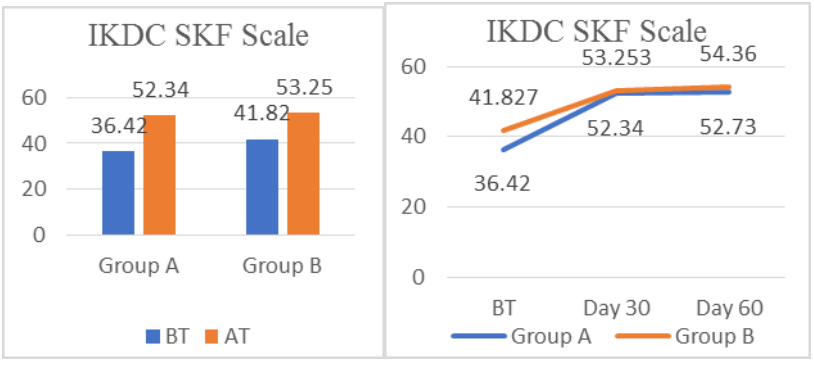


Figure 13, 14 showing the effect on IKDC SKF Scale before and after treatment and its changes on BT, Day 30 and Day 60 respectively.

Effect on WHO QOL Scale: All subjects were assessed for WHO QOL Scale.

Physical Function: In group A, the mean score of Physical Functioning which was 26.047 has been improved to 45.667 after the treatment and was statistically significant with P value <0.001. In group B, the mean score of Physical Functioning which was 34.000 has been improved to 42.667 after the treatment and was statistically significant with P value <0.001. Group A showed an improvement of 19.6% and Group B showed an improvement of 8.66%.

Table 12: comparing the effect on Physical Functioning before and after treatment between the group.

	Mean (Lt+Rt)	Median (Lt+Rt)	S D (Lt+Rt)	S E (Lt+Rt)	Man-Whitney U test		
Group A	19.667	20.000	11.095	2.865	T value	U value	P value
Group B	8.667	5.000	8.756	2.261	164.500	44.500	P = 0.005

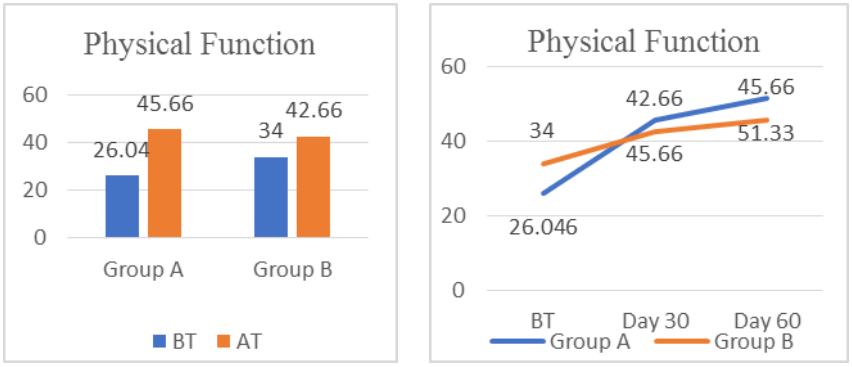


Figure 15, 16 showing the effect on Physical Functioning before and after treatment and its changes on BT, Day 30 and Day 60 respectively.

Limitations of Physical Functioning: In group A, the mean score of Limitations of Physical Functioning which was 25.000 has been improved to 63.333 after the treatment and was statistically significant with P value <0.001. In group B, the mean score of Limitations of Physical Functioning which was 30.000 has been improved to 65.000 after the treatment and was statistically significant with P value <0.001. Group A showed an improvement of 38.3% and Group B showed an improvement of 35%.

Table 13: comparing the effect on Limitations of Physical Functioning before and after treatment within the group.

	Mean(Lt+Rt) BT	AT	BT-AT (Lt+Rt)	% of relief		SD (Lt+Rt)	SE (Lt+Rt)	Median (Lt+Rt)	t value	P
Group A	25.000	63.333	38.33	38.3	BT	18.898	4.880	25.000	3.493	P = <0.001
					AT	18.581	4.797	75.000		

Group B	30.000	65.000	35	35	BT	19.365	5.000	25.000	3.520	P = <0.001
					AT	15.811	4.082	75.000		

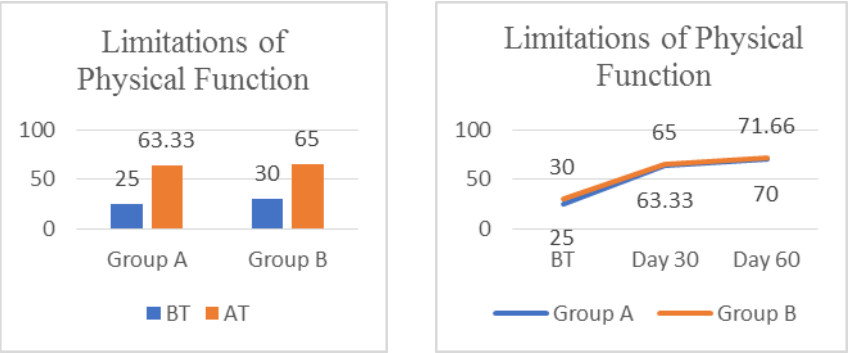


Figure 17, 18 showing the effect on Limitations of Physical Functioning before and after treatment and its changes on BT, Day 30 and Day 60 respectively.

Pain: In group A, the mean score of Pain-QOL which was 25.000 has been increased to 63.333 after the treatment and was statistically significant with P value <0.001. In group B, the mean score of Pain-QOL which was 30.000 has been improved to 65.000 after the treatment and was statistically significant with P value <0.001. Group A showed an improvement of 21.33% and Group B showed an improvement of 17.87%.

Table 14: comparing the effect on Pain-QOL before and after treatment within the group.

	Mean (Lt+Rt) BT	AT	BT-AT (Lt+Rt)	% of relief		SD (Lt+Rt)	SE (Lt+Rt)	Median (Lt+Rt)	t value	P
Group A	42.667	65.000	21.333	21.33	BT	21.412	5.528	45.000	3.346	P = <0.001
					AT	14.970	3.865	67.500		
Group B	40.833	58.700	17.87	17.87	BT	12.771	3.297	45.000	3.440	P = <0.001
					AT	14.608	3.772	57.000		

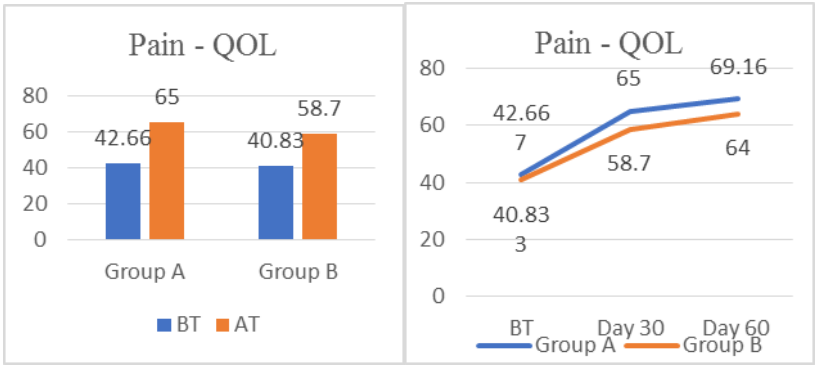


Figure 19, 20 showing the effect on Pain-QOL before and after treatment and its changes on BT, Day 30 and Day 60 respectively.

Table 15: showing percentage of improvement in Group A and Group B assessed on primary and secondary outcomes of the study.

Parameter	Group A			Group B		
	Mean BT (Lt+Rt)	Mean AT (Lt+Rt)	% of improvement	Mean BT (Lt+Rt)	Mean AT (Lt+Rt)	% of improvement
Sandhi Shoola	5.133	3.333	35.12	5.667	3.733	34.12
Sandhi Shopha	74.800	73.9	1.2	78.367	77.267	1.4
Prasarana Akunchana Vedana	3.26	1.26	61.34	2.6	0.93	64.23
Vatapoorna Druti Sparsha	2.667	2.667	0	2.467	2.467	0
Alteration in Gait	2.46	1.26	48.7	2.13	1	53.05
Morning Stiffness	1.867	0.533	71.45	1.667	0.733	56.02
Range of Movement	193.867	206.333	6.43	214.333	220.600	2.92
QOL - Physical Function	19.667	20.000	19.6	8.667	5.000	8.66
QOL - Limitation of physical function	25.000	63.333	38.30	30.000	65.000	35
QOL - Pain	42.667	65.000	21.3	40.833	58.700	17.87
IKDC SKF	24.446	59.993	15.92	28.92	71.2	11.42

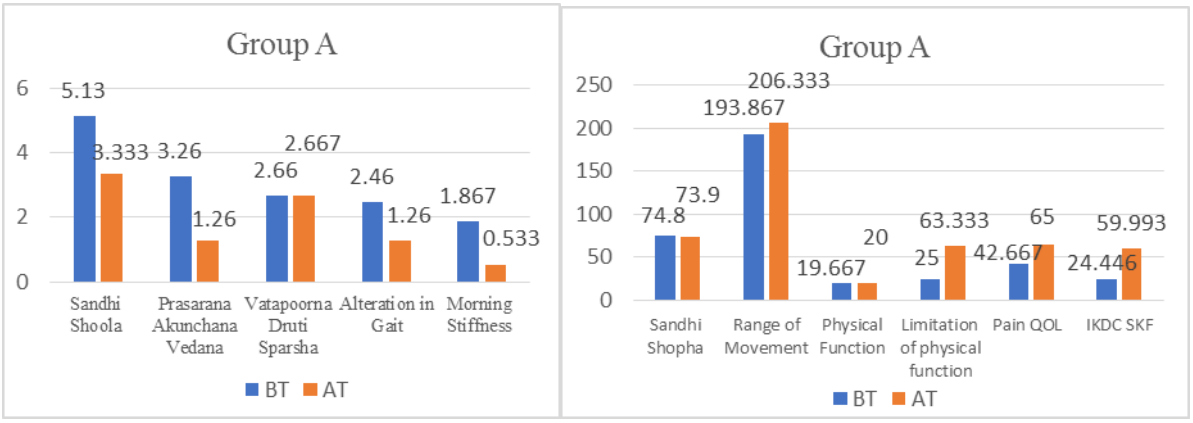


Figure 21, 22 showing mean scores before and after treatment in Group A

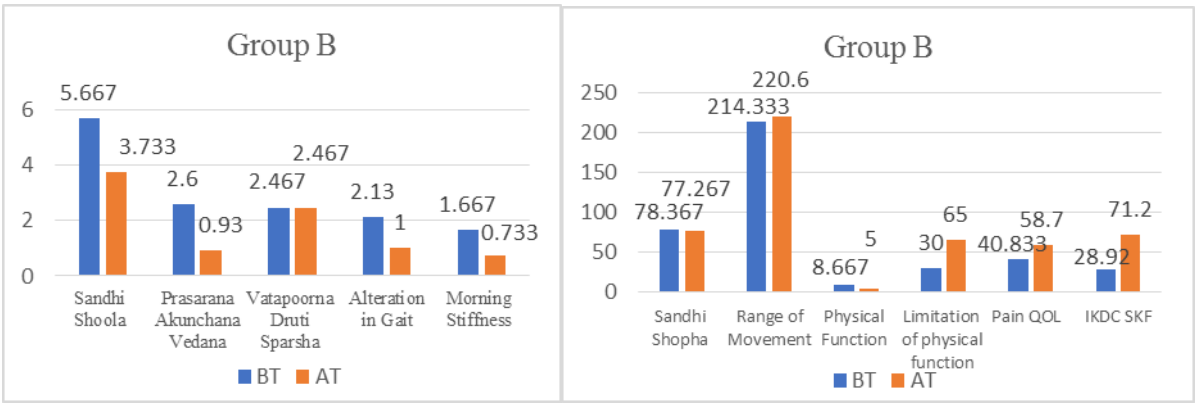


Figure 23, 24 showing mean scores before and after treatment in Group B

Overall assessment in Group A; 26.66% of patients showed mild response, 60% showed moderate response and 13.33% showed good response after treatment. Overall assessment in Group B; 13.33% of patients showed mild response, 73.33% showed moderate response and 13.33% showed good response after treatment. Both *Rasna Panchaka* and *Rasonadi Kashaya* helps in reducing disease symptoms and prevents disease progression. *Rasna Panchaka Kashaya* group showed better results than *Rasonadi Kashaya* group.

Table 16: showing criteria used for overall assessment of Group A and Group B.

Sl No	Range of Improvement	Category	No of patients		% of patients	
			Group A	Group B	Group A	Group B
1	75%-100%	Excellent	0	0	0%	0%
2	50%-75%	Good	2	2	13.33%	13.33%
3	26%- 50%	Moderate	9	11	60%	73.33%
4	0% – 25%	Mild	4	2	26.66%	13.33%

DISCUSSION

Janu sandhigata vata is caused due to *gatatva* of *vyana vata* from *pakwashaya* to *janu sandhi pradesha* caused due to over burdening of *janu sandhi* and *dhatukshaya* in *vriddha avastha*. Even though treatment is *vyapya*, with judicial treatment most patients get betterment in symptoms and improved quality of life. In this study patients were of Grade I and Grade II OA treated for 30 days without any external treatment and *shodhana* procedures. No patients showed adverse effects and study conducted gave satisfactory results.

Rasonadi Kashaya: *Rasonadi Kashaya* consists of 4 drugs. All drugs have *vata hara* property. *Shothahara* and *Vatanulomana* property of *Rasona, Krishna Jeeraka,* and *Shalaparni* relieves the inflammation process of osteoarthritis. *Balya* and *Brimhana* property of *Krishna Jeeraka* and *Shalaparni* increases the integrity of the *asthi dhatu* and does *poshana. Deepana* and *Pachana* action of *Rasona, Krishna Jeeraka,* and *Shalaparni* helps to remove *agnimandhya* and *ama* and thereby helps increase *dhatwagni* which helps in *asthi dhatu vriddhi* and *dooshita dhatu kshaya. Vedanasthapana* and *shoolaprashamana* properties of *Rasona* and *Pippali* respectively help in the management of pain associated with osteoarthritis. *Rasayana* property of *Rasona, Pippali,* and *Sthira* may help in the regeneration of the knee joint components.[8]

Pre-clinical studies proved *Rasona* has antioxidant action and anti-inflammatory effect thus having a significant anti-arthritic effect. *Pippali* has exhibited antioxidant activity against free

radical-induced oxidative damage, an antihyperlipidemic, and anti-inflammatory activity which significantly reduced nociceptive and arthritic symptoms.[9] *Sthira* has anti-oxidant and analgesic effect.

Rasna Panchaka Kashaya: *Rasna Panchaka Kashaya* consists of 5 drugs. All drugs have *vatahara* property. Furthermore, *Shothahara* properties of *Rasna* reduces joint inflammation, *shoola prashamana* property of *Eranda* along with other drugs alleviate pain and tenderness, *deepana* property of *Guduchi, deepana* and *amapachana* property of *Shunti, Devadaru* and *Rasna* helps in relieving the *jataragni* and *dhatvagni mandhya,* removing *ama* and increasing the *dhatwagni*. *Balya guna* of *Guduchi* improves *bala* in the *asthi sandhi* which is undergoing joint degeneration, *rasayana* properties of *Guduchi* may help in regeneration of *asthi dhatu.*[10]

All drugs have anti-inflammatory action, antioxidant action; *Rasna*, *Guduchi* and *Shunti* having immune-modulatory action; *Guduchi* having osteoprotective activity; *Eranda* having bone regeneration activity; free radical scavenging activity and various pre-clinical and clinical studies prove their efficacy against osteoarthritis.[11]

Both *Rasna Panchaka* and *Rasonadi Kashaya* helps in reducing disease symptoms and prevents disease progression. *Rasna Panchaka Kashaya* group showed better results than *Rasonadi kashaya* group.

CONCLUSION

Janu Sandhigata Vata being a chronic progressive joint disorder, needs continuous and well-planned treatment protocol after proper introspection and examination by means of *vatahara, shoolahara, shothahara* and *rasayana chikitsa* with internal medications, *shodhana* and external therapies. This study was designed to understand the clinical effect of *kashaya prayoga* in *janu sandhigata vata*. Mean percentage of relief in Group A was 29.03% while that of Group B was 25.88%. In Group A (*Rasna Panchaka Kashaya*) most patients (60%) had moderate improvement, 26.66% had mild improvement and 13.33% had good improvement in the scored parameters. In Group B (*Rasonadi Kashaya*) most patients (73.33%) had moderate improvement, 13.33% had mild improvement and about 13.33% had good improvement in the scored parameters. Hence Group A (*Rasna Panchaka Kashaya* group) showed better results as compared to Group B (*Rasonadi Kashaya* group).

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