

TO EVALUATE THE CLINICAL EFFICACY OF SHWADAMSHTRA TAILA IN THE MANAGEMENT OF JANU-SANDHIGATAVATA W.S.R TO OSTEOARTHRITIS OF KNEE JOINT- A CLINICAL STUDY

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ABSTRACT

Sandhigatavata one among *Vatavyadhi*. *Janu-Sandhigatavata* presents *Pratyatma Lakshanas* like- *Vatapurna Druti Sparsha*, *Prasarana Akunchana Pravrutti Savedana*, *Sandhigata Shotha*. The prevalence of the disease is influenced by life style and occupation. *Shwadamshttra Taila* usage, action, mode of administration explained in *Charaka Samhita Chikitsa Sthana*. **Aims and Objectives:** To evaluate the efficacy of *Shwadamshttra Taila* in the management of *Janu-Sandhigatavata* W.S.R to Osteoarthritis of knee joint. To assess the improvement in quality of life and to evaluate the drug safety. **Methodology:** A total of 20 patients who fulfilled the inclusion criteria were selected. *Shwadamshttra Taila* 10⁰ with 100 ml *Dugdha* twice daily after food for period of 30 days was administered. **Results:** The statistical analysis was done using mean, standard deviation, mean rank, chi-square, proportions and Frideman test is applied to find the difference within group. *Shwadamshttra Taila* intervention showed better results on KOOS (Knee Osteoarthritis Outcome Score) analysis, *Vatapurna Druti Sparsha*, *Sandhi Shotha*, *Prasarana Akunchana Pravrutti Savedana*, *Sandhi Shotha* for both knee, *Sandhi Sthabdhata* for right knee, Swelling assessment and Range of movement for right knee.

Keywords: *Janu-Sandhigatavata*, Osteoarthritis, *Shwadamshttra Taila*, *Dugdha*, *Lakshanas*.

INTRODUCTION

“*Sukharthanam Sarvabhootanam Mataha Sarve Pravrutayah*

Sukham Na Cha Vina Dharmat Tasmad Dharmparobhavet”

(*Charaka, Nidana Chikitsa Hastamalaka*)

As quoted in above reference we can interpret that every living being took the efforts to be happy. But no one knows the exact way to gain happiness. According to *Shastra* the eternal happiness can be achieved only by strictly following the code of conduct mentioned in classics.

Though, every act of human is to attain happiness and contentment. Absolute health is prerequisite for happiness. But change in life style, diet and fast changing global environment, this has made it far difficult. As these have added up the age related degenerative diseases and osteoarthritis of knee joint is one among them.

Sunshine and shadow comprise the sum of life. Where there is ease, there is bound to be disease too. When the joints were formed for ease of mobility, disease soon followed suit. *Janu-Sandhigatavata* is one such

condition, which is a disease of the joint and could be interpreted as the price to be paid for the ease of mobility, it is one among *Vatavyadhi*. The knee is the largest joint in the body and has to sustain the greatest stresses, since it supports the entire weight of the body above it.

Osteoarthritis of knee joint appears mostly in the early forties due to over use of joint, trauma, deficient diet and sedentary lifestyle which is the root cause of obesity, this disease has become now more prevalent in younger population too. Hence, not only treating *Sandhigatavata* is important but also equal emphasis must be given to prevention and negating early degeneration and related changes. *Ayurveda* can play major role in both of these aspects because as *Acharya Charaka* mentioned in classics the aim of this divine science is-

“*Swasthya Swasthya Rakshanam, Aturasya Vikara Prashamana Cha*”¹. Which means prevention and cure.

Janu-Sandhigatavata presents following *Pratyatma Lakshanas*²: *Vatapurna druti sparsha* (Crepitus), *Prasarana Aakunchana Pravrutti Savedana* (Painful movements), *Sandhigata shota* (Swelling) and *Sandhishoola* (Pain). In contemporary science too similar presentation is identified and explained as Osteoarthritis of Knee Joint³, where it's explained as primarily: Pain, Stiffness in morning, sensitivity when kneeling or bending, decrease in abilities of daily functioning, diagnosed with swelling. Secondary: Loss of mobility in affected joint, decrease in muscle power, instability of the joint, crepitation, this type of OA caused by trauma, inflammatory or genetically. Among the chronic Rheumatic diseases, hip and knee osteoarthritis is the most prevalent and leading cause of pain and disability in most of the countries worldwide. Importance of Knee Joint Osteoarthritis in world can be understood with the statistical information as, Osteoarthritis is uncommon in adults under the age of 40 years and highly prevalent in those over the age of 60 years⁴. Osteoarthritis is an important cause of disability and **second most common musculoskeletal problem in world (30%) after back pain (50%)**⁵. According to United Nations, by 2050 people aged above

60 years will account more than 20% of the world population. It's a degenerative disease curative measures are for long term and more emphasis should be given for further measures in prevention of degeneration rather than its complete cure.

In Modern Medicine the following options are available in treatment of Osteoarthritis of Knee Joint: Osteoarthritis goes hand in hand with pain, which necessitates repeated usage of analgesics for prolonged duration. This may give rise to many systemic side effects and which cannot be reversed back into normalcy.

Ayurveda mainly focuses on *Vatashamaka* treatment like *Snehana, Swedana, Virechana, Upanaha, Agnikarma, Unmardana, Bhandhana, Basti*. Amongst these for the present research work *Snehana* line of treatment is used as an internal medication.

Different works have been carried out in many views. *Shwadamshttra Taila* has been used for *Matra Basti*⁶ but *Basti Chikitsa* may not be possible in all cases owing to various reasons like non-acceptance of treatment by patients etc.

With the rising number of elderly population and an increase in knee joint osteoarthritis cases, an increase in expectation of what medical care should be used, resulting in increased unstoppable demands, coupled with the introduction of new and complex treatments, with an aggregation of afflicting effects became an inspiration to find out harmless internal medicaments as a palliative line of cure, which is effortless, uncomplicated and economical. Hence there is a need to build a drug regimen which can be dispensed at OPD level, which is simple, cost effective, and easy to administer internally, so that it can give better benefits clinically to patients without any untoward effects. Efforts were made to prove the efficacy of *Shwadamshttra Taila*.

MATERIALS AND METHODS

a) Source of Data: 20 patients coming under inclusion criteria approaching the OPD & IPD of RAMCH & RC Ramagondanahalli, Bengaluru and also through special camps conducted for the purpose.

b) Diagnostic criteria:

Subjective:

- Based on *Pratyatma Lakshana* of *Janu-Sandhigatavata* as mentioned in classics.
- Diagnosed case of Osteoarthritis of Knee Joint.

Objective:

- Knee Joint X-Ray if necessary.

c) Inclusion criteria

- Age: 35 years and above till 70 years.

- Sex: Male and Female.

- *Lakshanas* pertaining to *Janu-Sandhigatavata*²

d) Exclusion criteria

- Patients below 35 years and above 70 years of age.
- Patients suffering from Uncontrolled Diabetes & other Major Systemic Disorders.
- Psoriatic Arthritis, Gouty Arthritis, Rheumatoid Arthritis.

e) Intervention: Table 1: Details about Intervention of *Shwadamsashtra Taila*

Details	Trial Group
Drug	<i>Shwadamsashtra Taila</i>
Dose	10 drops
Administration	Oral
Adjuvant	<i>Dugdha</i> (100 ml)
Time	Morning & Night After food
Duration	30 days
Follow up	30 days after treatment
Assessment	7 days of Interval

f) Ingredients of *Shwadamsashtra Taila*⁷:



a) *Gokshura*



b) *Shunti*



c) *Guda*



d) *Tila Taila*



e) *Dugdha*



f) *Shwadamsashtra Taila*

g) Drug Standardization: An attempt was made for standardization of Trial drug- *Shwadamsashtra Taila* and analysis is done by Radiant Research Services PVT LTD.

Table 2: Cold extract extractive values

Sl.No	Sample Details	Wt oftaken 'a'(gm)	Wt ofobtained 'b'(gm)	Solvent	Qty ofTaken (ml)	%Yield
1	<i>Shwadamsashtra Taila</i>	8.8825gm	0.65	Methanol	100	7.31

Table 3: Mobile Phase

S l.No.	Sample Details	Solvent mobile phase	Ratio in ml
1	Shwadamshttra Taila	Petroleum ether: Ethyl Acetate: Acetic Acid	3ml:2ml: 40µl

Table 4: Rf values of Sample

Sl.No	Sample Details	TLC bonds (Rf Values)						
		1	2	3	4	5	6	7
1	Shwadamshttra Taila	0.97	0.91	0.80	0.54	0.5	0.73	0.26

h) Assessment criteria:

Table 5: Assessment Criteria

Subjective	Objective
<ul style="list-style-type: none"> ▪ Scale- Knee Injury and Osteoarthritis Outcome Score (KOOS). (Mentioned in Scoring Pattern). • Symptoms. • Pain. • Function, Daily Living. • Function, Sports and Recreational Activities. • Quality of Life. ▪ <i>Pratyatma Lakshanas</i> of <i>Janu-Sandhigatavata</i>. (Mentioned in Scoring Pattern). 	<ul style="list-style-type: none"> ▪ Knee Joint X-Ray (Affordable Subjects). (Mentioned in Scoring Pattern). ▪ Goniometer measurements. (Mentioned in Scoring Pattern of <i>Prasarana Aakunchana Pravrutti Save-dana</i>). ▪ Measuring tape. (Mentioned in Scoring Pattern of <i>Sandhi Shotha</i>). ▪ LFT (Liver Function Test). (As per normal reference values) ▪ RFT (Renal Function Test). (As per normal reference values)

i) SUBJECTIVE:

1. KOOS:

- Symptoms (includes stiffness): S1-S7, GRADES: 0- None, 1-Mild, 2-Moderate, 3-Severe, 4-Extreme.
- Pain: P1-P9, GRADES: 0- None, 1-Mild, 2-Moderate, 3-Severe, 4-Extreme.

- Function, Daily Living: A1-A17, GRADES: 0-None, 1-Mild, 2-Moderate, 3-Severe, 4-Extreme.
- Function, Sports and Recreational Activities: SP1-SP5, GRADES: 0- None, 1-Mild, 2-Moderate, 3-Severe, 4-Extreme.
- Quality of Life: Q1-Q4, GRADES: 0- None, 1-Mild, 2-Moderate, 3-Severe, 4-Extreme.

2. Pratyatma Lakshanas:

Table 6: Vatapura Druti Sparsha Scoring Grades

Score	Criteria
0	No Crepitus
1	Mild Crepitus
2	Moderate Crepitus
3	Severe/ Audible Crepitus

Table 7: Sandhigata Shotha Scoring Grades

Score	Criteria
0	No Shotha

1	Swelling slightly covering bony prominence
2	Completely covering all the bony prominence
3	Completely covering the joints

Table 8: Prasaranaakunchana Pravrutti Savedana Scoring Grades

Score	Criteria
0	No Vedana
1	Mild 101 ⁰ - 120 ⁰
2	Moderate 81 ⁰ - 100 ⁰
3	Severe < 60 ⁰

Table 9: Sandhi Shoola Scoring Grades

Score	Criteria
0	No Pain
1	Pain observed on excessive work with joint involvements, normal routine activities not being hampered
2	Pain increased on little work involving joint movement. But gets relieved by rest. Normal routine activities being slightly hampered.
3	Severe and persistent pain with sleep disturbance and inability to carry on normal activities.

Table 10: Sandhigata Sthabdhata Scoring Grades

Score	Criteria
0	No Sthabdhata
1	Mild, Occasionally for 5-10 minutes
2	Moderate, Daily for 10-30 minutes
3	Severe, Daily for 30-60 minutes

Table 11: Tenderness Scoring Grades

Score	Criteria
0	No Tenderness
1	Patient says its paining
2	Grade 1 + patient winces and draws the affected joints
3	Doesn't allow the affected joint to be touched

Temperature Scoring Grades: Grade 0- Absent, Grade 1 (+)- Present.

j) OBJECTIVE:

- Goniometer measurements. (Mentioned in Scoring Pattern of *Prasarana Aakunchana Pravrutti Savedana*).
- Measuring tape. (Mentioned in Scoring Pattern of *Sandhi Shotha*).

- LFT (Liver function test).
- RFT (Renal Function Test).

STATISTICAL ANALYSIS:

- To infer the clinical study and draw the conclusion test was applied for within group analysis.
- The corresponding p-Value was noted, and obtained results were interpreted as-

Table 12:p-Value Interpretation

Interpretation	p-Value
Non- significant (NS)	>0.05
Significant (S)	<0.05
Highly Significant (HS)	<0.01, <0.001

RESULTS: A. SUBJECTIVE:

I. KOOS

Table 13:KOOS Evaluation of changes:

KOOS Score	Grp A	Mean	Std.D	Mini- mum	Maxi- mum	Mean Rank	Chi- Square	df	p-value	Remarks
Symptoms	BT	65.17	22.25	21.42	96.42	1.18	35.343	2	0.000	HS
	AT	71.60	17.16	32.14	96.42	1.90				
	FU	84.10	11.72	53.57	96.42	2.93				
Pain	BT	62.77	15.30	33.33	83.33	1.10	37.680	2	0.000	HS
	AT	69.30	12.07	41.66	86.11	1.93				
	FU	81.52	13.13	41.66	100.0	2.98				
Function, Daily Living	BT	68.97	14.10	42.64	89.70	1.08	38.675	2	0.000	HS
	AT	76.39	10.46	54.41	91.17	1.93				
	FU	86.61	8.43	66.17	95.58	3.00				
Function, Sports and recreational	BT	85.75	11.27	55.00	100.0	1.43	26.873	2	0.000	HS
	AT	87.50	11.97	55.00	100.0	1.83				
	FU	92.00	9.51	65.00	100.0	2.75				
Quality of Life	BT	50.31	17.84	18.75	75.00	1.08	36.545	2	0.000	HS
	AT	61.56	14.23	31.25	81.25	1.98				
	FU	76.25	13.07	56.25	100.0	2.95				

Table 14:Evaluation of Change in % values:

KOOS Score	Treatment	Mean Trial Grp	Change in %
Symptoms	BT	65.17	-
	AT	71.60	9.86
	FU	84.10	29.04
Pain	BT	62.77	-
	AT	69.30	10.4
	FU	81.52	29.87
Function, Daily Living	BT	68.97	-
	AT	76.39	10.75
	FU	86.61	25.57
Function, Sports and recreational activities	BT	85.75	-
	AT	87.50	2.04
	FU	92.00	7.28
Quality of Life	BT	50.31	-
	AT	61.56	22.36
	FU	76.25	51.56

II. Pratyatma Lakshanas:

Table 15: Vataputra Druti Sparsha Evaluation:

Knee	Grp A	Mean	SD	Min	Max	Mean Rank	Chi-Square	df	p-value Re-marks	% Change (Decrease)
Right	BT	2.10	0.852	0.0	3.0	2.65	29.158	2	< 0.05 - S	-
	AT	1.70	0.923	0.0	3.0	2.13				19.05
	FU	1.00	0.725	0.0	2.0	1.23				52.38
Left	BT	1.60	1.046	0.0	3.0	2.68	27.000	2	0.000001- HS	-
	AT	1.00	0.858	0.0	2.0	2.00				37.50
	FU	0.45	0.510	0.0	1.0	1.33				71.88

Table 16: Sandhigata Shotha Evaluation:

Knee	Grp A	Mean	SD	Min	Max	Mean Rank	Chi-Square	df	p-value	% Change (Decrease)
Right	BT	1.55	1.099	0	3	2.65	26.528	2	0.000002- HS	-
	AT	1.00	0.795	0	2	2.03				35.48
	FU	0.40	0.503	0	1	1.33				74.19
Left	BT	1.15	1.089	0	3	2.55	21.535	2	0.000021- HS	-
	AT	0.65	0.745	0	2	1.98				43.47
	FU	0.15	0.366	0	1	1.48				86.95

Table 17: Prasaranaakunchana Pravrutti Savedana Evaluation:

Knee	Grp A	Mean	SD	Min	Max	Mean Rank	Chi-Square	df	p-value Remarks	% Change (Decrease)
Right	BT	2.00	0.795	1	3	2.70	30.4	2	< 0.05- S	-
	AT	1.40	0.681	0	3	2.10				30.00
	FU	0.65	0.587	0	2	1.20				67.50
Left	BT	1.30	0.979	0	3	2.63	22.706	2	0.000012- HS	-
	AT	0.80	0.768	0	2	1.95				38.46
	FU	0.40	0.598	0	2	1.43				69.23

Table 18: Sandhi Shoola Evaluation:

Knee	Grp A	Mean	SD	Min	Max	Mean Rank	Chi-Square	df	p-value	% Change (Decrease)
Right	BT	2.00	0.795	1	3	2.93	35.343	2	<0.05- S	-
	AT	1.05	0.686	0	2	1.90				47.50
	FU	0.40	0.503	0	1	1.18				80.00
Left	BT	1.20	0.894	0	3	2.70	26.080	2	0.000002- HS	-
	AT	0.50	0.688	0	2	1.85				58.33
	FU	0.15	0.366	0	1	1.45				87.50

Table 19: Sandhi Sthabdhatva Evaluation:

Knee	Grp A	Mean	SD	Min	Max	Mean Rank	Chi-Square	df	p-value Remarks	% Change (Decrease)
Right	BT	0.95	0.945	0	3	2.45	19.158	2	0.000069- HS	-

	AT	0.60	0.681	0	2	2.05				36.84
	FU	0.15	0.366	0	1	1.50				84.21
Left	BT	0.50	0.688	0	2	2.30	12.56	2	0.001873- HS	-
	AT	0.30	0.571	0	2	2.03				40.00
	FU	0.05	0.224	0	1	1.68				90.00

II. OBJECTIVE:

Table 20: Swelling assessment Evaluation:

Knee	Grp A	Mean	SD	Min	Max	Mean Rank	Chi-Square	df	p-value Remarks
Right	BT	1.55	1.099	0.0	3.0	2.65	26.528	2	0.000002- HS
	AT	1.00	0.795	0.0	2.0	2.03			
	FU	0.40	0.503	0.0	1.0	1.33			
Left	BT	1.15	1.089	0.0	3.0	2.55	21.535	2	0.000021- HS
	AT	0.65	0.745	0.0	2.0	1.98			
	FU	0.15	0.366	0.0	1.0	1.48			

Table 21: Swelling assessment change in % evaluation:

Knee	Treatment	Mean Trial Grp	Change in %
Right	Before	1.55	-
	After	1.00	35.48
	Follow-up	0.40	74.19
Left	Before	1.15	-
	After	0.65	43.47
	Follow-up	0.15	86.95

Table 22: Range of movement evaluation:

Knee	Grp A	Mean	SD	Min	Max	Mean Rank	Chi-Square	df	p-value
Right	BT	1.95	0.759	1	3	2.7	30.4	2	< 0.05
	AT	1.40	0.681	0	3	2.1			
	FU	0.65	0.587	0	2	1.2			
Left	BT	1.3	1.031	0	3	2.63	21.44	2	0.000022
	AT	0.8	0.768	0	2	1.95			
	FU	0.4	0.598	0	2	1.43			

Table 23: Range of movement evaluation Change in %:

Knee	Treatment	Mean Trial Grp	Change in %
Right	Before	1.95	-
	After	1.40	28.20
	Follow-up	0.65	66.66
Left	Before	1.3	-
	After	0.8	38.46
	Follow-up	0.4	69.23

Analysis of Lab Investigation: Lab Investigations: Both the drugs are not affecting the parameters (levels) of RBS, LFT and RFT.

DISCUSSION

Probable mode of action of *Shwadamshttra Taila* on Subjective KOOS, *Pratyatma Lakshanas* and Objective criteria as follows

A. Subjective:

1. **KOOS: Symptoms:** The percentage change from before treatment to follow-up was found to be 29.04%. **Pain:** The percentage change from baseline to follow-up was found to be 29.87%. **Function, Daily Living:** The percentage change from baseline to follow-up was found to be 25.57%. **Function, Sports and recreational activities:** The percentage change from baseline to follow-up was found to be 7.28%. **Quality of Life:** The percentage change from baseline to follow-up was found to be 51.16%. Hence by above values it's proved that the drug is beneficial in treating the disease.
2. *Vatapura Druti Sparsha* is because of *Prakupita Vata* residing in *Sandhi*. When joint is palpated it feels like air filled bag. *Shwadamshttra Taila* having *Dravyas* like *Shwadamshttra (Gokshura)* which is *Vata Shamaka* and *Anulomaka*. *Shunti* is *Vatanulomana*. *Tila* is *Vatahara*. *Guda* is *Anulomana*. Vowing to the above properties of the preparation subsidence of *Vatapura druti Sparsha* was observed and *Shwadamshttra Taila* proved better result.
p-value<0.05, There is a statistical difference in *Vatapura Druti Sparsha* before, after and follow-up in both Right and Left Knee [Change in percentage Right Knee: A.T- 19.05%, F.U- 52.28%. Left Knee: A.T- 37.50%, F.U- 71.88%.]
3. *Shotha* is mainly due to *Kupita Vata*. *Shotha* manifests due to the impairment of the *Sheeta Guna*. *Shwadamshttra Taila* and *Gandha Taila* by nature possess *Snehaguna*. This will nourish the *Shleshaka Kapha* present in the joint and reduces the *Vata* so that the *Shotha* gets relieved. *Tila* and *Guda* possess *Madhura Rasa* and *Ushna Veerya* by which it nourishes *ShleshakaKapha* and helps in regulating the *PrakupitaVata*. Also, the *Ushna Veerya* and the *Sheetaprashamana* property of the *Shunti* present in the *Shwadamshttra Taila* helps to

combat the impaired *Sheeta Guna* of the *Vata*. The drugs of the *Shwadamshttra Taila* also possess *Anulomana Guna* which helps in regulating *Vata* and hence helps in relieving the *Shotha*. Vowing to the above properties of *Shwadamshttra Taila* proved better result on *Sandhi Shotha*.

p-value<0.05, There is a statistical difference in *Sandhigata Shotha* before, after and follow-up in both Right and Left Knee [Change in percentage Right Knee: A.T- 35.48%, F.U- 74.19%. Left Knee: A.T- 43.47%, F.U- 86.95%.]

4. *Prasarana Aakunchana Savedana* is mainly because of deterioration of *Chala, Sukshma, Laghu Gunas* of *Vata*. *Shwadamshttra Taila* contains drugs which has *Guru, Snigdha Gunas, Madhura Rasa, Shoolahara* and *Vedanasthapana* property by which it helps to correct the impaired *Chala, Sukshma* and *Laghu Gunas* of *Vata* and thereby relieves the *Vedana* which is produced during the *Prasarana Aakunchana* of the *Janu Sandhi*. Vowing to the above qualities of *Shwadamshttra Taila* it has proved better result on improving *Prasarana Aakunchana Savedana*.

p-value<0.05, There is a statistical difference in *Prasarana Aakunchana Pravrutti Savedana* before, after and follow-up in both Right and Left Knee [Change in percentage Right Knee: A.T- 30.00%, F.U- 67.50%. Left Knee: A.T- 38.46%, F.U- 69.23%.]

5. *Shoola* is *Karmataha* manifestation of *Vata*. When it's purely *Vatika*, it severe and continuous but when associated with *Kapha* it may be less severe. *Shwadamshttra Taila* by its *Vatahara, Shoolahara* and *Vatanulomaka* property helps in regulating *Vata*. *Gokshura* is one of the *Vedanasthapana*, it is having *Anulomaka, Saraka* and *Vatashamaka* property. *Tila Taila* has *Snehana, Sandhaneeya* and *Vedanasthapana* properties. By above properties it reduces *Shoola* in *Janu-Sandhigatavata*. Vowing to the above qualities of *Shwadamshttra Taila* it has proved better result on improving *Sandhi Shotha*.

p-value<0.05, There is a statistical difference in *Sandhi Shoola* before, after and follow-up in both

Right and Left Knee [Change in percentage Right Knee: A.T- 47.50%, F.U- 80%. Left Knee: A.T- 57.33%, F.U- 87.50.]

6. *Stabdhatta* is mainly due to *Kupita Kapha* and *Vata*. *Sthabdhatta* manifests due to the augmentation of the *Sheeta Guna*. *Shwadamshttra Taila* and *Gandha Taila* by nature possess *Snehaguna*. This will nourish the *Shleshaka Kapha* present in the joint and reduces the *Vata* so that the *Stabdhatta* gets relieved. *Tila* and *Guda* possess *Madhura Rasa* and *Ushna Veerya* by which it nourishes *ShleshakaKapha* and helps in regulating the *PrakupitaVata*. Also, the *Ushna Veerya* and the *Sheetaprashamana* property of the *Shunti* present in the *Shwadamshttra Taila* helps to combat the impaired *Sheeta Guna* of the *Vata*. The drugs of the *Shwadamshttra Taila* also possess *Anulomana Guna* which helps in regulating *Vata* and hence helps in relieving the *Stabdhatta*. Vowing to the above qualities of *Shwadamshttra Taila* it has proved better result on improving *Sandhi Sthabdhatta*.

p-value <0.05, There is a statistical difference in *Sandhi Sthabdhatta* before, after and follow-up in both Right and Left Knee [Change in percentage Right Knee: A.T- 36.84%, F.U- 84.21%. Left Knee: A.T- 40%, F.U- 90.]

B. Objective:

1. Swelling assessment: p- value< 0.05 there is a statistical difference in swelling assessment before, after and follow-up in both Right and Left Knee.

Right Knee: The percentage change from before treatment to follow-up was found to be 74.19%.

Left Knee: The percentage changes from before treatment to follow-up was found to be 86.95%.

Sandhi Shotha above how it is analysed in the same way swelling is interpreted.

2. **Range of Movements:** p-value < 0.05, There is a statistical difference in range of movements before, after and follow-up in both Right and Left Knee.

Right Knee: The percentage change from baseline to follow-up was found to be 66.66%.

Left Knee: The percentage change from baseline to follow-up was found to be 69.23%.

The significant improvement in range of movements is because *Shwadamshttra Taila* asby nature possesses *Snehaguna*. This will nourish the *Shleshaka Kapha* present in the joint and reduces the *Vata* so that the *Stabdhatta* gets relieved. Above explanation of *Sandhi Sthabdhatta* can be analysed here too. The drugs of the *Shwadamshttra Taila* also possess *Anulomana Guna* which helps in regulating *Vata* and hence helps in relieving the *Stabdhatta*.

- C. **Probable mode of effect of internally administered *Sneha Dravya*:**

- *Snehana* is the *Parama Chikitsa*- “*Nataha Paramam Snehamaadishanti*” when compared with both *Bahya* and *AbhyantaraChikitsa* it is considered to be the first line of treatment more so to tackle *Vata Vikara*.

Table 24: Indications of *Sneha Pravicharna* and *Guna*:

<i>Bala, Vriddha, Sukumara, Rikta Krura Koshta, Avara Bala, Mandagni, Chirasamuttita Vyadhi, Jwara, Atisara, Kasa</i> ⁸ .	<i>Bala, Vriddha, Pipasaritha, Sneha Dveshi, Madyasevi, Streesevi, Mandagni, Sukhita, Kleshaabhirusha, Mrudu Koshta, Alpadhosha-yukta, Krusha all conditions Ushna Kala (Greeshma) is best for Sneha administration</i> ⁹ .
<i>Pana Guna: Alpa matra is Parihare Sukha, Snehana is Brihmana in quality, Vrishya, Balya, No Upadrava ie: Nirabhadha, the lakshanas obtained by Snehana will be for Chirakala</i> ^{8,9} .	

Understanding *Pravichanara* indications like *Vridhha*, *Chirasamuttita Vyadhi etc* linking to present condition of *Janu-Sandhigatavata* having factors involving like *Vyana Vata Prakopa*¹⁰, *Shleshaka kapha Kshaya*¹¹, *Shleshmadhara Kala*¹² deterioration, to alleviate the condition *Snehana Pravicharana (Abhyantara) is best Chikitsa* principle.

- As per *Sthana Vishesha*, *Vata* when affects *Asthi Majja dhatu Bahya and Abhyantara Sneha*¹³ is best line of treatment and *Brihmana Chikitsa* principle is considered as *Sarva Prashastha Vataroginam*¹⁴, hence for the present study *ShamanaSnehapana* with *Brihmana* mode of action was considered as treatment.
- “*Snehana Sneha Vishyanda Mardava Kleda Karakam*¹⁵”, it has properties and does *Shareera Vishyandana, Mruduta and Kleda Karaka*.
- *Snehana* by its *Sukshma, Snigdha Guna* enters the *Shareera Anu Paramanu* and does the *Karya*.
- *Sneha* when administered as main line of treatment it does *Vata Shamana, Mruduta of Dosha*, does *Agni Pradeepana*, does *Kosthashuddi, MalaSanghatahara*, does *Shareera Pushti*, increases *Shareera Bala*, does *Varna Prasadana*, does *Drudata of Indriya*, Increases *Dhatubala*, helps to attain *Dheergayu* and helps to improve *Shareera Vyadhikshamatva* property.
- *Shwadamshttra (Gokshura)*: The ethanolic extract of *Tribulus terrestris* inhibits the expression of mediators related to inflammation and expression of inflammatory cytokines, which has a beneficial effect on various inflammatory conditions. And the methanolic extract of *Tribulus terrestris* has analgesic effect, hence it has proven qualities of anti-inflammatory and analgesic property.
- *Shunti*:Ginger constituents like gingerol and shogaol, it inhibits formation of inflammatory proteins in osteoarthritis; this brings about a reduction in pain, swelling and soreness. It also reduces degradation of bone and cartilage. Ginger extract exerts anti-inflammatory effect and reduces pain. It also has a good safety profile in comparison to other painkillers and it also reduces dependence on opioid painkillers.
- *Tila*:It is a important plant specially its seeds, which has **phenolic compounds**, terpenes, limonoids and steroids for which it is used traditionally as herbal medication for many years in many medications, It is proved to be analgesic and anti-inflammatory in actions.
- *Guda*: It is important content having antioxidant reducing the degenerative mechanism and even anti-inflammatory activities which helps in alleviating the disease.
- *Dugdha*: **Vitamin D**, has anti-inflammatory properties and may modulate the effect of certain pro-inflammatory cytokines. **Calcium** in milk may also suppress inflammatory stress and enhance the anti-inflammatory action of vitamin D. Milk also contains **bioactive peptides** such as angiotensin-converting enzyme inhibitory peptides. These inhibit the stimulation of the renin-angiotensin system, thereby suppressing inflammatory responses. **Dairy fatty acids**, such as conjugated linoleic acid, may also have anti-inflammatory actions via the modulation of cytokine gene expression and production.
- Considering all the above points, *Shwadamshttra Taila* in the present study has proved to alleviate the *Janu-Sandhigatavata* in the best way.

Lipid Based Drug¹⁶:

- General route of lipid based drug delivery system are- Oral, parenteral, ocular, intranasal, dermal, transdermal, vaginal can be for lipid based drug delivery system. Oral route is the most preferred route because of the properties like non-invasiveness, less expensive and less prone to side effects. It is easiest and most convenient method of drug delivery for chronic therapies. The principle objective of formulation of lipid based drugs is to enhance the bioavailability.
- Lipid based drug delivery system are one of the emerging technologies designed to address challenges like the solubility and bioavailability of

poorly water soluble drugs when took along with food.

- Food dependent bioavailability can be significantly reduced by formulating the drug as lipid based formulation, which can increase the solubility and dissolution of lipophilic drugs and facilitate the formulation of solubilized pieces from which absorption occurs. Hence, lipid based drug formulations can be used to reduce dose of the drug while simultaneously enhancing its oral bioavailability.
- Hence understanding the above concepts an attempt was made to use *Shwadamshttra taila* as a *Sneha dravya* in treating *Janu-Sandhigatavata*, which proved better result in treating the *Vyadhi*.

CONCLUSION

Janu-Sandhigatavata is a *Shoola Pradhana Vataja Nanatmaja Vyadhi*. *Snehana* and *Swedana* are the general line of management of *Vatavyadhi*. *Shwadamshttra Taila* is a *Sneha Dravya*, the drug used in present study is having five ingredients as: *Shwadamshttra*, *Shunti*, *Tila Taila*, *Guda*, *Ksheera* which are having common quality of *Vatahara* in nature. As in *Janu-Sandhigatavata* which is *Vatapradhana Vyadhi* with degeneration as one of the pathological features, hence repetitive measures of *Vatashamana*, *Vedanasthapana*, *Shotahara*, *Shoolahara*, *Sthambahara*, *Deepana*, *Pachana*, *Anulomaka* drugs are to be used perpetually as indicated by *Acharya Sushruta* as *Atandrita*, thus being suggestive of the progressive nature and *Yapyatwa* of the condition. *Shwadamshttra Taila* showed better results in this aspect of *Chikitsa*. As in the reference of *Charaka Samhita Vatavyadhi Chikitsa*, for *Shwadamshttra Taila*¹² administration, after its complete digestion *Paya (Dugdha)* has to be given as *Bhojana*. Here in the same concept *Paya (Dugdha)* is used as Adjuvant along with *Taila* in the study. As it is a degenerative disease, *Brihmana Roopa Sneha Dravya* is best line of *Chikitsa*. *Arunadatta Teeka* over *Ashtana Hrudaya* explains that dosage of *Brihmana Sneha* is *Alpa Matra* which can be administered with any mode of adjuvant like *Paya*. *Alpa Matra* here can be interpreted as that which is

less than *Hrusiyasi Matra*¹⁷. Hence, for better palatability of *Sneha Dravya* respective dosage is fixed for a particular duration.

Since *Vyana Vata* is involved here in *Vatavyadhi*, *Oushadhi* should be always administered after *Ahara* (food). This is one of the main reasons behind using the medicine after food in current study. In the *Vyadhi* if *Dosha* is in *Madhyamaavastha Shamana* is the best line of treatment and in *Prabhuta Dosha* it is *Shodhana*. But practically patients are reluctant for procedures that require admission for minimum up to 30 days. It may not be possible in all cases owing to various reasons like non-acceptance of treatment by patients etc; unless the patient himself feels there is a necessity for the procedure and admission. Hence in present study better benefits clinically without any untoward effects were noticed.

REFERENCES

1. Acharya Agnivesha, Charaka Samhita Sutra Sthana, Vidyotini commentary, Pt. Kashinath Shastri, Dr. Goraknath Chaturvedi, Varanasi: Chaukambha Bharati Academy: reprint: 2009, 30/26. Pp. No. 187. Pg. No 738.
2. Acharya Agnivesha, Charaka Samhita Chikitsa Sthana, Vidyotini commentary, Pt. Kashinath Shastri, Dr. Goraknath Chaturvedi, Varanasi: Chaukambha Bharati Academy: reprint: 2009, 28/618. Pp. No 620. Pg. No 738.
3. www.physiopedia.com/knee_Osteoarthritis#Description_of_knee_osteoarthritis: Epidemiology of knee osteoarthritis in India and related factors, Indian J Orthop › v.50 (5); 2016 Sep.
4. Siddharth Kumar Das. Osteoarthritis. In: Editor-in-Chief YP Munjal, AK Agrawal, P Gupta, et al. API Text Book of Medicine, 10th edn. Vol 2. Part 24. Pg. No 2459.
5. https://www.who.int/medicines/areas/priority_medicines/Ch6_12Osteo.pdf. Pg. No 1.
6. Kalpesh Chaudhari, Jibi Varghese, Aboli Patil, Mamta Nakade. Study the efficacy of *Shwadamshttradi Taila Matra Basti* in *Sandhigatavata- niraama avastha* w.s.r to *Janu Sandhi*. IAMJ. April 2015; Volume 3; Issue 4:1031-38.
7. Agnivesha, Charaka Samhita Chikitsa Sthana, Ayurveda Deepika, Sri Chakrapanidatta commentary, edited by Vaidya Yadavji Trikamji Acharya, Varanasi:

- Chaukambha Surabharati Prakasha; 2016. 28/146-147 1/2, Pp. No 623.Pg. No 786.
8. Agnivesha, Charaka Samhita Sutra Sthana, Ayurveda Deepika, Sri Chakrapanidatta commentary, edited by Vaidya Yadavji Trikamji Acharya, Varanasi: Chaukambha Surabharati Prakasha; 2016. 13/23-25, 38-40, Pp. No 83 and 84.Pg. No 786.
 9. Acharya Vagbhata, Ashtanga Hrudaya Sutra Sthana, Sarvangasundara, Ayurvedarasayana, Arunadatta and Hemadri commentary, edited by Pt. Hari Sadashiva Shastri Paradakara, Varanasi: Chaukambha Suravharati Prakasha; 2016. 16/19 and 20-21 Pp. No 248. Pg.No 956.
 10. Roga Vijnana and Vikruti Vijnana, Dr Pavana Jayaram, Dr. Manoj Shankarnarayana, Varnasi: Chowkambha Sanskrit Series Office: 2nd Edition, 2018, H.S 3-20/10-14, Pp No. 637, Pg. No 799.
 11. Acharya Vagbhata, Ashtanga Hrudaya Sutra Sthana, Sarvangasundara, Ayurvedarasayana, Arunadatta and Hemadri commentary, edited by Pt. Hari Sadashiva Shastri Paradakara, Varanasi: Chaukambha Suravharati Prakasha; 2016. 12/17 ½. Pp. 195. Pg.No 956.
 12. Acharya Sushruta, Sushruta Samhita Shareera Sthana, Dalhana Commentary, Nyayachandrika Panjika, edited by Vaidya Yadavji Trikamji Acharya, Varanasi: Chaukambha Surabharati Prakasha; 2014. 4/15. Pp No 356. Pg. No 824.
 13. Agnivesha, Charaka Samhita Chikitsa Sthana, Ayurveda Deepika, Sri Chakrapanidatta commentary, edited by Vaidya Yadavji Trikamji Acharya, Varanasi: Chaukambha Surabharati Prakasha; 2016. 28/93, Pp. No 621 .Pg. No 786.
 14. Agnivesha, Charaka Samhita Chikitsa Sthana, Ayurveda Deepika, Sri Chakrapanidatta commentary, edited by Vaidya Yadavji Trikamji Acharya, Varanasi: Chaukambha Surabharati Prakasha; 2016. 28/105, Pp. No 621 .Pg. No 786.
 15. Agnivesha, Charaka Samhita Sutra Sthana, Ayurveda Deepika, Sri Chakrapanidatta commentary, edited by Vaidya Yadavji Trikamji Acharya, Varanasi: Chaukambha Surabharati Prakasha; 2016. 22/11, Pp. No 120 .Pg. No 786.
 16. Kalepu Sandeep, et.al, Oral Lipid-based drug delivery systems- an overview. Acta Pharmaceutica Sinicia B (2013), <http://dx.doi.org/10.1016/j.apsb.2013.10.001>
 17. Acharya Vagbhata, Ashtanga Hrudaya Sutra Sthana, Sarvangasundara, Ayurvedarasayana, Arunadatta and Hemadri commentary, edited by Pt. Hari Sadashiva Shastri Paradakara, Varanasi: Chaukambha Suravharati Prakasha; 2016. 16/19 Pp. No 248. Pg.No 956.

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