ISSN NO. 2320-5407

Journal Homepage: - www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/9763
DOI URL: <http://dx.doi.org/10.21474/IJAR01/9763>

RESEARCH ARTICLE

A COMPARATIVE EVALUATION OF THE EFFECT OF PANCHMULABALADI KSHEER BASTI & RASNADI GUGGULU IN THE MANAGEMENT OF SANDHIVATA.

Aparna Tripathi and S.K. Tiwari.

Manuscript Info

Manuscript History

Received: 12 July 2019

Final Accepted: 14 August 2019

Published: September 2019

Key words:-

Sandhivata, Osteoarthritis, Rasnadi guggulu, Panchmulabaladi ksheerbasti, kala basti.

Abstract

Ayurveda defines body as something that is constantly going through the process of decay- *shiryate iti shariram*¹, here decay indicates gradual ageing of the body. Ageing is a complex process of accumulation of molecular, cellular, and organ damage, leading to loss of function and increased vulnerability to disease and death, the rate and extent of which varies among individuals². Osteoarthritis (OA) is not only the most common joint disease, but is also one of the major causes of disability in people aged >65 years and is accompanied by co-morbid conditions, increased mortality, and decreased quality of life. One of the major risk factors for OA is ageing³. With the process of ageing all dhatus undergo kshaya, and leads to vataprakopa and the vitiated Vata dosha get lodged in *Asthi sandhis* and give rise to Sandhigata vata. The present clinical work is based on the study of 45 patients of Sandhigata vata (Osteo-arthritis) divided into three Groups A, B and C in terms of the nature of given treatment. Group A patients were prescribed *Shamana* therapy with *Rasnadi guggulu*, group B patient were administered *Panchmulabaladi ksheer basti* in *kalabasti* schedule of 16 days, group C patients were given *Rasnadi guggulu* after completion of *Panchmulabaladi ksheer basti* as per the schedule in group B. Subjective parameters and objective parameters were made out to assess the Clinical response. All group shows statistically highly significant relief in the subjective and objective parameters.

Copy Right, IJAR, 2019,. All rights reserved.

Introduction:-

Sandhigata vata is described under Vatavyadhi in all the Samhita and Sangraha Grantha. Sandhigata vata is a Dhatukshayajanya Vyadhi, and occurs usually after mid life stage. Vardhakya is predominated by Vata dosha⁴ and characterized by Dhatu kshaya⁵. Vataprakopaka ahara vihara along with age related dhatukshaya reduces sneha bhava and kapha in the body and allows the vitiated vata to lodge in asthivaha and majjavaha srotas⁶ mainly in Asthi and Sandhi thereby resulting in karmahani (loss of function) of the Sandhis. When aggravated Vata gets localized in Sandhi, it over powers and undoes all qualities of kapha. Shleshaka Kapha is described to be situated in the Sandhi⁷. It keeps the joints firmly united and helps in their function. Also, dhatushaithilya is another feature in Vardhakya⁸, which reflects in peshis and snayus thereby reducing their functional efficiency in supporting the joints. Asthi- Sandhi is one of the component of Madhyamarogamarga⁹. The disease which is located in Marma and Sandhi

is considered as Yappa¹⁰. Osteoarthritis is the most common type of arthritis in both developed and developing countries. It is a chronic degenerative disorder of multifactorial etiology characterised by the loss of articular cartilage, hypertrophy of bone at the margins, subchondral sclerosis and range of biochemical and morphological alterations of the synovial membrane and joint capsule¹¹. It is a major cause of disability in older adults worldwide. According to World Health Organization (WHO) 9.6% of men and 18% of women aged over 60 years has symptomatic OA worldwide. 80% of those with OA have limitations in movement and 25% cannot perform their major daily activities of life¹². Osteoarthritis is the second most common rheumatologic problem and it is the most frequent joint disease with a prevalence of 22% to 39% in India¹³.

Goal of managing Osteoarthritis includes controlling pain, maintaining and improving range of movement and stability of affected joints and limiting functional impairment¹⁴. Several pharmacological and non-pharmacological mode of treatment are in use now a days, but the toxicity and adverse event profile of the most commonly used existing treatment in contemporary medical science (such as NSAIDs, and total joint replacement) is unfavourable¹⁵. Modalities of treatment have been tried in various systems of medicine including the contemporary system of medicine but the statistical figure of the cured is still lying low than the expectant and has kept whole medical fraternity on tenterhooks.

An indigenous compound drug for *shaman chikitsa*, *Rasnadi Guggulu*¹⁶, mainly containing *vatahara* and *rasayana* drugs like *Rasna*, *Devdaru*, *Eranda*, *Guduchi*, *Guggulu* etc was given in one group. In the another group *Basti* was given with *Panchmulabalasiddha ksheera*^{17, 18}. *Panchmulabaladi ksheera* as well as its route of administration- *Basti* both have *vata shamaka* properties. Patients of group C were given *Panchmulabaladi Ksheer Basti* in *kalabasti*¹⁹ schedule of 16 days, followed by *Rasnadi guggulu* as given in group A.

Aims And Objectives:-

1. To assess the effect of *Rasnadi Guggulu* in *Sandhigatavata*.
2. To evaluate the effect of *Panchmulabaladi Ksheer Basti* on *Sandhigatavata*.
3. To evaluate the additive effect of *Rasnadi guggulu* and *Panchmulabaladi Ksheer Basti*
4. To compare the difference of results in the above treatment groups.

Material and methods:-

Drugs

Table 1:-Ingredients of *Rasnadi Guggulu*

S.No	Drugs	Botanical name
1.	Rasna	<i>Pluchea lanceolata</i>
2.	Guduchi	<i>Tinospora cordifolia</i>
3.	Eranda mula	<i>Ricinus communis</i>
4.	Deodaru	<i>Cedrus deodara</i>
5.	Shunthi	<i>Zingiber officinale</i>
6.	Guggulu	<i>Commiphora wightii</i>

Table 2:-Ingredients of *Panchmulabaladi ksheer basti*.

S.No	Drugs	Botanical name
1.	Bilwa	<i>Aegle marmelos</i>
2.	Agnimanth	<i>Premna mucronata</i>
3.	Shyonaka	<i>Oroxylum indicum</i>
4.	Gambhari	<i>Gmelina arborea</i>
5.	Patala	<i>Stereospermum suaveolens</i>
6.	Bala	<i>Sida cordifolia</i>
7.	Saunfa	<i>Anethum sowa</i>
8.	Godugdha (milk)	—
9.	Madhu (Honey)	—
10.	Saindhava lavana (rock salt)	—

Selection of patients:

A series of 45 patients of *Sandhivata* vis-a-vis Osteoarthritis were randomly selected for the present study from OPD and IPD of Kayachikitsa, Sir Sundarlal Hospital, Institute of Medical Sciences, B.H.U, Varanasi. The cases were selected randomly on the basis of classical sign and symptoms described in various ayurvedic texts giving special importance to cardinal symptoms like *Sandhishula*²⁰, *Sandhigati asamarthya*²¹, *Sandhishotha*²², *Atopa*²³, *Akunchana prasaranjanya vedana*²⁴ irrespective of their sex, religion and socioeconomic considerations. Out of 45 patients only 35 cases could complete their follow up i.e. 3 months. The following exclusion and inclusion criteria were adopted for the selection of cases of Osteoarthritis –

Exclusion criteria:

1. History of active presence of other inflammatory or rheumatic disease.
2. Patients below 40 years and aged above 80 years.
3. History of traumatic arthritis.
4. Over weight defined by Body mass index BMI of > 30.
5. Substantial abnormalities in haematological, hepatic, renal or metabolic function.

Inclusion criteria:

1. Patients diagnosed as *Sandhigatavata* on the basis of sign and symptoms according to classical ayurvedic texts.
2. Patient fit for *Basti karma*.
3. Patients with radiological findings of Osteoarthritis along with clinical features.
4. Patient aged over 40 years with involvement of knee joint.

GROUPING:

After selection of the patients they were randomly divided into following groups

Group – A :

The patients of this group were administered *Rasnadi Guggulu* twice daily in the morning and in evening on empty stomach. In this group 15 patients were registered, out of them 14 patients completed the course.

Dose -

50 mg/kg body weight in divided doses.

Anupana –

Luke warm water, patients were suggested to take drug after crushing the *bati*.

Group - B

In this group, *Panchmulabaladi Ksheer Basti* in *Kala basti* schedule of 16 days was administered. Patients were advised *Panchkola churna* 3gm bid after meal for 3-5 days for *Amapachana*. *Abhyanga* with *Bala tail* and *mridu nadi swedana* was done prior to *basti* treatment as *purvakarma*. In this group 15 patients were registered, out of which 10 patients completed their course.

Dose :-

Bala tail Anuvasan Basti - 80 ml. *Panchmulabaladi Ksheer Basti*- 450-500 ml.

Group – C

Patients of this group were given *Rasndi guggulu* after completion of *Panchmulabaladi Ksheer Basti* as per the schedule of group A and B.

In this group 15 patents were registered out of them 11 patients completed the course.

Assessment Of Clinical Response

Subjective parameters and objective parameters were made out to assess the clinical response in all the groups.

Subjective Parameters**Prasarana-akunchanayo-savedana (pain)**

01.	Grade 0	No Complaints
02.	Grade 1	Tells on Enquiry
03.	Grade 2	Complains Frequently
04.	Grade 3	Excruciating Condition

Stambha (Stiffness)

01.	Grade 0	Absent
02.	Grade 1	Present

Objective parameters**Sparshaakshamatva (Tenderness)**

01.	Grade 0	No Complaints
02.	Grade 1	Says the joint is tender
03.	Grade 2	Winces the affected joint
04.	Grade 3	Winces and withdraws the affected joint.

Atopa (Crepitations)

01.	Grade 0	None
02.	Grade 1	Felt
03.	Grade 2	Heard

Sandhigati-Asaamarthya (Restriction of joint movement)

01.	Grade 4	No movement
02.	Grade 3	Up to 50% of the full range of joint motion.
03.	Grade 2	50-75% of the full range of joint motion
04.	Grade 1	>75% & <full range

Shotha (Swelling)

01.	Grade 0	No Complaints
02.	Grade 1	Slightly obvious
03.	Grade 2	Covers well over the bony prominence
04.	Grade 3	Much elevated

Walking time to cover 21meters distance:

01.	Grade 0	Up to 20seconds
02.	Grade 1	21-30seconds
03.	Grade 2	31-40seconds
04.	Grade 3	41-50seconds
05.	Grade 4	51-60seconds

Overall Assessment of Clinical Response:

1.	Good Response	>75 % improvement in overall clinical parameters.
2.	Moderate Response	50-75% improvement in overall clinical parameters.
3.	Poor Response	Up to 50% improvement in overall clinical parameters
4.	No Response	0% or No improvement in overall clinical parameters

Womac Scale

The Western Ontario and McMaster Osteoarthritis Index (WOMAC) is a disease specific, Self-administered, health status measure of symptoms and physical disability. The WOMAC is considered the leading outcome measure for

patients with OA of the lower extremities. Numerous studies have reported on its reliability and validity. There have also been several studies, which have raised issues about the factorial validity of the subscales.

The WOMAC has three subscales **Pain** – 5 questions, **Stiffness** – 2 questions, **Physical functioning** – 17 questions²⁵. Each question uses a likert scale from 0-4 i.e:

1. None	:	0
2. Mild	:	1
3. Moderate	:	2
4. Sever	:	3
5. Extreme	:	4

Interpretation:

Higher scores on WOMAC indicate worse pain, stiffness and functional limitations.

1. Minimum total score: 0
2. Maximum total score: 96

Pain subscale items

1. Walking on the flat surface
2. Going up or down stairs
3. At night while in bed
4. Sitting or lying
5. Standing upright.

Stiffness scale items:

How severe is your knee joint stiffness after first wakening in the morning and later in the day.

Physical functioning subscale:

1. Descending stairs
2. Ascending stairs
3. Rising from sitting
4. Standing
5. Bending to floor
6. Walking on flat
7. Getting in or out of car
8. Going shopping
9. Putting on socks
10. Rising from bed
11. Taking off socks
12. Lying in bed
13. Sitting
14. In/out bath
15. Getting on or off toilet
16. Heavy domestic duties
17. Light domestic duties

Statistical analysis:

For analysis of pain, stiffness, tenderness, swelling, restriction of movement, crepitus and walking time, within the group comparison was done by friedman's Chi-Square test.

Between the groups comparison was done by PEARSON's Chi- Square test. Wherever expected frequency came less than 5, Chi-Square has been calculated after pulling the suitable rows or columns. For WOMAC score, within the group comparison was done by Paired t' test and calculating the mean difference of before and after the treatment.

Between the groups comparison was done by One Way ANOVA test. Post-Hoc test was done to compare significant pair of groups.

Statistical Significance

1. $p < 0.05$ was considered statistically significant and
2. $p < 0.01$ or $p < 0.001$ as statistically highly significant
3. $p > 0.05$ as not statistically significant

Observations and Results:-

Observation of demographic data:

Table 4:-Age wise distribution of 45 Patients of *Sandhigatavata*

Sr.	Age (year)	Total	
		Number	Percentage
1.	30-40	5	11.11 %
2.	41-50	21	46.66%
3.	51-60	12	26.66%
4.	61-70	7	15.55%

Table 5:-Sex wise distribution of 45 Patients of *Sandhigatavata*

Sr.	Sex	Total	
		Number	Percentage
1.	Male	17	37.77 %
2.	Female	28	62.22 %

Table 6:-Occupation wise distribution of 45 patients of *Sandhi- gatavata*

	Occupation	Total	
		Number	Percentage
1.	Sedentary	14	31.11%
2.	Active	25	55.55%
3.	Labour	6	13.33%
4.	Other	0	0%

Table 7:-Pattern of Onset wise distribution of 45 Patients of *Sandhigatavata*

Sr.	Pattern of onset	Total	
		Number	Percentage
1.	Gradual	36	80%
2.	Insidious	9	20%

Table 8:-Chronicity wise distribution of 45 Patients of *Sandhigatavata*

Sr.	Chronicity	Total	
		Number	Percentage
1.	0-6 mnths	5	11.11%
2.	6-12mnths	7	15.55%
3.	1-2 yrs	15	33.33%
4.	2-5 yrs	8	17.77%
5.	>5 yrs	10	22.22%

Table 9:-*Koshta* wise distribution of 45 Patients of *Sandhigatavata*

Sr.	<i>Koshta</i>	Total	
		Number	Percentage
1.	<i>Mridu</i>	6	13.33%

2.	Madhya	15	33.33%
3.	Krura	24	53.33%

Data Related to clinical features before treatment and after follow-up:**Subjective parametres :****Table 10:-**Showing the distribution of patients by different grades of Vedana .*Prasaranaakunchanayohosavedanapravruthihi: (Pain on movement)*

Group	Grade	No. of cases with percentage				Within the group comparison Friedman Test
		BT	F1	F2	F3	
Group A (n=14)	0	0 0%	0 0%	0 0%	2 14.3%	$\chi^2 = 27.600$ P < .001
	1	0 0%	1 7.1%	3 21.4%	4 28.6 %	
	2	6 42.9%	7 50%	10 71.4%	8 57.1%	
	3	8 57.1%	6 42.9%	1 7.1%	0 0%	
Group B (n=10)	0	0 0%	0 0%	0 0%	2 20%	$\chi^2 = 21.808$ P < .001
	1	0 0%	6 60%	7 70%	7 70%	
	2	4 40%	2 20%	3 30%	1 10%	
	3	6 60%	2 20%	0 0%	0 0%	
Group C (n=11)	0	0 0%	0 0%	0 0%	5 45.5%	$\chi^2 = 23.080$ P < .001
	1	0 0%	5 45.5%	6 54.5%	3 27.3%	
	2	4 36.4%	3 27.3%	4 36.4%	2 18.2%	
	3	7 63.6%	3 27.3%	1 9.1%	1 9.1%	
Between the Group comparison	Pearson Chi-Square Test	$\chi^2 = 0.11$ P > .05	$\chi^2 = 1.54$ P > .05	$\chi^2 = 0.98$ P > .05	$\chi^2 = 6.10$ P < .05	

Table 11 :-*Stambha* (stiffness)

Group	Grade	No. of cases with percentage				Within the group comparison Friedman Test
		BT	F1	F2	F3	
Group A	0	2 14.3%	3 21.4 %	3 21.4%	5 35.7%	$\chi^2 = 6.333$ p > .05
	1	12 85.7%	11 78.6 %	11 21.4%	9 64.3%	
Group B	0	1 10%	5 50%	6 60%	7 70%	$\chi^2 = 13.105$ p < .01
	1	9 90%	5 50%	4 40%	3 30%	
	0	1	6	6	9	$\chi^2 = 16.500$

Group C		9.1%	54.5%	54.5%	81.8%	p < .001
	1	10 90.9%	5 45.5%	5 45.5%	2 18.2%	
Between the Group comparison	PEARSON Chi-Square Test	$\chi^2 = 0.19$ p > .05	$\chi^2 = 3.40$ p > .05	$\chi^2 = 4.44$ p > .05	$\chi^2 = 6.04$ p < .05	

Objective Parameters**Table 12:-Sparsha akshamatva (tenderness)**

Group	Grade	No. of cases with percentage				Within the group comparison Friedman Test
		BT	F1	F2	F3	
Group A (n=14)	0	2 14.3%	4 28.6%	4 28.6%	5 35.7%	$\chi^2 = 22.726$ P < .001
	1	2 14.3%	3 21.4%	4 28.6%	5 35.7%	
	2	7 50%	5 35.7%	5 35.7%	4 28.6%	
	3	3 21.4%	2 14.3%	1 7.1%	0 0%	
Group B (n=10)	0	0 0%	1 10%	1 10%	5 50%	$\chi^2 = 21.507$ p < .001
	1	2 20%	3 30%	7 70%	3 30%	
	2	3 30%	5 50%	1 10%	1 10%	
	3	5 50%	1 10%	1 10%	1 10%	
Group C (n=11)	0	0 0%	0 0%	1 9.1%	7 63.6%	$\chi^2 = 24.038$ p < .001
	1	0 0%	5 45.5%	6 54.5%	2 18.2%	
	2	8 72.7%	5 45.5%	3 27.3%	1 9.1%	
	3	3 27.3%	1 9.1%	1 9.1%	1 9.1%	
Between the Group comparison	PEARSON Chi-Square Test	$\chi^2 = 3.62$ p > .05	$\chi^2 = 0.24$ p > .05	$\chi^2 = 0.502$ p > .05	$\chi^2 = 0.442$ p > .05	

Table 13:-Shotha (swelling)

Group	Grade	No. of cases with percentage				Within the group comparison Friedman Test
		BT	F1	F2	F3	
Group A (n=14)	0	1 7.1%	1 7.1%	1 7.1%	4 28.6%	$\chi^2 = 25.061$ p < .001
	1	0 0%	1 7.1%	2 14.3%	5 35.7%	
	2	7 50%	10 71.4%	11 78.6%	5 35.7%	

	3	6 42.9%	2 14.3%	0 0%	0 0%	
Group B (n=10)	0	0 0%	2 20%	2 20%	2 20%	$\chi^2 = 20.571$ $p < .001$
	1	2 20%	6 60%	6 60%	6 60%	
	2	7 70%	2 20%	2 20%	2 20%	
	3	1 10%	0 0%	0 0%	0 0%	
Group C (n=11)	0	0 0%	2 18.2%	2 18.2%	7 63.6%	$\chi^2 = 24.117$ $p < .001$
	1	2 18.2%	4 36.4%	7 63.6%	2 18.2%	
	2	6 54.5%	5 45.5%	2 18.2%	2 18.2%	
	3	3 27.3%	0 0%	0 0%	0 0%	
Between the Group comparison	PEARSON Chi-Square Test	$\chi^2 = 0.99$ $p > .05$	$\chi^2 = 10.65$ $p > .05$	$\chi^2 = 8.095$ $p < .05$	$\chi^2 = 0.015$ $p > .05$	

Table 14:-Atopa (Crepitus)

Group	Grade	No. of cases with percentage				Within the group comparison Friedman Test
		BT	F1	F2	F3	
Group A (n=14)	0	0 0%	0 0%	0 0%	3 21.4%	$\chi^2 = 11.800$ $P < .01$
	1	6 42.9%	7 50%	7 50%	5 35.7%	
	2	8 57.1%	7 50%	7 50%	6 42.9%	
Group B (n=10)	0	0 0%	2 20%	2 20%	4 40%	$\chi^2 = 10.158$ $P < .01$
	1	5 50%	7 70%	7 70%	3 30%	
	2	5 50%	1 10%	1 10%	3 30%	
Group C (n=11)	0	0 0%	0 0%	0 0%	6 54.5%	$\chi^2 = 16.524$ $P < .001$
	1	4 36.4%	8 72.7%	8 72.7%	3 27.3%	
	2	7 63.6%	3 27.3%	3 27.3%	2 18.2%	
Between the Group comparison	PEARSON Chi-Square Test	$\chi^2 = 0.40$ $p > .05$	$\chi^2 = 4.46$ $p > .05$	$\chi^2 = 4.46$ $p > .05$	$\chi^2 = 1.75$ $p > .05$	

Table 15:-Sandhigati-asamarthya (Restriction of movements)

Group	Grade	No. of cases with percentage				Within the group comparison

		BT	F1	F2	F3	Friedman Test
Group A (n=14)	0	3 21.4%	3 21.4%	3 21.4%	4 28.6%	$\chi^2 = 16.867$ $p < .001$
	1	3 21.4%	3 21.4%	3 14.3%	7 50%	
	2	5 35.7%	6 42.9%	7 50%	2 14.3%	
	3	3 21.4%	2 14.3%	1 7.1%	1 7.1%	
Group B (n=10)	0	1 10%	2 20%	3 30%	4 40%	$\chi^2 = 20.429$ $p < .001$
	1	1 10%	7 70%	6 60%	5 50%	
	2	5 50%	1 10%	1 10%	1 10%	
	3	3 30%	0 0%	0 0%	0 0%	
Group C (n=11)	0	0 0%	1 9.1%	1 9.1%	5 45.5%	$\chi^2 = 23.964$ $p < .001$
	1	1 9.1%	4 36.4%	5 45.5%	4 36.4%	
	2	5 45.5%	6 54.5%	5 45.5%	2 18.2%	
	3	5 45.5%	0 0%	0 0%	0 0%	
Between the Group comparison	PEARSON Chi-Square Test	$\chi^2 = 3.916$ $p > .05$	$\chi^2 = 6.19$ $p < .05$	$\chi^2 = 5.60$ $p > .05$	$\chi^2 = 0.55$ $p > .05$	

Table 16:-Womac Score

Groups	Mean $\pm$ SD				Within the group comparison Paired t test BT - AT
	BT	F1	F2	F3	
Group A (n=14)	40.07 ± 5.62	37.79 ± 4.60	32.29 ± 3.56	27.86 ± 4.75	12.21 $\pm$ 5.31 t =8.61 P <0 .001
Group B (n=10)	42.30 ± 5.43	28.50 ± 7.261	24.00 ± 6.02	20.60 ± 5.10	21.70 $\pm$ 5.12 t = 13.40 P <0.001
Group C (n=11)	41.36 ± 4.88	29.73 ± 5.25	24.00 ± 5.91	18.55 ± 5.46	22.82 $\pm$ 4.19 t = 18.06 P < 0.001
Between the group comparison One – Way ANOVA	F = 0.52 $p > 0.05$ NS	F = 9.92 $p < 0.001$	F = 10.97 $p < 0.001$	F = 11.72 $p < .001$	–
Post- Hoc Test Significant pairs ($p < 0.05$)	–	(1, 2) (1, 3)	(1, 2) (1, 3)	(1, 2) (1, 3)	–

Table 17:-Walking Time

Group	Grade	No. of cases with percentage				Within the group comparison Friedman Test
		BT	F1	F2	F3	
Group A (n = 14)	0	0 0%	0 0%	0 0%	0 0%	$\chi^2 = 20.824$ $p = .001$
	1	2 14.3%	3 21.4%	6 42.9%	9 64.3%	
	2	7 50%	7 50%	5 35.7%	3 21.4%	
	3	5 50%	4 28.6%	3 21.4%	2 14.3%	
Group B (n = 10)	0	0 0%	4 40%	4 40%	3 30%	$\chi^2 = 27.403$ $p < .001$
	1	2 20%	3 30%	4 40%	5 50%	
	2	4 40%	3 30%	2 20%	2 20%	
	3	4 40%	0 0%	0 0%	0 0%	
Group C (n = 11)	0	0 0%	0 0%	1 9.1%	4 36.4%	$\chi^2 = 23.081$ $p < .001$
	1	1 9.1%	5 45.5%	5 45.5%	3 27.3%	
	2	5 45.5%	5 45.5%	4 36.4%	3 27.3%	
	3	5 45.5%	1 9.1%	1 9.1%	1 9.1%	
Between the Group comparison	PEARSON Chi-Square Test	$\chi^2 = 0.51$ $p > .05$	$\chi^2 = 5.66$ $p > .05$	$\chi^2 = 3.33$ $p > .05$	$\chi^2 = 0.85$ $p > .05$	

Table 18:-Showing the distribution of Overall Response to the treatment:

Response	Group A No. and percentage	Group B No. and percentage	Group C No. and percentage
Good Response	5 35.7%	4 40%	7 63.6%
Moderate Response	7 50%	5 50%	3 27.3%
Poor Response	2 14.3%	1 10%	1 9.1%
No Response	0 0%	0 0%	0 0%

Discussion:-

In the present study, maximum number of patients were of age Group 41-50 years (46.66%) followed by 51-60 years age Group (26.66%). *Sandhigataavata* is the disease of *Vridhnavastha* due to Dhatukshaya which has been found same here in the present study. Majority of the patients were of Female sex (62.22%) in the present study. Male sex found in 37.77% patients. In this study (55.55%) patients were doing active occupation. Due to the continuous stress affecting on the joints due to excessive work the particular joint becomes degenerated causing *Sandhigataavata* (Osteoarthritis). (31.11%) patients were of sedentary. Life style and occupation are regarded as the

risk factors in the epidemiology of Osteoarthritis in contemporary medical science. (Arthritis clinical symposia.vol.51.1999).

Maximum number of patients were having chronicity of 1-2 years (33.33%) , followed by chronicity of more than 5 years (22.22%) and 2-5 years of Chronicity (17.77%).The disease *Sandhigataavata* is encountered as a *Yapya* or *Kastasadhya* variety of disease under the *Vatavyadhi* and all the *Yapyavikaras* are chronic in nature. As per observations, the chronicity of the *Sandhigataavata* is reflected. The chronicity is inversely proportional to the prognosis of disease i.e. if chronicity is less, prognosis is good. In this series, 80% patients gave history of Gradual onset while 20% patients gave history of Insidious onset of the disease. Gradual slow progression of the disease Osteoarthritis is common. Data of the present study shows the same thing.

Therapeutic response of the clinical trial :

Statistically highly significant relief was obtained in all the groups in the complain of prasaran-akunchanyohvedana (Pain) as $p < .001$ in all the groups but percentage relief in pain was more in Group C than group B, and group B more than Group A. Statistically significant result was obtained in between the group comparison after the treatment as $p < .05$.

Statistically not significant relief was obtained in Group A in complain of Stambha (Stiffness) as $p > .05$. In Group B and C highly significant result was obtained ($p < 0.001$). Degree of improvement was more in group C than group B. Highly significant result was obtained on between the groups comparison as $p < .05$.

All the groups have highly significant relief in complain of Sparshakshamatwa (tenderness) as $p < .001$ in all the groups. Between the groups comparison result was insignificant, percentage relief was highest in group C, and B have more percentage relief than group A.

Similarly all the groups have highly significant improvement in Shotha (swelling), Sandhigati-asamarthyas (restriction of movement), Atopa (crepitus) and Walking time as $p < .001$ in all the groups in all the symptoms. Between the Groups comparison was not significant. Degree of improvement by seeing the percentage relief, effect was highest in group C than Group B, group B more effective than group A.

WOMAC Score was significantly reduced in all the groups after trial therapy as p is $< .001$ in all the groups. The mean difference was 12.21 ± 5.31 in Group A. While it was 21.70 ± 5.12 in Group B and 22.82 ± 4.19 in group C. On intergroup comparison statistical significance was obtained in WOMAC score between Group A and B and Group A and C.

In Group A, B and C, 35.7%, 40% and 63.6% patient respectively had the good response, 50%, 50% and 27.3% have moderate response respectively and 14.3%, 10% and 9.1% respectively shows poor response. Any group didn't have No response in any patient.

Shamana therapy as Rasnadi Guggulu provided also better result in all signs and symptoms but low in percentage in comparison to Basti (shodhana) and Basti (Shodhana) followed by administration of Rasnadi Guggulu (shaman).

In this study the Basti therapy has shown beneficial effects on subjective and objective criteria of the patients of Sandhigataavata.

Probable Mode Of Action

Rasnadi Guggulu

The *Rasnadi Guggulu* can reduce the symptoms as well as the degenerative process due to various actions of individual drugs in it. The contents of this composition are all *Vata Shamaka*. The drugs like Rasna, Eranda, Devadaru are not only capable of pacifying *Vata* but also is very good in promoting the health by normalising the Doshas. This composition can also help to control the progressive degeneration, desquamation and necrosis of perichondrial tissues and chondrocytes of the articular cartilage. Rasna is a known anti-inflammatory drug as well as disease modifying agents. Amrita, Shunthi, Devadaru have immunomodulatory action from which can regulate the

lysosomal secretion macrophages in the synovial fluids. Therefore this *Rasnadi Guggulu* provides symptomatic relief from inflammation and arthralgia through its anti-inflammatory, analgesic and possibly anti kinin effects.

Panchmulabaladi Ksheer Basti

Brihatpanchmula is having well known anti-inflammatory and analgesic action. *Brihatpanchmula* is the most highly prized Ayurvedic formula for fatigue. It aids cellular regeneration to hasten removal of dead or weak cells and replace them with fresh ones. *Bala* acts on nerves and is *Balya*, & *Vatahara*, it is also *Brimhan* & *Ojovardhaka*. *Bala* is a drug of choice amongst all *Balya* and *Vatahara*²⁶ drugs. *Balamula* has *Rasayana* and *Ojovardhaka* properties. Acharya Dalhana has considered *Purishdhara kala* as *Asthidhara kala*²⁷. *Purishdhara kala* is located in *Pakwashaya*. It is very important site of *vata dosha*²⁸. The *virya* of *Bastidravya*, because of its *Anupravanabhava*, is transmitted to all over the body by the *Apanadi vatas* and thus has a systemic effect. The *virya* of the *bastidravya* extracts the morbid doshas from all parts of the body i.e. “**ApadaMastaka**” to the *pakwashaya*²⁸. By the combined effect of *purvakarma* viz *Amapachana*, *Snehana* and *Swedana*, the morbid *doshas* are brought to *kostha*. The Pharmacodynamics of these three procedures is nothing but *Paka*, *Vishyandana*, *Srotomukha vishodhana* and *Vayunigrahana*²⁹. These factors are responsible for the movement (*Gati*) of *Doshas* from *Shakha* to *Kostha*. The overall action of *Dravyas* of *Panchmulabaladi Ksheer Basti*, the prominent *rasa* is *madhura* and *madhura vipaka* which are *Saptadhatuvardhak*, *Balya*, *Sihairyakara*, *Kshatasandhanakara* and *vata-kaphashamak* and *Rasayana* properties³⁰. *Tikta rasa* following is *lekhana*, *kleda-meda-kapha soshana*, *Dipana* and *Pachana*³¹. *Tikta Ksheer basti* are especially indicated in diseases of *Asthi dhatu*³². *Katu rasa* is *shotha*, *kleda nashana*, *lekhana* and *Margavivarana*³³. *Kashayarasa* is *Sandhanakara*, *Ropana*, *Shosana*, *Lavana rasa* is in trace, it is *margavishodhana*, *Stambha*, *Bandha*, *Sanghatakaraka*. Looking at *virya bastidravya* is prominently *usna virya* which does *Swedana*, *Pachana*, *Vilayana*, and *Vata-kapha nashana*³⁴. On analysing effect on *Tridosha*, it is mainly *vataghna*, *kaphaghna* and *pittaghna* also. It indicates *Tridoshaghna* of *Bastidravya*. When studying *gunas*, *Snigdha* and *Guru gunas* are prominent. *Snigdha* is *malapravartak*. It produces *snigdha* (oleation), *mriduta* (softness) and *ardrata* (Moisturisation) in the body. It is *vatahara* and *Balya*³⁵. *Guru guna* has *Adhogamipravritti* (Towards gravity) which helps in elimination of *malas*. It is *Dhatuvardhak*, *Balya*, *Vatahara* as well³⁶. *Laghu* follows *guru guna* which is *lekhana*, *Ropana*, *Kaphaghna*³⁷. *Ruksha* is *soshana*, *kaphanashaka*. *Tikta* and *usna gunas* are *shodhana*, *lekhana* and *kaphavatahara*. *Sukshma guna* of *basti* drugs has the power to penetrate the deepest and smallest *srotas* of the body. *Pichhila* is *tantula* and *styana* hence it helps in *sandhana karma*³⁸ of the organs. Overall effect of *Bastidravya* is mainly *shoolaghna*, *sothaghna* and *Balya*. In addition to these prominent *karmas*, *bastidravya* may have *yogavahi lakshana*. *Tridoshahara* property because of *Madhu* and due to *Saindhav*, *dipana pachana karma* is made. *Rasayana* properties of *ksheer* and *bala* helps in the rejuvenation of the tissues.

Conclusion:-

The *Sandhigatavata* explained in Ayurvedic classics as *Sthana vishesha krita Vatavyadhi*, under the concept of *Gatavata*. The vitiated *Vata dosha* get lodged in *Asthi*- *Sandhis* and give rise to *Sandhigatavata*. This is one of such disease commonly affecting a large number of elderly individuals. *Rasnadi Guggulu* has properties like *Vedanasthapana*, *Shothahara*, *Balya*, *Rasayana*, *Sandhaniya*, *Deepana*, *Anulomana* etc. Its pharmacological activities include anti-inflammatory, analgesics, antioxidant, immunostimulant and rejuvenator, by these properties the drug is beneficial for *shaman* of *Sandhigatavata*. *Basti* is best known treatment for *vatavyadhi*, amongst *Basti*, *ksheer*. The disease *Sandhivata* is mainly due to *Dhatukshaya* and *Bala kshaya*. The ingredients of the given *Basti* eg *Brihatpanchmula* is *Vatashamak*, *Shothahara* and *Balya*. *Bala* used in the *Basti* provides to the body having *Vatashamana* and *Rasayana* properties. So it is very good in *Vatavyadhi* i.e. in degenerative disorders. Its pharmacological activities include Rejuvenative, Anti inflammatory, Analgesic etc. *Goksheer* present in the *basti* is *jeevaniya*, *rasayana*, *balya*, *dhatuposhaka* and *vrishya*. The trial drug showed excellent response on reduction of the symptoms and in degenerative process. It is well observed that *shodhana* group showed better result than the *shamana* group. It is well assessed that *shodhana* should be carried out before commencing internal medication. The size of sample was small to draw a generalized conclusion. The period of study was limited. The study can be repeated with large sample and longer duration.

Reference:-

1. Vaidya Ranajeet Rai Desai, Ayurvediya kriya sharir, Sri Baidyanath Ayurveda Bhawan Limited, Naini, Allahabad, 4th edition 2006, page 9.

2. Osteoarthritis and ageing- Ana M. Valdes, Jo anne stocks, European medical journal, March 2018-Page-116-121, <https://www.emjreviews.com/rheumatology/article/osteoarthritis-and-ageing>.
3. Osteoarthritis and ageing- Ana M. Valdes, Jo anne stocks, European medical journal, March 2018-Page-116-121, <https://www.emjreviews.com/rheumatology/article/osteoarthritis-and-ageing>.
4. Vagbhata, Ashtanga Hridayam, Saarvangasundara commentary by Arunadatta and Vidyotini commentary by Atrideva Gupta, edited by Prof. P.V.Sharma, Reprint edition 2009, Sutra sthana, chapter 1/7, page 7, Chaukhamba Orientalia, Varanasi.
5. Agnivesha ,Charaka Samhita, elaborated by Charak and Drdhabala, edited and translated by Prof. P.V.Sharma, volume 1, 9th edition 2004, Chaukhambha Orientalia, Varanasi, Vimana sthana, chapter 8/122, page 383.
6. Agnivesha, Charaka Samhita , refined and annotated by Charaka and redacted by Drdhabala, edited and translated by Prof. P.V. Sharma, Vol.2,7th edition, 2005, Chaukhambha orientalia, Varanasi. Chikitsa Sthana, 28/18, Page- 462
7. Vagbhata, Ashtanga Hridayam, Saarvangasundara commentary by Arunadatta and Vidyotini commentary by Atrideva Gupta, edited by Prof. P.V.Sharma, Reprint edition 2009, Chaukhambha orientalia, Varanasi. Sutra sthana, chapter 12/17, page 158.
8. Agnivesha ,Charaka Samhita, elaborated by Charaka and Drdhabala, edited and translated by Prof. P.V.Sharma, volume 1, 9th edition 2005, Chaukhambha Orientalia, Varanasi, Vimana sthana, chapter 8/122, page 383
9. Agnivesha ,Charaka Samhita, elaborated by Charaka and Drdhabala, edited and translated by Prof. P.V.Sharma, volume 1, 9th edition 2004, Chaukhambha Orientalia, Varanasi, Sutra sthana, chapter 11/48, page 78.
10. Agnivesha ,Charaka Samhita, elaborated by Charaka and Drdhabala, edited and translated by Prof. P.V.Sharma, volume 1, 9th edition 2004, Chaukhambha Orientalia, Varanasi, Sutra sthana, chapter 10/18, page 68.
11. Chandra Prakash Pal, Pulkesh singh, Sanjay chaturvedi *et al*, Epidemiology of knee osteoarthritis in India and related factors, Indian journal of orthopaedics. 2016 Sep, page 518-522.
12. Chandra Prakash Pal, Pulkesh singh, Sanjay chaturvedi *et al*, Epidemiology of knee osteoarthritis in India and related factors, Indian journal of orthopaedics. 2016 Sep, page 518-522.
13. Chandra Prakash Pal, Pulkesh singh, Sanjay chaturvedi *et al*, Epidemiology of knee osteoarthritis in India and related factors, Indian journal of orthopaedics. 2016 Sep, page 518-522.
14. Pandelton A, Arden N, Dougados M, *et al*. EULAR recommendations for the management of knee osteoarthritis: report of a task force of the Standing Committee for International Clinical Studies Including Therapeutic Trials (ESCISIT), *Ann Rheum Dis* 2000;59: 936-44.
15. David J Hunter, BMJ- 2006 Mar 18, 332(7542) page- 639-642, doi: 10.1136/ bmj.332.7542.639. PMCID: PMC1403209 PMID: 16543327. www.ncbi.nlm.nih.gov/pmc/articles/pmc1403209
16. Yogaratnakara, Vaidyak Granth, edited by Pt. Sadasiva Sastri Joshi, 2nd edition 2007, Chaukhamba Sanskrit Series Office Varanasi, chapter – Vatavyadhi nidanam, page 413.
17. Bhaisajya Ratnavali of Kaviraj Govind Das Sen, edited with Siddhiprada Hindi commentary by Prof. Siddhi Nandan Mishra, Chaukhamba Subharati Prakashan, Varanasi, Reprint edition -2009, chapter 26/5, page 518.
18. Cakradatta of Shri Cakrapani data, Edited and translated by Dr.P.V.Sharma, Edition 2007, Chaukhambha Orientalia, Varanasi, Vatavyadhi Adhikara 22/83, page 193.
19. Agnivesha, Charaka Samhita , refined and annotated by Charaka and redacted by Drdhabala, edited and translated by Prof. P.V. Sharma, Vol.2,7th edition, 2005, Chaukhambha orientalia, Varanasi, Siddhi Sthana, chapter 1/47-48, page 594.
20. Sushruta, Sushruta Samhita, with Dalhana Commentary, volume 2, edited and translated by Prof. P.V.Sharma, Chaukhambha Orientalia, Varanasi, Reprint 2010, Nidana Sthana, chapter 1/28.
21. Sushruta, Sushruta Samhita, with Dalhana Commentary, volume 2, edited and translated by Prof. P.V.Sharma, Chaukhambha Orientalia, Varanasi, Reprint 2010, Nidana Sthana, chapter 1/28.
22. Agnivesha, Charaka Samhita , refined and annotated by Charaka and redacted by Drdhabala, edited and translated by Prof. P.V. Sharma, Vol.2,7th edition, 2005, Chaukhambha orientalia, Varanasi, Chikitsa sthana, chapter 28/37, page- 463.
23. Madhava Nidanam, Roga Vinischaya of Sri Madhavakara with the sanskrit commentary Madhukosha by Vijayarakhshita and Srikanthadatta, edited with 'Vimala', 'Madhudhara' Hindi commentary and notes by Dr. Brahmananda Tripathi, Volume 1, Chaukhamba subharati Prakashana, Varanasi, chapter 22/21, page 520.

24. Agnivesha, Charaka Samhita , refined and annotated by Charaka and redacted by Drdhabala, edited and translated by Prof. P.V. Sharma, Vol.2,7th edition, 2005, Chaukhambha orientalia, Varanasi, Chikitsa sthana, chapter 28/37, page- 463.
25. <http://www.rheumatology.org/practice/clinical/clinicianresearchers/outcomes-instrumentation/WOMAC.asp>.
26. Agnivesha ,Charaka Samhita, elaborated by Charak and Drdhabala, edited and translated by Prof. P.V.Sharma, volume 1, 9th edition 2004, Chaukhambha Orientalia, Varanasi, Sutra Sthana, chapter 25/40, page 168.
27. Sushruta, Susruta Samhita with the Nibandhasangraha Commentary of Sri Dalhanacharya and the Nyayachandrika Panjika of Sri Gayadasacharya on Nidanasthana, edited by Vaidya Jadavji Trikamji Acharya and Narayan Ram Acharya, Chaukhamba Subharati Prakashan Varanasi, Reprint 2003, Kalpa sthana, Chapter 4/40,Page- 574.
28. Agnivesha, Charaka Samhita , refined and annotated by Charaka and redacted by Drdhabala, edited and translated by Prof. P.V. Sharma, Vol.2,7th edition, 2005, Chaukhambha orientalia, Varanasi, Siddhi Sthana, chapter 1/40, page-592.
29. Agnivesha ,Charaka Samhita, elaborated by Charak and Drdhabala, edited and translated by Prof. P.V.Sharma, volume 1, 9th edition 2004, Chaukhambha Orientalia, Varanasi, Sutra sthana, chapter 28/33, page 230.
30. Agnivesha ,Charaka Samhita, elaborated by Charak and Drdhabala, edited and translated by Prof. P.V.Sharma, volume 1, 9th edition 2004, Chaukhambha Orientalia, Varanasi, Sutra sthana, chapter 26/43(1), page 181.
31. Agnivesha ,Charaka Samhita, elaborated by Charak and Drdhabala, edited and translated by Prof. P.V.Sharma, volume 1, 9th edition 2004, Chaukhambha Orientalia, Varanasi, Sutra sthana, chapter 26/43(5), page 182.
32. Agnivesha ,Charaka Samhita, elaborated by Charak and Drdhabala, edited and translated by Prof. P.V.Sharma, volume 1, 9th edition 2004, Chaukhambha Orientalia, Varanasi, Sutra sthana, chapter 28/27, page 230.
33. Agnivesha ,Charaka Samhita, elaborated by Charak and Drdhabala, edited and translated by Prof. P.V.Sharma, volume 1, 9th edition 2004, Chaukhambha Orientalia, Varanasi, Sutra sthana, chapter 26/43(4), page 182.
34. Vagbhata, Astanga Samgraha, volume 1, Sutra Sthana, translated by Prof. K.R.Srikantha Murthy, Chaukhambha Orientalia, Varanasi, 2nd edition, chapter 17/22, page – 325.
35. Susruta, Susruta Samhita, with Dalhana commentary, volume 1, edited and translated by Priya Vrat Sharma, Chaukhambha Visvabharati, reprint 2010, Sutra sthana, chapter 46/516, page 559.
36. Susruta, Susruta Samhita, with Dalhana commentary, volume 1, edited and translated by Priya Vrat Sharma, Chaukhambha Visvabharati, reprint 2010, Sutra sthana, chapter 46/518, page 559.
37. Susruta, Susruta Samhita, with Dalhana commentary, volume 1, edited and translated by Priya Vrat Sharma, Chaukhambha Visvabharati, reprint 2010, Sutra sthana, chapter 46/519, page 559.
38. Susruta, Susruta Samhita, with Dalhana commentary, volume 1, edited and translated by Priya Vrat Sharma, Chaukhambha Visvabharati, reprint 2010, Sutra sthana, chapter 46/517, page 559.