



Research Article

STUDY TO EVALUATE THE EFFICACY OF MATRA VASTI OF PANCHTIKTA GUGGULU GHRITA IN SANDHIVATA (OSTEOARTHRITIS)

Neetu Sharma^{1*}, N.R.Singh²

¹Assistant Professor, Dept. of Kayachikitsa, SSSB Ayurvedic College & Hospital, Renwal, Jaipur.

²Professor & Head of Department, Dept. of Kayachikitsa, Ch. Brahm Prakash Ayurveda Charak Sansthan, New Delhi.

KEYWORDS: *Sandhivata*,
Osteoarthritis, *Panchtikta*
Guggulu Ghrita, *Laksha Guggulu*.

ABSTRACT

Sandhigata Vata is *Vatapradhana Vyadhi*, which needs a specific target of therapeutic intervention to slow down the process of *Dhatu Kshaya* and to pacify *Vata*. We can correlate *Sandhigata Vata* with osteoarthritis (OA) on the basis of clinical features. OA is defined as a chronic joint disorder with progressive softening and disintegration of articular cartilage and bone at joint margin called osteophytes and capsular fibrosis. *Matra Vasti of Panchtikta Guggulu Ghrita* is effective in the management of *Sandhivata*. **Aim:** To evaluate the efficacy of *Matra Vasti of Panchtikta Guggulu Ghrita* in the management of *Sandhigata Vata* (Osteoarthritis). **Materials and method:** Total 40 patients having signs and symptoms of *Sandhivata* were selected and randomly divided into two groups. In Group A (n=20), *Laksha Guggulu* 250mg 2tab for TDS and Group B (n=20) *Laksha Guggulu* in same dose with 50ml of *Matra Vasti of Panchtikta Guggulu Ghrita* for 16 days. **Results:** Statistical analysis of both groups comparison in right knee joint shows that there are no significant results in movement and swelling. In both group comparisons pain shows significant results. **Conclusion:** *Matra Vasti of Panchtikta Guggulu Ghrita* provided better results compared to *Laksha Guggulu* in the management of *Sandhivata* (Osteoarthritis).

*Address for correspondence

Dr. Neetu Sharma

Dept. of Kayachikitsa,
SSSB Ayurvedic College &
Hospital, Renwal, Jaipur.

Email: drneetu90@gmail.com

Mobile: 8619188614,
7615050724

INTRODUCTION

In this era all system of medicine of this world are looking towards Ayurvedic system of medicine, with a hope of maintain the health of healthy persons and cure of disease. In *Vriddhavastha*, all *Dhatu* undergo *Kshaya*, thus leading to *Vataprakopa* and causes many diseases. *Sandhigata Vata* is one of such disease, which needs a specific target of therapeutic intervention to check or slow down the process of "*Dhatu Kshaya*" and to pacify *Vata*.

Acharyas described the disease as name of *Sandhigatanile* with symptoms of *Shotha* (edema), *Vatapurna driti sparsha* (on palpation revealed as air filled bag) and pain with *Prasarana* and *Akunchana* (movement).^[1,2]

We can correlate *Sandhigata Vata* with osteoarthritis (OA) on the basis of clinical features. OA is defined as a chronic joint disorder with progressive softening and disintegration of articular cartilage and bone at joint margin called osteophytes

and capsular fibrosis. It limits everyday activities such as walking, dressing, bathing etc., thus making individual handicapped with the symptoms like pain, swelling, crepitus and restricted joint movements.

Community survey data in rural and urban areas of India show the prevalence of OA to be in the range of 17%- 60.6%^[3]. The Global Burden of Disease Study reports that the burden of musculoskeletal disorders is much larger than estimated in previous assessments and accounts for 6.8% of DALYs worldwide^[4].

In contemporary system medicine a lot of research work is going on to develop Synopsis for the management of OA. But till date no satisfactory solution is available for treatment of this disease and at present this disease has been labelled as incurable. Presently NSAIDs, Analgesics. Corticosteroids, Hyaluronic Acid are used in modern system of medicine for providing relief in pain and swelling in

the affected joints to the patients. All these medicines have a lot of side effect such as-risk of gastric erosion, hepatotoxicity, nephrotoxicity, and haemorrhage in elderly on long term use of NSAIDs.

Acharya Vagbhatta mentioned *Panchtikta Guggulu Ghrita* in *Vatavyadhi chikitsa prakarana* which is effective in *Sandhi, Asthi, and Majjagata Vata*^[5]. In *Bhaishajya Ratnavali, Laksha Guggulu* mentioned in *Bhagna Rogadhikara*^[6].

In present clinical trial we used *Matra Vasti* of *Panchtikta Guggulu Ghrita* with *Snehana* and *Swedana* for 16 days in a group. In another group we use *Laksha Guggulu*.

As *Matravasti* is the form of *Snehavasti*, it simultaneously helps in pacification of *Vatadosha* and nourishment of *Sleshaka Kapha* at the level of joint. *Guggulu* has been proved as anti-inflammatory and antiarthritic drug.

Pancha Tikta Guggulu Ghrita

Most of the ingredients used in preparing this *Ghrita* have *Tikta Rasa, Ushna Virya, Madhura – Katu Vipaka* and *Snigdha Guna*. These all are opposite of properties of *Vata Dosha* which are helpful to subside the vitiated *Vata Dosha*.

Laksha Guggulu includes purified *Guggulu, Laksha, Asthisanharaka, Arjun, Ashwagandha* and *Nagbala*. Most of these drugs have properties like- *Vatakapha nashaka, Deepana, Balya, Rasayan, Tridosha nashaka, Pahana, Shothaghna, Vednashamaka* and *Shoola prashamaka*. A compound preparation having these properties is likely to check the etiopathogenesis of the disease *Sandhigata Vata* and arrest its progress.

In the present study 40 patients were registered and randomly divided into two groups from *Kayachikitsa OPD/IPD* of Ch. Brahm Prakash Ayurved Charak Sansthan, Khera Dabar, New Delhi. Group A patients were treated with *Laksha Guggulu* and Group B patients were treated with *Matra Vasti*

Assessment Criteria

Pain in Knee Joints

Table 1: Assessment of Pain in Knee Joints

Severity of Pain	Before Treatment		After Treatment	
	Rt. knee joint	Lt. knee joint	Rt. knee joint	Lt. knee Joint
Absent	0	0	0	0
Mild	1	1	1	1
Moderate	2	2	2	2
Severe	3	3	3	3

of *Panchtikta Guggulu Ghrita* along with *Laksha Guggulu* in the management of *Sandhigata Vata* (OA).

AIM AND OBJECTIVES

To evaluate the efficacy of *Matra Vasti* of *Panchtikta Guggulu Ghrita* in the management of *Sandhigata Vata*.

MATERIALS AND METHOD

Total 40 patients were selected on the basis of presence of classical symptoms of *Sandhigata Vata*. Patients were randomly categorized in 2 groups. The present study was conducted on patients suffering from *Sandhigata Vata* and selection of patients was done from the OPD/IPD CBPACS, New Delhi. This is open label, randomized (simple), interventional type.

Inclusion Criteria

- Age - 40 to 70 years in both sex
- Ambulatory as well as bed ridden patients
- Patients with OA of knee joint and suffering from moderate to severe knee pain with or without morning stiffness <30 minutes duration
- Patients having the symptoms of OA for at least 6 months
- Patients having radiological evidence of OA.

Exclusion Criteria

- Age below 40 years and above 70 years.
- Patient having established Hypertension, Diabetes mellitus, Renal, Hepatic, or Cardiac disorder, Carcinoma, Psoriasis, Gout, RA, Tuberculosis.

Diagnostic Criteria

- *Vatapoomadrithivat Sparsha* (feeling like putting the finger on air filled bag)
- *Sandhishotha* (joint swelling)
- *Vedana* during *Prasarana & Akunchana* (pain at the time of flexion and extension of joints)
- *Sandhi Hanti* (impaired joint function)
- *Atopa* (Crepitus)

Movement of Knee Joints

Table 2: Assessment Criteria for Movement of knee Joints

Severity of symptoms	Before Treatment		After Treatment	
	Rt. knee joint	Lt. knee joint	Rt. knee joint	Lt. knee joint
Free	0	0	0	0
Mildly restricted	1	1	1	1
Moderately restricted	2	2	2	2
Severely restricted	3	3	3	3

Distance Walked by Patient within 15 Minutes

Table 3: Assessment Criteria for Distance Walked by patient within 15 Minutes

Distance covered within 15 minutes	Before Treatment	After Treatment
90 feet	0	0
60 feet	1	1
30 feet	2	2
Less than 30 feet	3	3

90 feet Distance Walked by Patient with time Duration

Table 4: Assessment Criteria for 90 feet Distance walked by Patient with time Duration Distance

90 feet distance walked by patients	Before Treatment	After Treatment
90 feet		

Swelling of the Joint

Table 5: Assessment Criteria for Swelling of the Joint

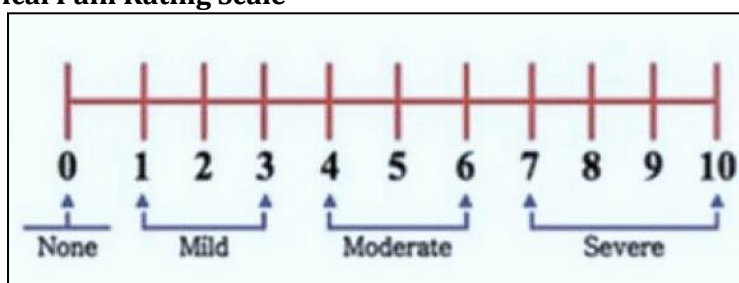
Severity of Swelling	Before Treatment		After Treatment	
	Rt. knee joint	Lt. knee joint	Rt. knee joint	Lt. knee joint
No swelling	0	0	0	0
Slight swelling	1	1	1	1
Moderate swelling	2	2	2	2
Severe swelling	3	3	3	3

Scoring was done on the basis of parameters as follows-

Pain Scoring

Pain scoring was done on the basis of numerical pain score.

Numerical Pain Rating Scale



Swelling Scoring Criteria

Table 6: Showing Parameters for Swelling Scoring

Grade	Description
0	No edema
1	2mm or less: slight pitting, no visible distortion, disappears rapidly
2	2-4mm indent: somewhat deeper pit, no disappears in 10-25 sec.
3	4-6mm: pit is noticeably deep. May last more than a minute. Dependent extremity looks swollen and fuller
4	6-8mm: pit is very deep. Lasts for 2-5 min. Dependent extremity is grossly distorted

Movement of Knee Joint

Normal range of movement (ROM) at the knee is considered to be 0 degree to extension (completely straight knee joint) to 135 degree of flexion (fully bent knee joint).

Table 7: Showing Grading of Movement of Knee Joint

Grade	Knee flexion by goniometer
0	Up to 130 flexion and above (normal)
1	Up to 120 flexion (mild)
2	Up to 100 flexion (moderate)
3	No improvement in knee flexion and above

Interventions

- Method: *Matra Vasti* of *Panchtikta Guggulu Ghrita*
- Diet before procedure: Patient was advised to take light diet before procedure
- **Dose Rationale:** As per Classic the Standard dose of *Matra Vasti* has been mentioned as 11/2 *Pal* (72gms) but at present it is usually observed that *Vasti Pratyagaman* is too early by giving standard dose of *Matra Vasti* so desired result are not obtained, In view of above Prof (Dr.) Subhash Ranade it has recommended of 50 ml dose for *Tikta Vasti*^[7].
- Treatment duration: 16 days
- Follow up: Weekly follow ups for 3 months after completion of treatment.

Drug and Dosage**Table 8: Showing Drug and Dosage**

Gr.	Drugs	Dose	Route	Time	Anupana
A	<i>Laksha Guggulu</i>	2tab TDS (250mg/tab)	Oral	Thrice a day	Luke warm water
B	<i>Laksha Guggulu</i> <i>Panchtikta Guggulu Ghrita</i>	2tab TDS (250mg/tab) 50ml <i>Matra Vasti</i>	Oral Anal	Thrice a day Once a day	Luke warm water

Laboratory investigations

- RA Factor
- Blood sugar (Fasting/PP)
- Serum uric acid
- ESR (Before and after treatment)

Radiological investigation:

- X-Ray bilateral knee joint both AP & Lateral view

Statistical analysis

Kruskal Wallis ANOVA test used for Intra Group comparison. For inter Group comparison we have used Mann Whitney U test. We also used Paired and Unpaired 't' test for Objective data.

OBSERVATIONS

Total 40 patients were registered (group A -20 & group B -20), all patients had completed the treatment. **Age:** The maximum numbers of patients registered were between age group of 40-50yrs (47.50%), 51-60yrs (20%) and 61-70yrs (32.50%). **Sex:** 11 (27.50%) patients were Male and 29 (72.50%) patients were female. **Occupational status:** the maximum number of patients was constant sitting /standing for long hour 34 (85%), 4 (10%) patients were Field work with physical labour and 2 (5%) patients were field work with intellectual. **Diet pattern:** the maximum numbers of patients were Vegetarian 35 (87.5%) and rest 5 (12.5%) patients were non-vegetarian. Vegetarian diets are less oily which increase *Ruksha Guna* in body that may vitiate the *Vata Dosha*. **Weight:** the maximum number of patients were 21 (52.50%) normal and 19 (47.50%) were obese. **Prakriti:** maximum patients was *Vata-Pitta Prakriti* 28 (70%), then *Pitta-Kapha Prakriti* 2 (5%) and minimum patients were *Vata-Kapha Prakriti* 10 (25%). **Vaya:** the maximum number of patients were *Madhyama* 27 (67.50%) and minimum were *Vridha* 13 (32.50%).

Table 9: Showing Comparative Overall effect of Treatment

Gr.	Right knee joint			Left knee joint		
	Pain %	Movement %	Swelling %	Pain %	Movement %	Swelling %
A	78.72	88.57	85	82.98	86.11	86.84
B	91.43	96	96	75.68	88.89	91.67

Table 10: Showing Comparative Effect on Right Knee Joint of Both Groups

Symptoms	Gr.	Mean	D	Sum of Ranks	SD	SE	Mann-Whitney U	P	R
Pain	A	0.50	0.35	480.00	0.5130	0.1147	130.00	0.0206	S
	B	0.15		340.00	0.3663	0.08192			
Movement	A	0.20	0.15	430.50	0.5231	0.1170	179.50	0.2985	NS
	B	0.05		389.50	0.2236	0.0500			
Swelling	A	0.30	0.25	450.50	0.5712	0.1277	159.50	0.0809	NS

Table 11: Showing comparative effect on left knee joint in of both group

Symptoms	Gr.	Mean	D	Sum of Ranks	SD	SE	Mann-Whitney U	P	R
Pain	A	0.40	0.05	406.50	0.5982	0.1338	196.50	0.9230	NS
	B	0.45		413.50	0.6863	0.1535			
Movement	A	0.25	0.10	421.50	0.5501	0.1230	188.50	0.6520	NS
	B	0.15		398.50	0.3663	0.08192			
Swelling	A	0.25	0.15	431.00	0.5501	0.1230	179.00	0.3710	NS
	B	0.10		389.00	0.3078	0.06882			

Table 12: Showing % change in 90 feet walked by patients with time duration of both Groups

	Group A		Group B	
	BT	AT	BT	AT
Mean	35.250	29.600	35.250	27.400
Mean Diff	5.650		7.850	
% of change	16.03		22.27	
SD	10.371	10.128	10.371	9.445
SE	2.319	2.265	2.319	2.112
t	7.161		10.258	
P	<0.0001		<0.0001	
R	ES		ES	

In 90 feet walk by patient with time duration shows that group B presents more relief as compare to group A. Maximum percentage of change was found in group B i.e., 22.27% and minimum in group A i.e.,16.03%.

Right knee joint: Maximum relief in movement of group B (96%) as compare to group A (88.57%) and swelling of group B (96%) as compare to group (85%), then in pain, group B shows 91.43% and group A shows 78.72%.

Left knee joint: Maximum relief in swelling of group B (91.67%) as compare to group A (86.84%) then

movement of group B (88.89%) as compare to group A (86.84%), then pain of group B shows 75.68% and group A shows 82.98%.

In ESR, maximum percentage of change in group B i.e., 27.35% and minimum in group A i.e.,19.77%.

According to percentage relief, group B shows better results as compare to group A. But statistically, no-significant results have been found in both groups. Left knee joint shows non-significant results in pain, movement and swelling. In right side, pain has significant result but swelling and movement

both shows no significant results. ESR shows no significant results in both groups comparison were found. 90 feet walk by patient with time duration of both groups comparison shows not significant result.

We can say that when comparing both group, no significant difference was found, hence it shows almost equal effect of both groups. This means that the effect of *Matra Vasti of Panchtikta Guggulu Ghrita* is same as the effect of *Laksha Guggulu*.

DISCUSSION

In this study 47.50% patients were found in 40-50 years of age group. *Sandhivata* starts at the age of 40 which is *Madhyam Vaya*. According to sex 72.50% patients were female, which indicates that this disease is more common females and here the lack of female hormone (oestrogen) in the premenopausal period also plays an important role. Due to *Dhatu Kshaya* aggravation of *Vayu* occurs that causes *Sandhivata*. According to occupational status, 85% of patients was found with constant sitting/standing for long hour, that may due to long time pressure create on weight bearing joint. Maximum patients are vegetarian that is 87.5%, which indicates that this disease is more common in vegetarians and here the lack of nutrition, Vegetarian diets are less oily which increase *Ruksha Guna* in body, that may vitiate the *Vata Dosha*. In prakruti distribution shows that *Vata-Pitta* predominance was found in 70% of patients, due to *Vaya* of patients and also intake of *Vata* and *Pitta Vardhaka Nidana*.

Sandhigata Vata needs a specific target of therapeutic intervention to check or slow down the process of "*Dhatu Kshaya*" and to pacify *Vata*.

Osteoarthritis is the chronic condition, in which cartilage cushioning at the end of bones gradually loses its elasticity and wears away. Without protective cartilage, bones rub against each develop stiffness, pain, loss of movements.

Degenerative changes develop in maximum people, and they feel difficulty in doing their daily activities and these changes affect their lifestyle. Joints are more prone for these degenerative changes and this term is known as Osteoarthritis.

The present work entitled "Study to evaluate the efficacy of *Matra Vasti of Panchtikta Guggulu Ghrita* in *Sandhivata* (Osteoarthritis)" with the objectives of a clinical study and demographic study, constitutional study clinical literary and a study to evaluate the efficacy of these therapeutic regimen for the treatment of *Sandhigata vata*.

Vasti is the best treatment for *Vata* as said by *Acharya Charaka "Vastihivataharanama"*. *Vasti* drug first reaches to the *Pakvashaya* (large intestine) and *Pakvashaya* is the chief site of *Vata Dosha*. Thus, by its

action on the chief site, *Vasti* gets control on *Vata* all over the body.

Modern pharmacokinetic studies have also proved that drug administration via the rectum can achieve higher blood levels of the drug than administration through the oral route due to partial avoidance of hepatic first-pass metabolism.

Probable Mode of Action of Panchkarma Procedure

Vasti is the best treatment for *Vata* as said by *Acharya Charaka "Vastihivataharanama"*. *Vasti* drug first reaches to the *Pakvashaya* (large intestine) and *Pakvashaya* is the chief site of *Vata Dosha*. Thus, by its action on the chief site, *Vasti* gets control on *Vata* all over the body. As *Matra Vasti* is the form of *Sneha Vasti*, it simultaneously helps in pacification of *Vata Dosha* and nourishment of *Sleshaka Kapha* at the level of joint. *Matra Vasti* can be administered any time irrespective of age, day and time. It can be administered to *Durbala Purusha* (weak person) where other *Vasties* are contra indicated. It does not produce any complications. It performs the function of *Brimhana* and cures *Vatavyadhi*^[8].

Sneha therapy provides nourishment of dry *Dhatus* and increase strength of the body, digestive powers and immunity. The fomentation causes *Harsha*, relief in pain, increase flexibility of body and decrease *Shotha* and Stiffness of body and body part become soft (*Mardava*)^[9]. The curved and stiffed part of body become soft and easily movable after *Snehana* and *Swedana* like dry wood after processing^[10]. If *Snehana* and *Swedana* administered frequently the *Koshtha* become soften then *Vata Rogas* remove from the body^[11].

Abhayanga (massage) directly acts on muscles and makes them strong. The root of *Mamsavaha Srotas* is *Snayu* (ligament), *Tvacha* (skin) and *Raktavahini* (blood vessels). So, here *Abhayanga* is done over *Tvacha* and *Snayu* and also it involves *Raktavahini*. So, here direct benefit is achieved a *Mamsavaha Srotas*. *Abhayanga* nourishes deeper *Dhatu* also.

Probable Mode of Action of Drugs Panchtikta Guggulu Ghrita

Sandhigatavata is *Madhyama Roga Margagata Vatika* disorders in which vitiated *Vata* gets lodged in *Sandhi*. Hence to treat *Sandhigata Vata* drugs acting on both *Vata* and *Asthi* should be selected. According to *Charaka*, in *Asthi Dhatu Dushti* the treatment should be given *Tikta Dravya Ghrita* and *Kshir*^[12]. *Panchatikta Guggulu Ghrita* fulfills all the criteria as mentioned by *Acharya Charaka* except that milk is not used in preparing this medicine. But on the other hand it contains *Guggulu*

(Commiphora mukul) which enhance the efficacy of this medicine by its anti-inflammatory and Srotoshodhaka property.

Most of the ingredients used in preparing Panchatikta Guggulu Ghrita have Tikta Rasa, Ushna Virya, Madhura- Katu Vipaka and Snigdha Guna. Due to Tikta Rasa, it will remove obstruction in flow of nutrients in the body channels due to predominance of Akasha Mahabhuta. Katu Vipaka and Ushna Virya of ingredients will promote the Dhatvagni (Metabolic functions).

Madhura Vipaka and Snigdha Guna of the medicine will provide nutrition of all the Dhatus including Asthi and Majja Dhatu which will stabilize Asthi Dhatu, Majja Dhatu and ultimately compensate the Asthi Dhatu and Majja Dhatu Kshaya. Tikta Rasa has got Deepana, Pachana and Rochana properties.

Ghrita is Vata-pittashamaka, Balya, Agnivardhaka, Snigdha, Madhura, Saumya, Sheeta Virya, Shulahara, Jwarahara, Vrishya and Vayahsthapaka^[13]. Ghrita also contains vitamin D and facilitate the absorption of fat soluble vitamins including vitamin D which plays an important role to utilize calcium and phosphorous in blood and bone building^[14] thus prevent further degeneration of tissues in joints and promote faster healing of damaged tissues of joints.

Laksha Guggulu

Laksha Guggulu is indicated in the management of Bhagna as internal medicine in various texts. This compound preparation is comprised of six ingredients and the details are available in Bhaishajya Ratnavali^[15] under the Bhagnadhikar.

The content of Laksha Guggulu include purified Guggulu, Laksha, Asthisanharaka, Arjun, Ashwagandha and Nagbala, most of these drugs have properties like- Vatakaphanashaka, Deepana, Balya, Rasayan, Tridoshanashaka, Pachana, Shothaghna, Vednashamaka and Shoolaprashamaka.

CONCLUSION

Sandhigatavata can be correlated with Osteoarthritis (OA) on the basis of their clinical manifestation, as described in modern medical science. Laksha Guggulu is effective in Sandhigatavata. Matra Vasti of Panchatikta Guggulu Ghrita is effective in cases of Sandhigatavata. It was observed that the patients tolerated Panchatikta Guggulu Ghrita in Matra Vasti very well. No side effect or toxic effect was noted in any of the patients. Maximum number of patients were between age group of 40-50yrs 19 (47.50%), female gender 29 (72.50%), occupation constant sitting/standing for long hour 34 (85%), vegetarian 35 (87.5%), normal weight 21 (52.50%). We found that maximum number of patients were Vata-Pitta Prakriti 28 (70%), and Madhyama Vaya 27 (67.50%).

In percentage of relief, in right knee joint, maximum relief in movement of group B (96%) as compare to group A (88.57%) and swelling of group B (96%) as compare to group A (85%), then in pain, group B shows 91.43% and group A shows 78.72%. In left knee joint, maximum relief in swelling of group B (91.67%) as compare to group A (86.84%) then movement of group B (88.89%) as compare to group A (86.84%), then pain of group B shows 75.68% and group A shows 82.98%. In 90 feet distance walk by patients with time duration, maximum relief was found in group B i.e., 22.27% and minimum in group A i.e., 16.03%.

Figure 1: Comparative Result in Both Groups (Group A & Group B)

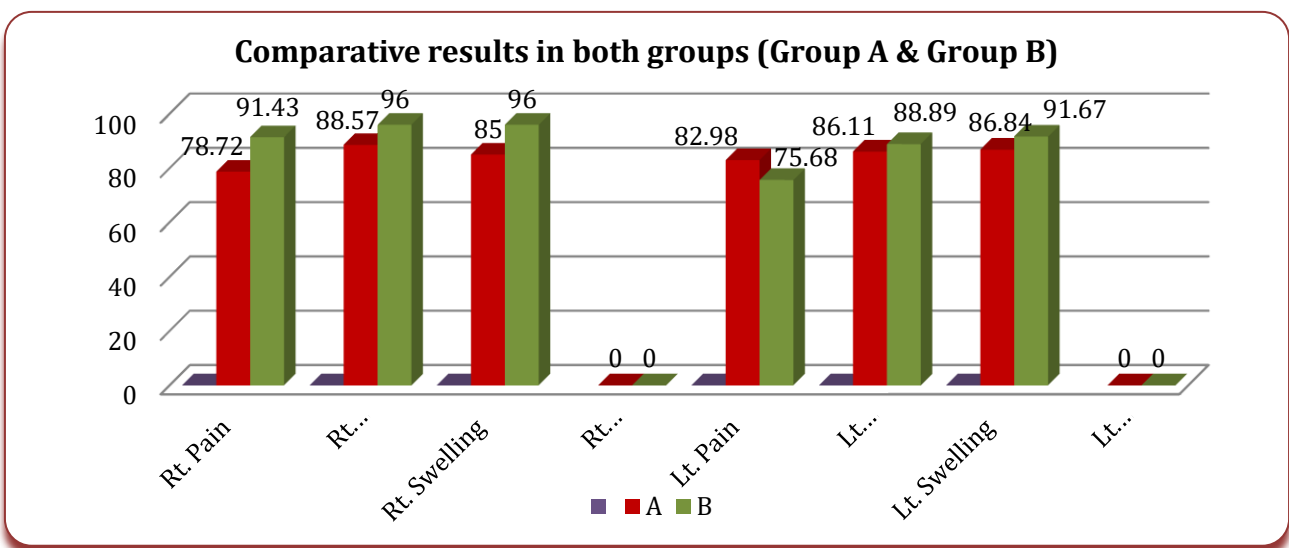
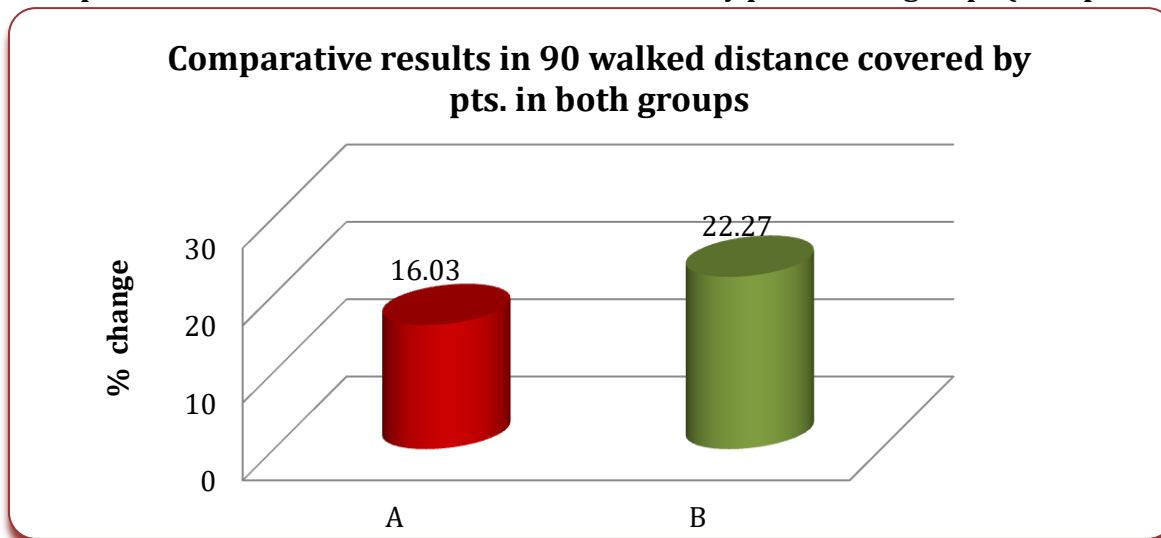


Figure 2: Comparative Result in 90 walked distance covered by pts. in both groups (Group A & Group B)



REFERENCES

1. Agnivesha, Charaka Samhita of Acharya Charak, Edited by Shashtri K.N., Chaturvedi G.N., Charaka Samhita, Chikitsa Sthana, Ch. 28, Ver 37, Varanasi, Chaukhambha Bharati Academy, 2007, p. 783.
2. Gupta A.D., editor, Astanga Hridaya of Vagbhata, Nidana Sthana, Ch.15, Ver 14 Varanasi, Chaukhambha Prakashana, 2009, p.376.
3. Venkatachalam Jayaseelan, Natesan Murugan, 'Prevalence of Osteoarthritis of Knee joint among adult population in a rural area of Kanchipuram District, Tamil Nadu', Indian journal of public health, 2018, 62(2), 117-122.
4. Priority disease and reasons for inclusion, 12, Osteoarthritis, Ch. 6, https://www.who.int/priority_me.
5. Gupta A. D., editor, Astanga Hridaya of Vagbhata, Chikitsa Sthana, Ch.21, Ver.58-61, Chaukhambha Prakashana, Varanasi, 2009, p.572.
6. Shashtri R.D., editor, Bhaishjya Ratnavali of Govind Das Sen, Ch.49, Ver. 13-14, Chaukhambha Prakashan, Varanasi, 2010,p.859.
7. Ranade S. & Lelt A., Panchakarma & Ayurvedic Massage, Basti Medicated Enema, Chap-11, Delhi, Chaukhambha Sanskrit Pratisthan, 2004, p.94.
8. Shah R. Mayuri, Mehta S. Charmi, Shukla V.D, A Clinical study of *Matra Vasti* and an Ayurvedic indigenous compound drug in the management of *Sandhigatavata* (Osteoarthritis) Ayu, 2010, 31(2): 210-217.
9. Agnivesha, Charaka Samhita of Acharya Charaka, Edited by Shashtri K.N., Chaturvedi G.N., Chikitsa Sthan, Ch. 28, Ver. 80-81, Varanasi, Chaukhambha Bharati Academy, 2007, p. 791.
10. Agnivesha, Charaka Samhita of Acharya Charaka, Edited by Shashtri K.N., Chaturvedi G.N., Chikitsa Sthan, Ch. 28, Ver. 79, Varanasi, Chaukhambha Bharati Academy, 2007, p.791.
11. Agnivesha, Charaka Samhita of Acharya Charaka, Edited by Shashtri K.N., Chaturvedi G.N., Chikitsa Sthan, Ch. 28, Ver. 82, Varanasi, Chaukhambha Bharati Academy, 2007, p.792.
12. Agnivesha, Charaka Samhita of Acharya Charaka, Edited by Shashtri K.N., Chaturvedi G.N., Sutra Sthan, Ch. 28, Ver. 26, Varanasi, Chaukhambha Bharati Academy, 2008, p.432.
13. Shashtri A.D., editor, Shusruta Samhita of Acharya Susruta, Sutra Sthana, Ch. 45, Ver. 96 Varanasi, Chaukhambha Sanskrita Sasthana, 2012, p.228.
14. Rose & Wilson, Anatomy & Physiology in health & illness- Elsevier Churchill Livingstone. Ch.11, p.274.
15. Shashtri R.D., editor, Bhaishjya Ratnavali of Govind Das Sen, Ch. 49, Ver. 13-14, Varanasi, Chaukhambha Prakashan, 2010, p.859.

Cite this article as:

Neetu Sharma, N.R.Singh. Study to Evaluate the Efficacy of Matra Vasti of Panchtikta Guggulu Ghrita in Sandhivata (Osteoarthritis). AYUSHDHARA, 2020;8(2):3154-3161.

Source of support: Nil, Conflict of interest: None Declared