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A RANDOMIZED COMPARATIVE CLINICAL STUDY TO EVALUATE THE EFFICACY OF *JANUBASTI* ON ANTERIOR ASPECT AND POSTERIOR ASPECT WITH *MURCHITA TILATAILA* IN *JANUSANDHIGATA VATA*.

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ABSTRACT

Sandhigatavata can be defined as a disease of *Sandhi;* The condition is much similar with the osteoarthritis**,** presenting symptoms of *Sandhi shoola, Sandhi shotha* and *Akunchana Prasarana Savedana* and in later stage *Hanti Sandhigatah. Sandhi Vata* busted out as challenging diseases till the date, and is an important reason of disability in industrialized countries. *Sandhi Vata*is a disease occurring as a result of affliction of *Sandhis* by vitiated *Vata Dosha*. Development of this disease is attributed to *Vata Dosha Vruddhi* due to age related *Kshaya*. Increase in *Vatika Ahara Vihara* results in *Shleshaka Kapha Kshaya* because of *Khavaigunya* in *Asthivaha* and *Majjavaha Srotas.*

Globally osteoarthritis ranks 8th in all diseases and is the 2nd most common musculoskeletal problems, 30% in the world, which covers around 15% proportions among all musculoskeletal problems, and is also 2nd most frequent joint diseases with a prevalence of 22% to 39% in India, having a steady rise in prevalence from age 30 such that by age 65, 70% of people will have radiographic evidence of osteoarthritis. Generally life time risk is about 11% in women's, 8% in men, and is more prevalent in women than men. India has higher proliferation rate of osteoarthritis among world and expected, it will be at top rank till 2025.

*Janubasti*is a kind of *Bahya Sneha yukta Sweda, Samshamaniya Bahirparimarjana Chikitsa. Tilataila* is V*ataghna* which counteracts *Ruksha and Sheeta Guna* of *Vata* by its *Snigdha Guna* and *Ushna Virya* of drug and procedural warmth will reduce stiffness.*Janubasti*on anterior aspect have anatomical, physiological lacunae; uneven surface of anterior aspect can make *Basti* constructed with dough cover major skin surface of area, leaving limited area of skin to absorb the oil, skin thickness on anterior aspect is more

and diameter of hair infundibula follicle orifice is less affecting

absorption of medicine, which is contrary to the posterior aspect. So here an attempt was made through a posterior *Janubasti* which may help to restore functional disability, with cost effectiveness, hence a study is planned to explore the role of *Janubasti* on posterior aspect in *Janusandhigata Vata.*

METHODS

40 subjects fulfilling the inclusion criteria were selected. And randomly allocated to groups

- Group A - 20 Patients for Posterior *Janubasti* with *Murchita Tilataila*.
- Group B - 20 Patients for Anterior *Janubasti*with*Murchita Tilataila.*

RESULTS

Posterior *Janu Basti* is clinically and statistically effective in yielding better relief in the symptoms of *Janusandhigata Vata* assessed by subjective and objective parameters.With P value < 0.05.

KEYWORDS

Posterior *Janu Basti*;*Janusandhigata Vata*; *Murchita Tilataila*

INTRODUCTION

Ayurveda, the all time medicinal boon to the mankind, which has been showering its valuable treasures to the mankind since unknown time. Still the same is continuing with more and more global support. Since this medical science treats the patient as a whole it differs and occupies its own special place than other medicinal branches which give attention only to the presenting signs and symptoms of the patient.

The basic principle of *Ayurveda* is to treat the *Ksheena Dosha*, to treat the *Vruddha Dosha*, restoring normalcy of *Prakupita Doshas* and also *Paripalana* of *Sama Doshas* in healthy state. *Ayurveda* advocates two kinds of treatment measures, which represent the end-phase of all the treatment process, namely *Samshodhana* (Purificatory) and *Samshamana* (Pacificatory) of which the former is given the first place. *Doshas* once cured by pacification may circumstantially be provoked again, where as it can't ever do so, once it is totally expelled from the system by purification.

Panchakarma means the five therapeutics of the unique specialty of *Ayurveda* viz., *Vamana, Virechana, Basti, Nasya* and *Raktamokshana*. The *Shodhana karmas* should always be preceded by *Purvakarma* such as *Pachana, Snehana* and *Swedana*. These *Purvakarmas* cause *Vishyandana, Doshapaka, and Srotomukha Vishodhana* and thus brings the vitiated *Doshas* from *Shakhas* to *Koshta*. The vitiated *Doshas* (*Malas*) which are eliminated from the *Urdhwamarga* i.e. by mouth called *Vamana,* through *Adhomarga* (*Guda*) is called *Virechana*; both are together called as *Virechana*. Both will remove the vitiated *Doshas* and cure the disease through its root, just as a cut tree soon dries up together with all its twigs, fruits and flowers i.e. treatment aim of *Ayurveda* is not directed at the level of symptoms, but at root cause.

Sandhigatavata can be defined as a disease of *Sandhi*, presenting symptoms of *Sandhishoola, Sandhishotha* and *Akunchana Prasarana Savedana* and in later stage *Hanti Sandhigatah.* In *Ayurveda, Acharya Charaka*

was the pinor to describe the disease separately named "*Sandhigata Anila*" under the heading of *Vatavyadhi.Vagbhata* considered *Vatavyadhi* as *Maharoga .Sandhivata* as busted out as a challenging diseases till the date, and is a important reason of disability in industrialized countries. *Sandhivata* is a disease occurring as a result of affliction of *Sandhis* by vitiated *Vata Dosha*. Development of this disease is attributed to *Vata Dosha Vruddhi* due to age related *Kshaya*. Increase in *Vatika Ahara Vihara* results in *Shleshaka Kapha Kshaya* because of *Khavaigunya* in *Asthivaha* and *Majjavaha Srotas. Sandhis* are one of the types of *Marmas* which are integral part of *Madyama Roga Marga.* Thus, involvement of *Marma, Madyamaroga Marga, Vata Dosha* and *Dhatukshaya* make disease *Kasthasadya*.

The condition is much similar with the osteoarthritis, a degenerative joint disease in modern concept. Osteoarthritis or degenerative arthritis is a joint disorder characterized by degeneration of joint cartilage and adjacent bone that can cause pain and stiffness. Globally osteoarthritis ranks 8th in all diseases and is the 2nd most common musculoskeletal problems, 30% in the world, which covers around 15% proportions among all musculoskeletal problems, and is also 2nd most frequent joint diseases with a prevalence of 22% to 39% in India, having a steady rise in prevalence from age 30 such that by age 65, 70% of people will have radiographic evidence of osteoarthritis. Generally life time risk is about 11% in women's, 8% in men, and is more prevalent in women than men. India has higher proliferation rate of osteoarthritis among world and expected, it will be at top rank till 2025.

Acharya Sushruta and *Acharya Charaka* have mentioned *Snehana* as a line of treatment in *Sandhigatavata*. *Basti* plays a major role in mitigating vitiated *Vata Dosha*. *Janubasthi* is a kind of *Bahya Snehayukta Sweda, Samshamaniya Bahirparimarjana Chikitsa. Tilataila* is a *Vataghna* which counteracts *Ruksha and Sheeta Guna* of *Vata* by its *Snigdha Guna* and *Ushna Virya* of drug and procedural warmth will reduce stiffness.

Janubasthi on anterior aspect can have anatomical, physiological lacunae; uneven surface of anterior aspect can make *Basti* constructed with dough cover major skin surface of area, leaving limited area of skin to absorb the oil which is contrary to the posterior aspect. So here an attempt will be made through a posterior *Janubasti* which may help to restore functional disability, with cost effectiveness, hence a study is planned to explore the role of *Janubasthi* on posterior aspect in *Janusandhigata Vata.*

OBJECTIVES

1) To evaluate clinically the efficacy of posterior *Janubasti* with *Murchita Tilataila* in the management of *Janusandhigata Vata.*

2) To evaluate clinically the efficacy of anterior *Janubasti* with *Murchita Tilataila* in the management of *Janusandhigata Vata.*

3) To compare the efficacy of posterior *Janubasti* with anterior *Janubasti.*

HYPOTHESIS

H_0 - Posterior *Janubasti* with *Murchita Tilataila* is not effective in the management of *Janusandhigata Vata.*

H_1 - Posterior *Janubasti* with *Murchita Tilataila* is effective in the management of *Janusandhigata Vata.*

H_2 - Anterior *Janubasti* with *Murchita Tilataila* is effective in the management of *Janusandhigata Vata*.

METHODOLOGY

SOURCE OF DATA:

A) LITERARY SOURCE:

Literary aspect of the study was collected from *Ayurvedic* classics and updated with recent medical journals, internet source, and contemporary texts.

B) *SAMPLE SOURCE:*

40 Patients suffering from *Janusandhigata Vata* were selected from the OPD and IPD of SDM Trust's Ayurvedic Medical College, Danigond Post-Graduation centre and Padma Ayurvedic Hospital and Research Centre, Terdal-587315, Karnataka.

C) *DRUG SOURCE:*

Tilataila and required *Murchana* raw drugs was procured from the local market after proper identification and authentication by department of *Dravyaguna*, SDM Trust's Ayurvedic Medical College. *Murchita Tilataila* was prepared as per the classics under the guidance of teaching faculty in *Rasashala* of *Rasashastra* and *Baishajya Kalpana* department, SDM Trust's Ayurvedic Medical College,

Danigond Post-Graduation centre and Padma Ayurvedic Hospital And Research Centre,Terdal-587315, Karnataka. as mentioned in the classics. 40 liters of *Tila Taila* was used for which 8750 grams of *Kalka Dravya* and 160 liters of *Drava Dravya* was used according to the ratio of 1:4:16, 1 part *Kalka Dravya*,4 part *Taila*,16 part *Drava Dravya*.

METHOD OF COLLECTION OF DATA:

Patients fulfilling the inclusive criteria irrespective of gender, religion, caste, economic status and occupation were enrolled for the study.

A) STUDY DESIGN: Simple randomized comparative clinical study.

B) SAMPLE SIZE: 40 subjects fulfilling the inclusion criteria were selected.

- Group A - 20 Patients for Posterior *Janubasti* with *Murchita Tilataila*.
- Group B - 20 Patients for Anterior *Janubasti* with *Murchita Tilataila.*

C) *SELECTION CRITERIA:*

The cases are selected as per inclusion and exclusion criteria.

D) *DIAGNOSTIC CRITERIA:*

Individuals were diagnosed as per the classical *lakshanas* of *Sandhigata Vata*.

E) *INCLUSION CRITERIA:*

1. Patients having classical signs and symptoms of *Sandhigata Vata*, like *Sandhi Shoola, Sandhi Shotha, Prasarana Akunchana Vedana, Sparshaasahatva, Sandhi Sputana, Sandhi Stamba.*

2. Age group between 30 to 70 years of either gender irrespective of religion, socioeconomic status.

3. Patients willing to sign the consent form.

F) *EXCLUSION CRITERIA:*

1. Patients of *Vatarakta, Amavata, Kroshtuksheersha.*

2. Patients with systemic disorders such as DM, HTN.

3. Patients having history of surgical, acute traumatic, neoplastic, and infectious conditions of knee joints.

4. Lactating and Pregnant Women.

5. Low back ache with or without radiation to legs.

G) LABAROTORY INVESTIGATIONS: XRAY of affected kneeknejoint AP. Blood investigations: RBS, ESR, CRP

H) *WITHDRAWAL CRITERIA:*

The participants were allowed to withdraw from the trial if there is any major ailment necessitating the institution of new modalities of treatment. The decisions to withdraw a participant from the trial were taken by the principal investigator with proper justification and formal information was given to the Guide and the Ethics Committee within two working days. But no such case was seen in my study

I) *DROP-OUTS:*

No drop outs in the clinical trial.

J) *INTERVENTION AND FOLLOW UP PERIOD:*

Janubasti was done to both the knee joints for 7days even if pathology lies in a single joint, as a preventive measure and follow up period for 7 days.

K) Assessment Criteria:

Subjective and Objective parameters before treatment (BT), after treatment (AT) and after follow up (AF) was analyzed and final conclusion were drawn.

Assessment Criteria.

a] SUBJECTIVE CRITERIA	b]OBJECTIVE CRITERIA
1) *Sandhi Shoola* (Pain)	**1)** *Sandhi Sputana* (Crepitus)
2) *Stambha* (Stiffness)	**2)** Range of movement
3) *Akunchana Prasarana Vedana*	**3)** *Sandhi Shotha* (Swelling)
4) WOMAC INDEX	**4)** *Sparshaasahatva* (Tenderness)

A) PRESENTATION OF DATA:

- Data was collected using case report form (CRF) designed by incorporating all aspects of *Ayurveda* and modern medicine for the study. Such collected data was tabulated and analyzed using SPSS (Statistical package for social sciences) version 26 by using appropriate statistical test.
- Demographic data and other relevant information were analyzed with descriptive statistics.
- Assessment criteria of ordinal data within the group assessed by: Friedman's test, Friedman's Two-Way ANOVA by Ranks and Wilcoxon Signed Ranks test with Bonferroni correction (0.0166).
- Assessment criteria of continuous data within the group assessed by: Repeated Measure of ANOVA test.
- Assessment criteria of ordinal data between the groups assessed by: Mann - Whitney U test.
- Assessment criteria of continuous data between the groups assessed by: One Way ANOVA test.

METHOD OF DOING *JANUBASTHI:*

Purvakarma- Aturapareeksha

The patient is examined in relation to *Dashavidha Pareeksha* and by applying *Pratyaksha, Anumana* and *Aptopadesha Siddhantas* to assess *Vyadhibala* and *Dehabala*.Then, the affected knee joint is examined properly and the maximum tender region is noted.It is also examined for scars and wounds. [1]

Sambhara Sangraha

It includes a *Mashapishti*, *Janubast*i brim, *Aushada Dravya*, spoon, bowl, vessel, water, gas stove and table.

Aturasiddhata

Patient is asked to lie in supine position or sit erect and extend the lower limbs on the table for anterior *Janubasti* and patient is asked to lie in prone position for posterior *Janubasti*. The affected knee joint is exposed properly, and limbs are supported properly so that they are placed horizontally and comfortably.

Pradhanakarma Bastiyantradharana

The first *Mashapishti* is prepared by adding sufficient quantity of water to flour of black gram.Then, with the use of *Mashapishti*, a pit about two *Angula* height is constructed over *Janusandhi*.The concavity of pit should be well sealed to prevent leakage of the medicine retained in the cavity.

Aushadhidharana

The bowl containing medicine is heated indirectly by keeping over hot water.Then the heated oil is poured slowly and carefully on *Janusandhi* with cotton dipped holding in fist, allowing uniform pressure through thumb.The patient tolerable temperature should be maintained.The level of medicine should be two *Angula*

above the highest point inside the cavity.

Maintainence of constant temperature of medicine

Every 5 minutes, oil should be changed to maintain constant temperature.

Removal of *Dravya* and *Basti Yantra*

After 45 minutes, the *Taila* is removed with cotton and the *Masha Pishti* is removed.

Samyak Lakshanas

Not mentioned in classics.Bahya Lakshanas of Snehana and Swedana can be taken. *Mardavata, Snigdhata, Sheetoparama, Stambha Nigraha, Gauravanigraha* and *Vyadhihani*.[2]

Time

Vataja disorders 10000 *Matra Kala* (45 minutes).[3]

Paschat Karma

After removing the *Sneha* and *Masha Pishti*, *Mridu Abhyanga* done over *Janu Sandhi* for about 5 minutes.

RESULTS

Posterior *Janu Basti* is clinically and statistically effective in yielding better relief in the symptoms of *Janusandhigata Vata* assessed by subjective and objective parameters.With P value < 0.05.

DISCUSSION

the facts which have emerged from the study were studied in 6 main headings.

1) Discussion on *Janu Sandhigata Vata*.
2) Discussion on Materials and methods.
3) Discussion on clinical study.
4) Discussions on the patients of *Janu Sandhigata Vata* who were in the trial.
5) Discussion on results.
6) Discussion on mode of action.

1. Discussion on *Janu Sandhigata Vata*

Aharaja Hetu: The *Alpashana, Samashana, Vishamashana, Ruksha Ashana, and Laghu Bhojana* etc These *Apathya Aharas* lead to the *Kopa* of *Vata Dosha* progressively. Analysis on the basis of dominant *Rasa* consumed showed that maximum patients had inclination towards *Katu Rasa*; *Katurasa* is included in the *Rasas* which provocate the *Vata Dosha*. Out of 40 patients, many were observed to be consuming *Katu Rasa (95%), Ruksha Ahara (95%)* and *Vishamashana (97.5%)*. Irregular diet pattern and consumption of *Katu Rasa* in excessive manner can be effectively considered in predisposing factors for causing *Sandhigata Vata*.

Viharaja Nidana*:-Vegadharana, Baravahana, Diwasapna, Sheeta Samparsha, Ratri Jagarana, Vishamachesta* etc. are common with their work which makes *Vatakopa* in a very short period. Out of 40 patients, many were housewives (57.5%), farmers (20%). They were observed with these predisposing factors *Vegadharana (70%), Diwasapna (57.5%), Bharavahana (55%), Sheeta Samparsha (52.5%), Ratri Jagarana (20%), and Vishamachesta (17.5%)*.

***Manasika Nidana*: -** *Chinta, Shoka, Bhaya* and *Krodha* leads to *Vata Prakopa*.
Among 40 patients, *Chinta (75%), Krodha (37.5%), Shoka (27.5%)* and *Bhaya* (10%) had given history of presence of these factors.

Sandhigata Vata is a disease in which the *Prakupita Vata Dosha* makes *Sthana Samshraya* at *Sandhi* and make it unfit to perform its functions or to do the same with associated discomforts. While taking into consideration of the *Lakshanas* of *Sandhigata Vata*, which are explained in *Ayurvedic* classics, we can compare it with the degenerative joint disease (Osteo Arthritis).

O.A. is a condition which is associated with swelling, pain & stiffness at the joints. Most commonly affected joints are Knees & Hips. The condition has a typical pathogenesis in which the progressive loss of cartilage occurs, with bone formation. More than 60 million Americans are suffering from this great joint disease every year. Worldwide occurrence shows that among the Musculo skeletal disorders, O.A. occupies first place. Being a degenerative disease, old age persons are more prone to this condition. *Sandhigata Vata* is described under *Vata Vyadhi Chikitsita*. In this *Roga, Sandhi* gets *Vata Purna Druti Sparshata, Shopha* and movement is with pain.

More than1 lakh of knee replacements are performed every year due to O.A.As far as O.A. is concerned no effective remedies are available for it even in 21scentury. N.S.A.I.D is found to give some relief by reducing the pain & inflammation of the joint. Along with this proper Physiotherapy, dieting and exercises provide relief in the symptoms. No medicine is found to develop the cartilage which destructed in O.A. So management is aimed to reduce the pain, prevent the deformity and disabilities. For the Same reason *Janu Sandhigatavata* was selected for the study.

Samprapti:

Here the process of *Samprapti* initiation is due to the strong involvement of *Nidana* factors such as *Vishamashana, Ruksha Ahara, Katu Ahara, Vegadharana* etc, or in *Sthulya*, due to *Kapha* and *Meda* the *Margavarana* occurs leading to obstruction in the flow of nutritive materials to the *Uttarotara Dhatus* i.e. *Asthi*, *Majja* and *Sukra* and causing *Prakopa* of *Vata Dosha* in the body. This in turn will cause *Kapha Kshaya*. As the *Shleshma Bhava* decreases in the body, *Shleshaka Kapha* in the joints gets decrease in both quality and quantity. Reductions of Kapha in *Sandhis* make *Sandhi Bandha Shithilata.Vatavrudhi* leads to *Asthidhatu Kshaya*. *Asthi* being the main tissue of the joint, its *Kshaya* leads *Khavaigunya* in the joints. In the mean time *Sthanasamshraya* of *Prakupita Vata* takes place in the *Khavaigunyayukta Sandhi*. This localized *Vayu* due to its *Ruksha, Laghu Guna* decreases the properties of *Shleshaka Kapha* producing disease *Sandhi-Gata-Vata* in *Janu Sandhi*.

Three main factors involving in the production of *Sandhigata Vata*,

1) *Kopa* of *Vyana Vata*, which controls all the movements of body.
2) *Kshaya* of *Shleshaka Kapha*, which normally aligns the joints and maintains its compactness.
3) Deterioration of *Sleshmadhara Kala*, which lubricates the joints.

Chikitsa:

The treatments of *Sandhigatavata* include *Snehana, Swedana, Upanaha, Agnikarma, Bandana,* and *Unmardhana*. Since it is a *Vata Vikara* and *Dhatukshaya Janya Vikara, Snehana* and *Swedana* etc. would be an ideal line of treatment. In the contemporary science treatment is mainly aimed at Non–pharmacological methods and analgesics.

As *Acharya Charaka* mentioned repeated use of Snehana and Swedana, so present study is taken entitled "A randomized comparative clinical study to evaluate the efficacy of *Janubasthi* on anterior aspect and posterior aspect with *Murchita Tila Taila* in *Janusandhigata Vata*"

2. *Discussion on materials and methods:*

Drug used in the trial work: *Murchita Tila Taila*:

Taila is best for treating *Vatavyadhi*, where as *Tilataila* is best among *Tailas* for the process of *Snehana* and *Balya. Tilataila* by its *Madura Rasa, Kasaya-Tikta Anurasa, Guru-Snigdha Guna, Ushna Virya, Madura Vipaka*, does *Snehana, Vedanasthapana, Balya, and Sandaniya. Murchana* of *Tilataila* is done accordingly to the classics to remove *Ama Dosha*, and to increase the efficacy and self life of the *Taila.*

Posology

Quantity of *Taila* for *Janu Basti* - Quantity sufficient used, as the size of knee joint differs based on body constitution ,exact quantity used per patient cannot be given accurate calculation. The fresh *Taila* was added on 4th day to remaining used

oil. The same *Masha Pishti* is used for all 7 days, as instructions were given to patient regarding the wrapping it in cover and storing in refrigerator.

Based on duration

Janu Basti to bilateral knee joint is done for 45 minutes, for a span of 7 days. Quantity sufficient *Taila* is used. Total study duration is for 15 days. The follow up is taken after 7 days of treatment.

3. *Discussion on clinical study*

The Patients were selected from OPD and IPD of SDM Trust's Ayurvedic medical college, Danigond post graduation centre, Padma Ayurvedic hospital and research centre, terdal. After applying the inclusion and exclusion criteria. Totally 60 patients were registered, out of which 20 patients were excluded due to not fulfilling the inclusion and exclusion criteria.

To diagnose *Janusandhigata Vata*, the main symptoms like *Janu Sandhi Shoola, Sandhi Shotha, Sandhi Sputana, Stambha, Akunchana Prasarana Vedana* and *Sparshaasahatva.* Main symptoms were present in all patients but the intensity of pain was differed from patient to patient. Various movements of the knee

joint were elicited by various objective and subjective criteria included in assessment i.e. by Goniometric examination,VAS scale and WOMAC INDEX. Here in this study, investigation like RBS, ESR, and CRP were done only for excluding patients from trial and X-ray of knee joint AP view was done to support the study.

After taking informed consent from the patients, the treatment was administered randomly by using lottery method of randomization. Firstly *Janu Basti* was done by making a ring of *Masha Pishti, Janu brim* and sealing it over *Janu Sandhi*, on posterior aspect in group A and on anterior aspect in group B and the passively heated luke warm *Murchita Tila Taila* was poured over *Janu* inside the *Janu* ring and uniform temperature maintained for 45 mins.

The materials and methods of the present work with complete description of the assessment criteria are given here. The descriptive statistical analysis of the sample taken for the study is methodically elaborated. The observations, results and their statistical analysis are presented in order with tables and graphs. In the chapter entitled discussion, the results obtained are critically analyzed to reveal the truth of efficacy of the study. The final conclusions drawn from the present clinical research

work are detailed in the chapter summary and conclusion

1) Discussions on the patients of *Janusandhigata Vata*, who were in the trial. Age wise:

Out of 40 patients in the sample taken for the study, 31-40 age groups was 10%, 41-50 age groups 25%, 51-60 age groups 45% and 61-70 age groups 20%.Maximum patients were belonged to 51-60[155] i.e. 45% which indicates *Parihanikala* i.e. degeneration occurs, which supports the association of *Vardakya Avastha*.

Gender wise:

Out of 40 patients in the sample taken for the study, 40% of males were registered in comparison to 60% females, which indicate that females are more prone to *Janusandhigata Vata*. It is told that women are at high risk than men in developing O.A. This substantiates the observations made by earlier researchers that this disease prevalence is more in women than men.[4]

Religion wise:

Out of 40 patients in the sample taken for the study, 90% were Hindus, and 10% were Muslims. This study shows a greater prevalence of *Sandhigata Vata* in Hindu 90% patients. Higher geographical proportions of Hindus in and around this area may be the reason for its higher incidence in Hindu.[5]

Education wise:

Out of 40 patients in the sample taken for the study, 55% were illiterate, 20% who had high school education, 15% had primary education, 5% had a degree, 2.5% each had graduated and post graduated respectively. This study shows a greater prevalence of *Sandhigata Vata* in illiterates. This may be because of small sample size.[6]

Marital status wise:

Out of 40 patients in the sample taken for the study, 97.5% were married and 2.5% was widow. This study shows a greater prevalence of *Sandhigata Vata* in married patients.

Socio economic status wise:

Out of 40 patients in the sample taken for the study**,** patients belonging to Upper lower class 2.5%, Upper class 5%, Upper middle class-17.5%, lower middle class 30%, Lower class 45%.Maximum patients were belonging to lower class

which indicates that lower class patient's work load and stress.[7]

Domicile wise:

Out of 40 patients in the sample taken for the study, it was seen that 85% are from rural, and 15% were from urban. It's because that maximum patients participated in the trial are from local area.

Occupation wise:

Out of 40 patients in the sample taken for the study, House wives 57.5%, Farmers 20%, retail shop owner 7.5% and 2.5% each of peon, gynecologist, PSI, engineer, lab technician, auto driver respectively,. Maximum patients were 57.5% of housewives, and farmers 20% which indicates their work load, long standing, *Diwasapna, Bharavahana, Vegadharana* because of their work stress, leading the predisposing factors for the incidence of *Sandhigata Vata*.[8]

Onset of *Sandhishoola* wise:

Out of 40 patients in the sample taken for the study, onset was gradual in 97.5% and sudden in 2.5%. Maximum patients were having gradual onset of *Sandhishoola*, which indicates disease occurs gradually.

Duration of *Sandhishoola* wise:

Out of 40 patients in the sample taken for the study, duration was chronic in 90%, sub acute in 7.5% and acute in 2.5%. Maximum patients were having chronic history of *Sandhishoola* more than 1 year.

Onset of *Sandhishotha* wise*:*

Out of 40 patients in the sample taken for the study, onset was gradual in 27.5% and sudden in 72.5%. Maximum patients were having sudden onset of *Sandhishotha*, which indicates affected *Vata* causing sudden swelling.

Duration of *Sandhishotha* wise:

Out of 40 patients in the sample taken for the study, duration was chronic

17.5 %, sub acute 12.5% and acute 70 %. Maximum patients were having acute history of *Sandhishotha* less than 6 months.

Onset of *Akunchana Prasarana Vedana* wise:

Out of 40 patients in the sample taken for the study, onset was gradual in 7.5% and sudden in 92.5%. Maximum patients were having sudden onset of *Akunchana Prasarana Vedana*.

Duration of *Akunchana Prasarana Vedana* wise:

Out of 40 patients in the sample taken for the study, duration was chronic

in 47.5 %, sub acute in 27.5% and acute in 25%. Maximum patients were having chronic history of *Akunchana Prasarana Vedana* more than 1 year..

Onset of *Stambha* wise*:*

Out of 40 patients in the sample taken for the study, onset was gradual in 52.5% and sudden in 47.5%. Maximum patients were having gradual onset of *Stambha*.

Duration of *Stambha* wise:

Out of 40 patients in the sample taken for the study, duration was chronic in 30 %, sub acute in 30% and acute in 40 %. Maximum patients were having acute history of *Stambha* less than 6 months.

Onset of *Sandhi Sphutana* wise:

Out of 40 patients in the sample taken for the study, onset was gradual in 100%. All the patients were having gradual onset of *Sandhi Sphutana*, which indicates disease occurs gradually.

Duration of *Sandhi Sphutana* wise*:*

Out of 40 patients in the sample taken for the study, duration was chronic 97.5% and sub acute 2.5% .Maximum patients were having chronic history of *Sandhi Sphutana* more than 1 year.

Onset of *Sparshaasahatva* wise*:*

Out of 40 patients in the sample taken for the study, onset was gradual in 7.5% and sudden in 92.5%. Maximum patients were having sudden onset of *Sparshaasahatva*.

Duration of *Sparshaasahatva* wise*:*

Out of 40 patients in the sample taken for the study, duration was chronic in 10 %, sub acute in 12.5% and acute in 77.5 %. Maximum patients were having acute history of *Sparshaasahatva* less than 6 months.

Nature of *Ahara* wise:

Out of 40 patients in the sample taken for the study, it was seen that 60% are vegetarian and 40% were having mixed nature of *Ahara*.

Sevana Krama* of *Ahara* wise*:

Out of 40 patients in the sample taken for the study, it was noted patients having a habit of *Vishamashana* 90%, *Samashana* and *Adyashana* 5% each. Maximum patients 90% were having a habit of *Vishamashana*. This indicates the *Apathya Ahara* habit can be effectively considered as predisposing factors for causing *Sandhigata Vata*.

Nature of work *wise:*

Out of 40 patients in the sample taken for the study, it was noted patient's nature of work was physical in 85% and sedentary in 15%. Maximum patients 85% were having physical nature of work. This indicates the physical nature of work cause *Vata Prakopa* leading in the manifestation of Janu *Sandhigata Vata*.[9]

***Nidra* wise:**

Out of 40 patients in the sample taken for the study, 95% were having *Samyak Nidra* and 5% were having *Asamyak Nidra*.

***Agni* wise:**

Out of 40 patients in the sample taken for the study, 82.5% were having *Vishama Agni* and 17.5% were having *Tikshna Agni*. Maximum patients had *Vishama Agni* because of *Vataprakopaja Ahara* and *Vihara*.

***Koshta* wise:**

Out of 40 patients in the sample taken for the study, 82.5% were having *Krura Koshta* and 17.5% were having *Mridu Koshta*. Maximum patients 82.5% had *Krura Koshta*.

Menopause wise:

Out of 40 patients in the sample taken for the study, 60% were female, in which all the female are having

menopausal history. That indicates menopause is one of predisposing factor for *Sandhigata Vata*.[10]

Body mass index (BMI) wise:

Out of 40 patients in the sample taken for the study**,** 30% patients were having normal weight, 40% patients were overweight and 30% patients were obese. Maximum patients 40% were overweight and 30% were obese, so if more weight is there, there will be early wear and tear of joint, which indicates that over weight and obese patients are more prone for *Janusandhigata Vata* as *Janu* is the weight bearing joints.[11,12]

***Prakrithi* wise:**

Out of 40 patients in the sample taken for the study**,** patients showed following *Prakrithi*, *Vata Pitta* 37.5%, *Vata Kapha* 32.5% and *Pitta Kapha* 30%. Maximum patients were having *Vata Pitta Prakrithi*, due to the terdal region as it is a *Jangala Desha*.

***Satwa* wise:**

Out of 40 patients in the sample taken for the study**,** following *Satwa* was noticed, *Avara* 60%, *Pravara* 2.5% and *Madyama* 37.5%. Maximum patients 60% were observed having *Avara Satwa.*

***Sara* wise:**

Out of 40 patients in the sample taken for the study**,** following *Sara* was noticed, *Pravara* 5%, *Madyama* 95%. Maximum patients were belonging to *Madyama Sara*.

***Samhanana* wise:**

Out of 40 patients in the sample taken for the study**,** following *Samhanana* was noticed; *Pravara*-42.5% and *Madhyama*-57.5%.Maximum patients 57.5% were said to have *Madyama Samhanana.*

***Satmyatha* wise**:

Out of 40 patients in the sample taken for the study**,** following *Satmyatha* was noticed, *Pravara* 30% and *Madyama* 70%. Maximum patients were said to have *Madyama Satmyatha*

4. *Discussion on Results:*

Effect of therapies on *Sandhi Sphutana*:

In group A: An assessment of Right and left knee joint *Sandhi Sphutana* in patients with posterior *Janu Basti at* BT, AT and AF showed statistically significant with $p <$
0.05. And effect between the intervals BT –AT and BT – AF showed significant and not significant between AT-AF with Bonferroni correction (0.0166).

In group B: An assessment of Right and left knee joint *Sandhi Sphutana* in patients with anterior *Janu Basti at* BT, AT and AF showed statistically significant with $p <$
0.05. And effect between the intervals BT –AT and BT – AF showed significant and not significant between AT-AF with Bonferroni correction (0.0166).

Between the groups: Mean rank of right knee joint *Sandhi Sphutana* in group A showed better mean value i.e.17.05 and 16.65 while comparing with group B i.e.
23.95 and 24.35 of AT and AF respectively in reliving *Sandhi Sphutana*, which was statistically significant with $p < 0.05$. Mean rank of left *Sandhi Sphutana* in group A showed better mean value i.e.16.98 and

17.23 while comparing with group B
i.e.24.03 and 23.78 of AT and AF respectively in relieving *Sandhi Sphutana*, where AT was statistically significant and AF was not significant with $p < 0.05$.

So this study affirms that posterior *Janu Basti* is effective in reliving in *Sandhi Sphutana* in *Janu Sandhigata Vata*, compare to anterior *Janu Basti*. Posterior *Janubasthi* is effective because of drug absorption rate, fast penetration compare to anterior *Janubasthi*.[13,14]

But clinically reliving of *Sandhi Sphutana* was observed in mild condition, but there was no changes seen in moderate and severe condition of *Sandhi Sphutana* in either of the groups, this may be because of chronic duration of disease.

The *Sandhi Sphutana* occur mainly due to *Vata Vruddhi* and *Shleshaka Kapha Kshaya*, this is counteracted by *Janubasti*, as it comprises both *Snehana* and *Swedana*, which is a kind of *Snehayukta Sweda* and retaining type of *Bahirparimarjana Chikitsa*. While *Murchita Tila Taila* due to its *Guru*, *Snigdha*, and *Ushna Virya*, counteracts the *Vata Gunas* improves the lubrication and helps in reducing *Sandhi Sphutana*.

Effect of therapies on Range of movements (ROM) (angle of flexion):

In group A: An assessment of Right and left knee joint range of movements in patients with posterior *Janu Basti at* BT, AT and AF showed statistically significant with $p < 0.05$. And effect between the intervals BT –AT and BT – AF showed significant and not significant between AT-AF with Bonferroni correction (0.0166). **In group B**: An assessment of Right and left knee joint range of movements in patients with anterior *Janu Basti at* BT, AT and AF showed statistically significant with $p < 0.05$. And effect between the intervals BT –AT and BT – AF showed significant and not significant between AT-AF with Bonferroni correction (0.0166).

Between the groups: Mean rank of right knee joint range of movement in group A showed better mean value i.e.19.30 and 18.50 while comparing with group B
i.e.21.70 and 22.50 of AT and AF respectively in increasing range of movement, where AF was statistically significant and AT was not significant with $p < 0.05$. Mean rank of left knee joint range of movement in group A showed better mean value i.e.18.35 and 17.50 while comparing with group B i.e.22.65 and 23.50 of AT and AF respectively in increasing range of movement, where AF was statistically significant and AT was not significant with $p < 0.05$.

So this study affirms that posterior *Janu Basti* is effective in increasing range of movement in *Janu Sandhigata Vata*, compare to anterior *Janu Basti*. Posterior *Janubasthi* is effective because of drug absorption rate, fast penetration and relaxing the muscles that are supporting the knee joint, compare to anterior *Janubasthi*.

Range of movement will mainly be restricted due to the reduction in Synovial fluid, degeneration of joint cartilage, and *Murchita Tila Taila* by its *Guru*, *Snigdha Guna* helps in improving lubrication by *Snehana*

action. Relives restricted movements by the procedural effect. This makes the movements unrestricted. One more factor for restricted movements is pain, as pain will be reduced there will be free movements of *Janu Sandhi*.

Effect of therapies on *Sparshaasahatva*:

In group A: An assessment of Right and left knee joint *Sparshaasahatva* in patients with posterior *Janu Basti at* BT, AT and AF showed statistically significant with $p <$
0.05. And effect between the intervals BT –AT and BT – AF showed significant and not significant between AT-AF with Bonferroni correction (0.0166).

In group B: An assessment of Right and left knee joint *Sparshaasahatva* in patients with anterior *Janu Basti at* BT, AT and AF showed statistically significant with $p <$
0.05. And effect between the intervals BT –AT and BT – AF showed significant and not significant between AT-AF with Bonferroni correction (0.0166).

Between the groups: Mean rank of right knee joint *Sparshaasahatva* in group A showed better mean value i.e.16.00and 18.00 while comparing with group B
i.e.25.00 and 23.00 of AT and AF respectively in reliving *Sparshaasahatva*, which was statistically significant with $p < 0.05$. Mean rank of left knee joint *Sparshaasahatva* in group A showed better mean value i.e.16.00 and 17.00 while comparing with group B i.e.25.00 and 24.00 of AT and AF respectively in reliving *Sparshaasahatva*, which was statistically significant with $p < 0.05$.

So this study affirms that posterior *Janu Basti* is effective in reliving *Sparshaasahatva* in *Janu Sandhigata Vata*, compare to anterior *Janu Basti*. Posterior *Janubasthi* is effective because of relaxing the muscles that are supporting the knee joint, compare to anterior *Janubasthi*.

As *Acharya Sushruta* says, there will not be occurrence of *Shoola* without *Vata*, the *Murchita Tila Taila* having the *Vedana Sthapana* property, and it does *Vatahara* action due to *Ushna Virya* and *Taila* having *Snigdha, Guru Guna* helps in *Vatahara*, leading to *Shamana* of *Sparshaasahatva*.

Effect of therapies on *Sandhi Shotha*:

In group A: An assessment of right knee joint *Sandhi Shotha*, mean of *Sandhi Shotha* BT, AT and AF was reduced from 40.440, 39.950 and 39.685 respectively, which was statistically significant with $p < 0.05$. An assessment of left knee joint *Sandhi Shotha*, mean of *Sandhi Shotha* BT, AT and AF was reduced from 40.220, 39.710 and 39.400 respectively, which was statistically significant with $p < 0.05$.

In group B: An assessment of right knee joint *Sandhi Shotha*, mean of *Sandhi Shotha* BT, AT and AF was reduced from 40.010, 39.315 and 39.055 respectively, which was statistically significant with $p < 0.05$. An assessment of left knee joint *Sandhi Shotha*, mean of *Sandhi Shotha* BT, AT and AF was reduced from 40.040,
39.440 and 39.205 respectively, which was statistically significant with $p < 0.05$.

Between the groups: Mean rank of right knee joint *Sandhi Shotha* in group B showed better mean value i.e.39.31and 39.05 while comparing with group A
i.e.39.95 and 39.68 of AT and AF respectively in reliving *Sandhi Shotha*, this was statistically not significant with $p < 0.05$. Mean rank of *Sandhi Shotha* in group B showed better mean value i.e.39.44and 39.20 while comparing with group A
i.e.39.71 and 39.20 of AT and AF respectively in reliving *Sandhi Shotha*, which was statistically not significant with $p < 0.05$.

So this study affirms that anterior *Janu Basti* is effective in reliving *Sandhi Shotha* in *Janu Sandhigata Vata*, compare to posterior *Janu Basti*.

Shotha is noticed in the anterior aspect of *Janu Sandhi* so anterior *Janu Basti* has shown the significant result.

Effect of therapies on *Sandhi Shoola*:

In group A: An assessment of Right and left knee joint *Sandhi Shoola* in patients with posterior *Janu Basti at* BT, AT and AF showed statistically significant with $p <$
0.05. And effect between the intervals BT –AT and BT – AF and AT-AF showed
significant with Bonferroni correction (0.0166).
In group B: An assessment of Right and left knee joint *Sandhi Shoola* in patients with anterior *Janu Basti at* BT, AT and AF showed statistically significant with $p <$
0.05. And effect between the intervals BT –AT and BT – AF and AT-AF significant with Bonferroni correction (0.0166).

Between the groups: Mean rank of right knee joint *Sandhi Shoola* in group A showed better mean value i.e.17.38 and 14.18 while comparing with group B
i.e.23.63 and 26.83 of AT and AF respectively in reliving *Sandhi Shoola*, which was statistically significant with $p < 0.05$. Mean rank of left knee joint *Sandhi Shoola* in group A showed better mean value i.e.17.23 and 15.68 while comparing with group B i.e.23.78 and 25.33 of AT and AF respectively in reliving *Sandhi Shoola*, which was statistically significant with $p < 0.05$.

So this study affirms that posterior *Janu Basti* is effective in reliving *Sandhi Shoola* in *Janu Sandhigata Vata*, compare to anterior *Janu Basti*. Posterior *Janubasthi* is effective because of drug absorption rate, fast penetration and relaxing the muscles that are supporting the knee joint, compare to anterior *Janubasthi*.

As *Acharya Sushruta* says, there will not be occurrence of *Shoola* without *Vata*, the *Murchita Tila Taila* having the *Vedana Sthapana* property, and it does *Vatahara* action due to *Ushna Virya* and *Taila* having *Snigdha*, *Guru Guna* helps in *Vatahara*, leading to *Shamana* of *Sandhi Shoola*.

Effect of therapies on *Akunchana Prasarana Vedana*:

In group A: An assessment of Right and left knee joint *Akunchana Prasarana Vedana* in patients with posterior *Janu Basti at* BT, AT and AF showed statistically significant with $p < 0.05$. And effect between the intervals BT –AT and BT – AF was significant and AT-AF showed not significant with Bonferroni correction (0.0166).

In group B: An assessment of Right and left knee joint *Akunchana Prasarana Vedana* in patients with anterior *Janu Basti at* BT, AT and AF showed statistically significant with $p < 0.05$. And effect between the intervals BT –AT and BT – AF was significant and AT-AF was not significant with Bonferroni correction (0.0166).

Between the groups: Mean rank of right knee joint *Akunchana Prasarana Vedana* in group A showed better mean value i.e.16.98 and 16.55 while comparing with group B i.e.24.03 and 24.45 of AT and AF respectively in reliving *Akunchana Prasarana Vedana*, which was statistically significant with $p < 0.05$. Mean rank of left knee joint *Akunchana Prasarana Vedana* in group A showed better mean value i.e.16.98 and 17.88 while comparing with group B i.e.24.03 and 23.13 of AT and AF respectively in reliving *Akunchana Prasarana Vedana*, where AT was statistically significant with $p < 0.05$ and AF was not significant with $p < 0.05$.

So this study affirms that posterior *Janu Basti* is effective in reliving *Akunchana Prasarana Vedana* in *Janu Sandhigata Vata*, compare to anterior *Janu Basti*. Posterior *Janubasthi* is effective because of relaxing the muscles that are supporting the knee joint in turn reliving stiffness, compare to anterior *Janubasthi*.

As there will be *Shleshaka Kapha Kshaya* in *Sandhi* because of *Vata Prakopa* in *Sandhi* ,the pain occurs during *Prasarana* and *Akunchana* of *Janu Sandhi*, *Murchita Tila Taila* having *Snigdha*, *Guru Guna*, tackles *Vata* in *Sandhi* by *Snehana* and procedural warmth thus effective in reducing the pain during *Prasarana* and *Akunchana*.

Effect of therapies on *Stambha*:

In group A: An assessment of Right and left knee joint *Stambha* in patients with posterior *Janu Basti at* BT, AT and AF showed statistically significant with $p < 0.05$. And effect between the intervals BT –AT and BT – AF was significant and AT-AF showed not significant with Bonferroni correction (0.0166).

In group B: An assessment of Right and left knee joint *Stambha* in patients with anterior *Janu Basti at* BT, AT and AF showed statistically significant with $p < 0.05$. And effect between the intervals BT –AT and BT – AF was significant and AT-AF was not significant with Bonferroni correction (0.0166).

Between the groups: Mean rank of right knee joint *Stambha* in group A showed better mean value i.e.18.18 and 19.77 while comparing with group B i.e.22.83 and 21.33 of AT and AF respectively in reliving *Stambha*, which was statistically not significant with $p < 0.05$. , Mean rank of left knee joint *Stambha* in group A showed better mean value i.e.18.00 and 19.50 while

comparing with group B i.e.23.00 and

21.50 of AT and AF respectively in reliving *Stambha*, which was statistically not significant with $p < 0.05$.

So this study affirms that posterior *Janu Basti* is effective in reliving *Stambha* in *Janu Sandhigata Vata*, compare to anterior *Janu Basti*. Posterior *Janubasthi* is effective because of relaxing the muscles that are supporting the knee joint in turn reliving stiffness, compare to anterior *Janubasthi*.

Stambha occurs by *Vata Vruddhi*, which was reduced with *Murchita Tila Taila* as it possesses the *Gunas* opposite to *Vata Dosha* and does *Vata Shamana*. Drug action and procedural warmth together reduces the *Stabdhata* of the knee joint. **Effect of therapies on WOMAC INDEX:**

In group A: An assessment of Right and left knee WOMAC INDEX in patients with posterior *Janu Basti at* BT, AT and AF showed statistically significant with $p < 0.05$. And effect between the intervals BT –AT and BT – AF was significant and AT-AF showed not significant with Bonferroni correction (0.0166).

In group B: An assessment of Right and left knee joint WOMAC INDEX in patients with anterior *Janu Basti at* BT, AT and AF showed statistically significant with $p <$
0.05. And effect between the intervals BT –AT and BT – AF was significant and AT-AF was not significant with Bonferroni correction (0.0166).

Between the groups: Mean rank of right knee joint WOMAC INDEX in group A showed better mean value i.e.16.52 and 14.70 while comparing with group B
i.e.24.48 and 26.30 of AT and AF respectively in increasing WOMAC INDEX, which was statistically significant with $p < 0.05$. Mean rank of left knee joint WOMAC INDEX in group A showed better mean value i.e.15.88 and 16.13 while comparing with group B i.e.25.13 and 24.88 of AT and AF respectively in increasing WOMAC INDEX, which was statistically significant with $p < 0.05$.

So this study affirms that posterior *Janu Basti* is effective in increasing WOMAC INDEX in *Janu Sandhigata Vata*, compare to anterior *Janu Basti*. Posterior *Janubasthi* is effective because of drug absorption rate, fast penetration and relaxing the muscles that are supporting the knee joint, compare to anterior *Janubasthi*.

Janubasti is a kind of *Bahya Snehayukta Sweda*,[6] *Bahirparimarjana Chikitsa*. *Tilataila* is a *Vataghna*,[7] which counteracts *Ruksha* and *Sheeta Guna* of *Vata* by its *Snigdha Guna* and *Ushna Virya*. *Ushna Virya* of drug and procedural warmth will reduce stiffness. By the combined effect of the *Murchita Tila Taila* and the procedural warmth do Snehana and Swedana leading in qualitative improvement of physical activities and nourishment of knee joints of the patients.

5. Probable mode of action of *Janubasti:*

Janubasti is unique as it comprises both *Snehana* and *Swedana*, which is a kind of *Snehayukta Sweda, Sagni, Ekanga, Snigdha, Drava,* and retaining type of *Bahirparimarjana Chikitsa. Janubasti* is *Snigdha* and *Shamana Swedana.* The *Tiryak Dhamanis* are connected to the *Romakoopa*, through these *Dhamanis* the *Virya* of *Aushada* used in *Abhyanga, Parisheka, Avagaha, Upanaha, and Alepa* enters into the *Twak* and undergoes *Paka* through *Bhrajaka Pitta*. *Acharya Vaghhata* explains the same that *Bhrajaka Pitta* does the

Pachana of drugs used for the *Abhyanga, Parisheka* and *Lepa*. In other context it is said that oil used for anointing cleanses the channels of Sira, *Romakoopa* and *Dhamanis* and bestows strength to body. *Acharya Sushruta* while explaining about the benefits of Lepa opines that the *Virya* of *Lepa Dravya* enters into the *Romakoopa* and carried by *Swedavaha Srotas*. All these references in *Samhita* indicate about the absorption of drug applied over the skin.

In *Janusandhigata Vata,* as there is *Vata Prakopa* in *Janu Sandhi*, there is involvement of *Snayu* of *Janu Sandhi*; *Snigdha Swedana* helps to normalize *Vata*. The *Stambha, Shoola, Shotha* also reduced by the *Snehana* and *Swedana* action of *Janubasti*. The drug in *Murchita Tila Taila* used for Janubasti is having *Vatahara* property which adds to response of pain and also it reduces the swelling by its anti- inflammatory effect.

Thermal sensations

Human beings have thermal sensory receptors in the body, which can perceive different gradations of temperature ranging from freezing cold to burning hot.

These thermal receptors can be explained as 3 types

1. Cold receptors
2. Hot receptors
3. Pain receptors

The pain receptors are stimulated only by extreme degrees of heat or cold. The cold and heat receptors are placed immediately under the skin at discrete spots. As the temperature rises to 10 to 15degree Celsius, the cold pain impulses cease but

cold receptors begin to be stimulated reaching the peak stimulation at about 24 degree & fading out slightly above 40 degree Celsius. Above 30 degree Celsius the warmth receptors begin to be stimulated, but these also fade out at about 49 degree Celsius. Finally at about 45 degree Celsius the heat pain fibers begin to be stimulated by heat and paradoxically some of the cold fibers begin to be simulated again possibly because of thedamage to the cold endings caused by excessive heat Extreme degree of the both cold and heat is painful and when intense enough may give almost the same quality of sensation that is freezing cold and burning hot.

Physiological effect of heat

Heating the tissues results in increased metabolic activity, increased blood flow and stimulation of neural receptors in the skin or tissues.

Increased metabolism:

The increase in metabolism is greatest in the region, where most heat is produced, which is in the superficial tissues. As a result is increased metabolism, there is increased demand for oxygen and food; thereby there is an increase output of waste products, including metabolites.

Increased blood supply

As a result of increased metabolism, the output of waste products from the cells is increased, these include metabolites, which act on the walls of capillaries and arterioles causing dilatation of these vessels, in

addition the heat has a direct effect on blood vessels, causing vasodilatation, particularly in the superficial tissues where the heating is greatest stimulation of superficial nerve endings can also cause a reflex dilatation of the arteriole. As a result of vasodilatation, there is an increased flow of blood through the area so that the necessary oxygen and nutritive materials are supplied and waste products are removed

Effect of heat on nerve endings

Heat appears to produce sedative effects. The effect of heat on nerve conduction has still to be thoroughly investigated. Heat has been applied as a counter irritant, which is the thermal stimulus, may affect the pain sensation as explained by the gate theory of melzack and wall

Increased activity of sweat glands

There is reflex stimulation of sweat glands in the area exposed to heat, resulting from the effect of heat on the sensory endings. As the heated blood

circulates throughout the body, it affects the centers concerned with regulation of temperature, and there is increased activity of sweat glands through the body.

Muscle tissue

Rise in temperature induces muscle relaxation and increases the efficiency of muscle action. As the increased blood supply ensures the optimum condition for muscle contraction.

Medicinal effect:

Taila is for treating *Vatavyadhi*, where as *Tilataila* is best among *Tailas* for the process of *Snehana* and *Balya*. *Tilataila* by its *Madura Rasa, Kasaya-Tikta Anurasa, Guru-Snigdha Guna, Ushna Virya, Madura Vipaka*, does *Snehana, Vedanasthapana, Balya, Sandaniya* actions. Hence reduces the symptoms of *Sandhigata Vata* and does *Asthiposhana* when *Janu Basti* is done.

Tikta Rasa *Dravya* having *Jwaraghna* and *Daha Prashamana* properties that *Tila Taila* may acts as anti-inflammatory agent and can reduce the pain and swelling of the joints. Taila is having *Snigdha, Guru, Ushna* and *Bruhmana Gunas*. Thus, helps in the *Samprapti Vighatana* of the *Janusandhigata Vata*.

Why *Taila*?

Taila was taken as it is chief *Vata* alleviating.

Na Taila Dannat Parma Asti Kinchith Dravyam Sameeranaarte.

(Cha Si. 1/29)

How?

Teshaam Tu Taila Vasa Majja Sarpishaam Yatha Purvam Sreshtam Vatashleshma Vikareshu Anuvasaneeyeshu, Yatha Uttaram Tu Pittavikareshu

(Cha.Vi. 8/153)

Tailas inherent properties like *Sneha* entangles *Ruksha Guna* of *Vata, Guru Guna - Laghu, Ushna Guna-Sheeta* respectively thus alleviating morbid *Vata Dosha*. And it gives immediate strength due to its *Anu* and *Sukshma Guna* and *Pushti* as mentioned by *Kashyapa*, which is required in all *Dhatukshayaja* disorders.

Aama Sneha creates *Abhishyandan*. Hence we should use *Pakwa* Taila i.e. by

Murchana of *Tila Taila*.

Vata have functional relationship with micro cells parts of the body. *Tila Taila* also has the penetrating power to reach the micro cells. These properties are useful for concept of *Srotasa Gamitwa* as effect of medicine comes ultimately good. So it is easy to counteract the vitiated *Vata* up to cellular level with the help of other properties like *Sneha, Guru, Sukshma, Ushna,* and *Drava*. Thus, helps in the Samprapti Vighatana of the Janusandhigata Vata.

Thus the effect of *Janu Basti* with Murchita Tila Taila in interrupting the process of pathogenesis of *Sandhigata Vata* is understood.

CONCLUSION

On the basis of the study, following conclusions can be drawn

- All the menopausal patients are having higher incidence of *Janu Sandhigata Vata.*
- *Janu Sandhigata Vata* is not only seen in *Vrudavasta* but also in *Madyamaavasta* of *Vaya* if the patients follow *Apathya Ahara* and *Vihara*.
- Posterior *Janu Basti* is clinically and statistically effective in yielding better relief in the symptoms of *Janusandhigata Vata* assessed by subjective and objective parameters.
- Posterior *Janu Basti* with *Murchita Tila Taila* showed statistically significant result compare to anterior *Janu Basti* in relieving the symptoms of *Janusandhigata Vata*.
- Thus, Research Hypothesis is accepted i.e. Posterior *Janubasti* with *Murchita Tilataila* is effective in the management of *Janusandhigata Vata.*

FURTHER SCOPE FOR STUDY

- Comparative study of posterior *Janu Basti* with *Murchita Tila Taila* and other yoga's can carried out for further validating its efficacy.
- This study should be done on large sample so that definite conclusions can be drawn as the present study is limited to small sample of 40 patients.
- Study should be conducted for a longer duration so as to know the durability of the clinical effects.
- Study should be carried out incorporating electromagnetic therapy and static exercises of physiotherapy.

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