

**A COMPARATIVE CLINICAL STUDY TO EVALUATE THE
EFFECT OF AROHANA AND SADHARANA KRAMA
MATRAVASTI IN THE MANAGEMENT OF
JANUSANDHIGATAVATA**

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It is certified that work entitled “A comparative clinical study to evaluate the effect of Arohana and Sadharana krama matravasti in the management of Janusandhigatavata” is an original research work done by Dr. Udaya Ganesha B under my supervision for the degree of Doctor of Philosophy in Panchakarma (Ayurveda) to be awarded by Tilak Maharashtra Vidyapeeth, Pune. To the best of my knowledge this thesis

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I Dr. Udaya Ganesha B is the Ph.D scholar of the Tilak Maharashtra Vidyapeeth in Panchakarma (Ayurveda) subject. Thesis entitled “A comparative clinical study to evaluate the effect of Arohana and Sadharana krama matravasti in the management of Janusandhigatavata” under the supervision of Dr. Gunvant Hari Yeola, solemnly affirm that the thesis submitted by me is my own work. I have not copied it from any source. I have gone through extensive review of literature of the related published/unpublished research works and the use of such references made has been acknowledged in my thesis. The title and the content of research is original. I understand that, in case of any complaint especially plagiarism, regarding my Ph.D, research from any party, I have to go through the enquiry procedure as decided by the Vidyapeeth at any point of time. I understand that, if my Ph.D thesis (or part of it) is found duplicate at any point of time, my research degree will be withdrawn and in such circumstances, I will be solely responsible and liable for any consequences arises thereby. I will not hold T.M.V, Pune responsible and liable in any case.

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ABSTRACT

Person will be miserable due to affliction of locomotion. Osteoarthritis is one such disorder where the person will be handicapped in the later half. Osteoarthritis is the commonest form of degenerative joint disorder. It is being the commonest form of arthritis affecting the knee joint in elderly people. Most of the individuals over 60 years of age will show radiological evidence of Osteoarthritis in one or both the knees. World arthritis day is celebrated on October 12th every year.

Janusandhigatavata is a condition in which vitiated vata reside in the knee joint to exhibit symptoms. This can be compared with the Osteoarthritis of knee in contemporary system of medicine. Disease sandhigatavata is mentioned in Charakasamhita under the heading of Vatavyadhi. It is coming under gatavata type of disorder. Vatavyadhi is one among the Ashtamahagada. It is madhyamarogamargagata, asthidhatupradoshajavatavikara.

Vasti karma having multidimensional action is the best suited panchakarma to overcome the morbid vatadosha. Basti made up of drug possessing bitter taste is the ideal choice where involvement of vata along with asthi and majja dhatu. Matravasti is the simple and easiest method of administration of fatty material without any ill effect. Minimum quantity of fatty material is administered in matravasti. It is having good absorption rate, swift action and high efficacy. Hence the present study “**A comparative clinical study to evaluate the effect of Arohana and Sadharana krama matravasti in the management of janusandhigatavata**” is undertaken. In the present study **nirupasthambhajanusandhigatavata (anavrita)** patients were included.

Objectives of the Study:

To evaluate the effect of Arohana krama matravasti in janusandhigatavata

To evaluate the effect of Sadharana krama matravasti in janusandhigatavata

To evaluate the comparative efficacy of Arohana and Sadharana krama matravasti in janusandhigatavata

Materials and methods:

Total 150 patients were selected from O.P.D of Shri JayendraSarasaswathi Ayurveda College and Hospital, Nazarathpet, Chennai after duly fulfilling the inclusion and exclusion criteria. 150 patients were divided in two groups of 75 each. Group-A received Sadharana krama matravasti for nine days (72 ml each day) and Group-B

received Arohana krama matravasti for nine days in increasing order of the dose (starting with 48ml, increasing 12ml each day and 144 ml on 9th day) of Panchatiktaghrita.

Results:

Results were assessed by comparing the baseline data of subjective and objective parameter to the follow up data. All the results were analyzed using t test.

Improvement in Group-A (Sadharana Krama):

Mild response in 19 (25.33%), Moderate response in 54 (72%) and Good response in 02 (2.67%) patients were observed.

Improvement in Group-B (Arohana Krama):

Mild response in 26 (34.67%) and moderate response in 49 (65.33%) patients were observed.

Final Outcome:Sadharana Krama matravasti has shown 3.19% of better improvement than Arohana Krama matravasti.

Key words:Janusandhigatavata, Vasti, Arohana, Sadharana, Matravasti, Osteoarthritis of Knee, Panchakarma

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ABBREVIATIONS

A.H	Ashtanga Hridaya
A.S	Ashtanga Sangraha
B.R	Basava Rajeeyam
Bha.Pr	Bhava Prakasha
C. D	Chakra Dutta
Cha.Sa	Charaka Samhita
G.R	Good Response
H. S	Highly Significant
KP	Kaphapitta
K.S	Kashyapa Samhita
M.R	Moderate Response
Ma.Ni	Madhava Nidana
Mi.R	Mild Response
N.R	No Response
N. S	Nothing Significant
P.R	Poor Response
Su.Sa	Sushruta Samhita

Y.R	Yogaratnakara
VK	Vatakapha
VP	Vatapitta
PK	Pittakapha
V.S	Vangasena

INTRODUCTION

Man becomes prey to many diseases as the advancement of age. Person will be miserable due to affliction of locomotion. Vata is the responsible factor for each and every activity taking place in the body.

सर्वा हि चेष्टा वातेन स प्राणः प्राणिनां स्मृतः । च.सू.१७/११८

Pitta and kapha will be inactive in the absence of vata as cloud moves in the direction of wind.

पित्त पङ्कं कफ पङ्कं पङ्गवो मलधातवः ।

वायुना यत्र नीयन्ते तत्र गच्छन्ति मेघवत् ॥ शा.प्र.ख ५/२५

Basti karma is the major panchakarma considered as ardha chikitsa to overcome the morbid vata.

तस्मात् चिकित्सार्थमिति ब्रुवन्ति सर्वा चिकित्सामपि बस्तिमेके । च.सि.१/४०

Janusandhigatavata is a condition in which vitiated vata reside in the knee joint to exhibit symptoms. Disease sandhigatavata is mentioned in Charaka samhita under the heading of Vatavyadhi. Symptoms of Sandhigatavata mentioned in Ayurvedic classics include, वातपूर्णदृतिस्पर्शः शोथः सन्धिगतेऽनिले ।

प्रसारणाकुञ्चनयोः प्रवृत्तिश्च सवेदना ॥ च.चि.२८/३७

Ayurveda not merely curing the disease but also aims at prevention and progression of health. Ayurveda being the science of life gives importance to complete package of treatment modalities such as shodhana, shamana and rasayana chikitsa. Ayurvedic physician can treat the chronic ailments by means of Panchakarma. The diseases get rid off from its root by eliminative therapy having less chance of recurrence.

दोषाः कदाचित् कुप्यन्ति जिता लङ्घनपाचनैः ।

जिताः संशोधनैर्ये तु न तेषां पुनरुद्भवः ॥ च.सू.१६/२०

Disease janusandhigatavata can be compared with Osteoarthritis of knee joint in contemporary system of medicine. Most of the individual over 60 years of age will show radiological evidence of Osteoarthritis of knee in one or both the knee. Knee joint is one of the major weight bearing joint of the body. Osteoarthritis is the second commonest problem of the musculoskeletal system in the world population (30%) after back pain, which is 50% according to World Health Organization. Commonest

clinical manifestation of Osteoarthritis of knee include pain, restricted movement, pain during movement, swelling, tenderness, crepitus and morning stiffness of the affected joint will mimic to that of janusandhigatavata. **World arthritis day is celebrated on October 12th every year.**

In contemporary system of medicine NSAIDS and surgical measures are the major treatment principle prescribed for arthritis of knee joint. Recent reports of hazardous effects of NSAIDS on renal function, gastrointestinal system, electrolytes and blood pressure are noted. These are only a symptomatic and temporary relief yielding measures to the patients. Surgical procedures are very much costlier to bear for a common man.

Janusandhigatavata is a madhyama rogamargagata vataja vikara, where gambheera dhatus (deep tissues like asthi and majja) are involved. Asthi dhatu does the dharana of the shareera, gives shelter to vata dosha. तत्रास्थीनि स्थितो वायुः.....।
अ.ह.सू.११/२६

Sandhigatavata will result due to decrease in asthi dhatu and increase in vata dosha. Sandhigata, asthi majjagata vata and asthi vaha srotogata vikara chikitsa principles are followed in the management of janusandhigatavata.

स्नेहोपनाहाग्निकर्मबन्धनोन्मर्दनानि च ।

स्नायुसन्ध्यस्थिसंप्राप्ते कुर्यात् वायावतन्द्रितः ॥ सु.चि.४/८

बाह्याभ्यन्तरतः स्नेहैरस्थिमज्जगतं जयेत् । च.चि.२८/९३

अस्थ्याश्रयाणां व्याधीनां पञ्चकर्माणि भेषजम् ।

बस्तयोः क्षीरसर्पिषी तित्तकोपहितानि च ॥ च.सू.२८/२७

Panchatikta being asthi dhatu specific carried to pakwashaya, which is the major site of vata by means of vasti karma (matravasti) for nine days (to reach majja dhatu), thereby reduce the symptoms of janusandhigata vata.

....स्थानं वातस्य तत्रापि पक्वाधानं विशेषतः । अ.ह.सू.१२/१

दत्तस्तु प्रथमो बस्तिःस्नेहयेद्वस्तिवक्षणौ ।

.....अष्टमो नवमश्चास्थि मज्जानं च यथाक्रमम् ॥ सु.चि.३७/७१-७४

Janusandhigatavata is a disease of dhatu kshaya (asthi dhatu kshaya) janya vata vikara can be managed hypothetically by giving tikta brihmana dravya (Panchatikta Ghrita)

sadhita matravasti for nine days. **In the present study janusandhigatavata patients of nirupasthambhita vata (anavrita vata) are included.**

केवलं निरुपस्तम्भमादौ स्नेहैरुपाचरेत् । च.चि.२८/७५

Acharya Vagbhata mentioned matravasti and pratimarsha nasya can be administered from birth till death (daily).

रूक्षाय बहुवाताय स्नेह बस्तिं दिने दिने । सु.चि.३७/७८

आजन्ममरणं शस्तः प्रतिमर्शस्तु बस्तिवत् । अ.ह.सू.२०/३२

It is an attempt made to revalidate the effect of matravasti in arohana and sadharana krama in janusandhigatavata patients. Studies are not available on arohana krama matravasti in janusandhigata vata with Panchatikta Ghrita to the best of our knowledge. Principles of arohana krama matravasti mentioned in Adhamalla's commentary on Sharangadhara samhita uttarakhanda are followed.

तथा यस्य त्रिपली मात्रार्हति तस्य पलं प्रथमं देयं ततश्च कर्षेण वृद्धिः एवं नवभिर्दिनेः त्रिपली मात्रा भवति । दीपिक ठीक(आढमल्ल)-(शा.उ.५/५)

This study was aimed on the Ayurvedic principles and parameters, whereas modern methodology of research cannot be ignored.

वातं स्नेहेन मित्रवत्.....। यो.र

All the acharyas have opined the importance of snehana chikitsa in vata vikara, hence the present study **“A comparative clinical study to evaluate the effect of Arohana and Sadharana krama matravasti in the management of Janusandhigatavata”** is selected.

AIM

To revalidate the effect of Sadharana krama matravasti in nirupasthambha janusandhigatavata patients

To revalidate the effect of Arohana krama matravasti in nirupasthambha janusandhigatavata patients

OBJECTIVES OF THE STUDY

To evaluate the effect of Arohana krama matravasti in nirupasthmbha janusandhigatavata patients

To evaluate the effect of Sadharana krama matravasti in nirupasthmbha janusandhigatavata patients

To evaluate the comparative efficacy of Sadharana krama matravasti with Arohana krama in nirupasthmbha janusandhigatavata

REVIEW OF LITERATURE

REVIEW ON B(V)ASTI KARMA

Historical review:

History is an important aspect to understand the growth and development of Ayurveda. Ayurveda being the upaveda of Atharva Veda, it is essential to know the status of Ayurveda since Vedic period. There are some references available on vasti karma in Vedas and puranas. There is no mentioning of Matra vasti in the Vedic literatures.

Vedas-Puranas:

Minor surgeries can be substituted by Vasti Karma in Koushika Sootra of Atharva Veda¹.

In Gheranda Samhita, Vasti karma is explained under Shatkarma². Fatigue can be relieved instantaneously, if employed in horses, as explained in Ashwa Chikitsa Kathana of Agni Purana³. There is no direct mentioning of matravasti in Vedas/Puranas.

Samhita kala:

Charaka Samhita:

Indications, benefits and dose of matravasti is mentioned in Sneha vyapat siddhi adhyaya of Charaka Siddhithana⁴. Chakrapani has clarified the dose of matravasti in the same chapter.

Sushruta Samhita:

Acharya Sushruta mentioned matravasti as sub classification of Snehavasti basing on the quantity of Sneha in Netravasti pramana pravibhaga adhyaya of chikitsa sthana⁵. Number of days required to reach the different dhatus is also explained in Sushruta Samhita⁶.

Ashtanga Sangraha:

Acharya Vagbhata mentioned the indication of matravasti similar to madhutilika vasti in Vasti vidhi adhyaya of Sutrasthana⁷. He further mentioned about the contraindication, dose and benefits of matravasti.

Ashtanga Hridaya:

Similar description on matravasti to that of Ashtanga Sangraha, except contraindication is mentioned in Vasti vidhi adhyaya of Sutra sthana of Ashtanga Hridaya⁸.

Sangraha Kala:

Sharangadhara Samhita:

Matravasti is mentioned under the classification of anuvasana vasti in Vasti Kalpana vidhi adhyaya of 5th chapter of uttarakhanda of Sharangadhara Samhita⁹. 2pala or 1 Pala to be considered as dose of matravasti.

Bhava Prakasha:

Acharya Bhava Mishra has mentioned Matravasti as Anuvasana Vasti bheda in 5th Chapter of Poorva Khanda¹⁰. Uttama, madhyama and avara matra of Anuvasana Vasti in arohana krama is mentioned in the same chapter.

Kashyapa Samhita:

Acharya mentioned the Uttama, Madhyama and kanishta matra of Matravasti in Vasti visheshaneeya adhyaya of 8th chapter of Khilasthan¹¹. He further mentioned the dose of matravasti in children who had given up breast feeding and started eating rice.

Bhela Samhita:

Description on Matravasti is not available in Bhela Samhita. There is mentioning of Vastikarma in chapters of siddhisthana namely Basti matra siddhi, Upakalpa siddhi, Phalamatra siddhi and Dasha Vyapadika siddhi¹².

Chakradatta:

There are two chapters exclusively contributed to Anuvasana and Niruhavasti namely, Anuvasanadhikara and Niroohadhikara. He has mentioned Uttama, Madhyama and Avara matra of Anuvasana Vasti which can be administered in Arohana krama. Avara matra of Anuvasana Vasti can be contributed to Maravasti¹³.

Vangasena:

Acharya dealt Vasti karma in Vasti Karmadhikara Adhyaya¹⁴. He has mentioned similar description to that of Chakradatta. Number of basti required for specific dhatu is mentioned in the text.

Kalyanakaraka:

There is explanation on Vastikarma in Vatarogadhikara adhyaya itself.

Arohana Krama Maravasti:

There is description on Arohana Krama Matravasti in the Adhamallas commentary on Sharangadhara Samhita uttarakhanda 5th Chapter namely Vasti Vidhi Adhyaya¹⁵. Uttama, madhyama and avara matra of Anuvasana Vasti with arohana krama matra is mentioned in 5th Chapter of Poorva khanda of Bhavaprakasha¹⁶, Anuvasanadhikara of Chakradatta¹⁷ and Vastikarmadhikara of Vangasena¹⁸.

Etymology of Vasti:

The word “वस्ति/बस्ति” is derived from the root word “वस्/बस्” with “चित्” प्रत्यय, belonging to masculine gender.

The root “वस्/बस्” carries following meaning according to Siddhanta Koumudi.

“वसु निवासे”-Means to Reside, Dwell or Stay

“वसु आच्छादने”-Means to cover or Wrap

“वसु वासने सुरभिकरणे”-Gives fragrance

“वस्ते आवृणोति मूत्रम्”-That which retains or Covers mootram

“वस्तिः नाभेरधोभागस्थाने ”-The area below the umbilicus

Paribhasha:

बस्तिनां दीयते इति बस्तिः । अरुणदत्त(अ.हृ.सू.१९/१)¹⁹

बस्तिभिर्दीयते यस्मात् तस्मात् बस्तिरितिः स्मृतः । शा.उ.५/१²⁰

बस्तिना दीयते बस्तिं वा पूर्वमन्वेत्यतो बस्तिः । हेमाद्रि (अ.हृ.सू.१९/१)²¹

The bag made up of animal bladder is known as basti.

The bladder of animals were used to administer basti in olden days. The medicines in the form of kashaya, taila, Ghrita, vasa etc administered through vastinetra from vasti putaka will reach the lower abdomen and even to the urinary bladder, hence the name vasti. Vasti Karma is one of the important procedure in Panchakarma. It is also known as Ardha Chikitsa or Sampurna Chikitsa. Acharya Charaka defined Vasti karma²² as the therapy which while moving in the umbilical region, lumbar region, sides of the chest and pelvic region churns up the stool including all the other morbid matter located there, and appropriately eliminates them (stool and other materials) with ease after nourishing the body is called basti.

नाभिप्रदेशं कटिपार्श्वकुक्षिं गत्वा शकृद्दोषचयं विलोच्च ।

सस्नेह्य कायं सपुरीषदोषः सम्यक् सुखेनैति च यः स बस्तिः ॥ च.सि.१/४०

Shareera/Anatomy:

Knowledge of Anatomy & Physiology of rectum and large intestine is essential to a Panchakarma specialist, as the Vasti dravya administered will contact these areas.

Guda Shareeram:

Table No: 1 showing the synonyms of Guda:

SI No	Author/Book	Synonyms/Paryaya
1	Amarakosha	Apanam, Payu
2	Charaka ^{23,24}	Uttaraguda, Adhara Guda, Sthula Guda, Guda Mukha
3	Dalhana	Gudantra
4	Gangadhara	Bradhanam
5	Jatadhara	Guhyam, Guda Vartmam
6	Sushruta	Gudoushta, Gudamandala, Gudavalaya, PayuValaya
7	Vachaspati	Vitmarga
8	Vagbhata	Gudamarga
9	Vijayarakshita	Apana, Maha Srotas

Guda is defined as “मलत्याग द्वारम्”

Guda is mentioned as one among the dasa pranayatana (ten Vital Points/areas), bahirmukha srotas and sadyo pranahara marma.

There is elaborate description on anatomical structure of Guda in the context of Arsho roga of Sushruta samhita. Guda is an extension of sthoolantra, having four and half angula in length. It is having three parts namely Gudavalitraya²⁵.

Table No: 2 showing the measurement of Gudavalis:

SI No	Name of the Guda vali	Pramana/Measurement
1	Pravahini	One angula pramana, helps in pravahana and contraction of intestine
2	Visarjinee	One and half angula measurement, helps in mala visarjana and evacuation
3	Samvarani	One and half angula measurement, does the samvarana and helps in contraction of the sphincter

Gudoushta is a structure situated one and half yava pramana from the end of hairs. Distance between gudoushta and the first gudavali, samvarani is one angula pramana. The colour of the vali is similar to that of elephant's palate and having a width of one angula pramana²⁶.

Uttara Guda and Adhara Guda:

Uttara Guda and Adhara Guda were mentioned under panchadasha koshtangas by Acharya Charaka²⁷. Acharya Chakrapani opined Uttaraguda will help in storage of Pureesha where as Adhara Guda in expulsion of the same. Rectum and anus can be compared with Uttara Guda and Adhara guda respectively by the recent authors/commentators.

पञ्चादश कोष्ठाङ्गानि; तद्यथा-नाभिश्च, हृदयं च, क्लोम च, यकृच्च, प्लीहा च, वृक्कौ च, वस्तिश्च, पुरीषधारश्च, आमाशयश्च, पक्वाशयश्च, उत्तरगुदं च, अधरगुदं च, क्षुद्रान्त्रं च, स्थूलान्त्रं च, वपावहनं चेति । च.शा.७/१०

Marma/Vital Points:

There are hundred and seven marma sthanas according to Acharya Sushruta²⁸ and Vagbhata²⁹. Any injury to these vital points will result in deformity to death of the person. Hence it is essential to understand the concept of marma to a panchakarma vaidya before administering vasti karma. Guda marma comes under the classification of Udara marma according to anatomical distribution³⁰. It is falling under the classification of Mamsamarma according to anatomical structure³¹. It is classified as sadhyopranahara marma basing on the effect of injury³². It is having measurement of four angulas³³. It is attached to the sthoolantra through which Vata and pureesha is expelled out³⁴.

सप्तोत्तरं मर्मशतम्.....। अ.हृ.शा.४/१

उदरोरसोस्तुगुदबस्तिनाभिहृदयस्तनमूलस्तनरोहितापलापान्यपस्तम्भौ चेति । सु.शा.६/६

तत्र तलहृदयेन्द्रवस्तिगुदस्तनरोहितानि मांसमर्माणि.....। सु.शा.६/७

शृङ्गाटकान्यधिपतिः शङ्खौ कण्ठसिरा गुदम् ।

हृदयं बस्तिनाभ्यौ च घ्नन्ति सद्यो हतानि तु ॥ सु.शा.६/९

हृद्वस्तिकूर्चगुदनाभि वदन्ति मूर्ध्नि चत्वारि.....। सु.शा.६/२९

तत्र वातवर्चोनिरसनं स्थूलन्त्रप्रतिबद्धं गुदं नाम मर्म, तत्र सद्यो मरणम्..... । सु.शा.६/२५

Pranayatanas:

These are the vital spots similar to marma, where life of an individual lies. Guda is mentioned as one of the Dasha pranayatana³⁵ according to Acharya Charaka.

शङ्खौ मर्मत्रयं कण्ठो रक्तं शुक्राजसी गुदम् । च.सू.२९/३

Physiology of Guda:

Guda is mentioned as one among the pancha karmendriyas which does the excretion of fecal matter³⁶. Apana vayu which is residing in the Guda helps to excrete pureesha³⁷. Even after the administration of Vasti dravya, which will be eliminated out along with pureesha and vayu by virtue of Apana vata.

Mechanism of Defecation through Gudavalis according to Acharya Gananathsen can be understood as follows.

Table No: 3 showing the Mechanism of Defecation:

Sl.No	Gudavali	Action/Function
1	Pravahini	Helps in compression and pushing downwards
2	Visarjini	Relaxes during the process and allows the stool to pass further down
3	Samvarani	Expels the stool out and constricts immediately, by means of that break in continuity of stool and falls down.

Physiology of Defecation in Ayurveda:

Digestion of food, separation of nutrients and waste products, absorption of nutrients and elimination of waste products are influenced by Samana vata³⁸. Apana vata completes the act of defecation³⁹.

समानोऽग्निसमीपस्थः कोष्ठे चरति सर्वतः ।

अन्नं गृह्णाति पचति विवेचयति मुञ्चति ॥ अ.ह.सू.१२/८

अपानोऽपानगः श्रोणिबस्तिमेद्वोरुगोचरः ।

शुक्रार्तवशकृन्मूत्रगर्भनिष्क्रमणक्रियाः ॥ अ.ह.सू.१२/९

Modern View:

Defecation is the process of elimination of feces. It is due to voluntary contractions of abdominal muscles and diaphragm and relaxation of external anal sphincter. Fecal matter will be pushed in to the rectum from sigmoid colon by mass peristaltic movements. Defecation reflex will be initiated due to distention of rectal wall which in turn stimulate the stretch receptors. Sensory nerve impulse will be transmitted to sacral spinal cord due to rectal wall distention. Internal anal sphincter will open due to voluntary contraction of diaphragm and abdominal muscles, increased pressure within the rectum along with parasympathetic stimulation. Feces will be expelled as a process of defecation due to voluntary relaxation of external anal sphincter⁴⁰.

Table No: 4 showing the guda vali sthana and its modern terminology

Sl.No	Guda Vali	Equivalent Modern Term	Position
1	Pravahini	Middle Houstans Valve	Proximal
2	Visarjini	Inferior Houstans Valve	Middle
3	Samvarani	Dentate Line	Distal

Pakwashaya/Large Intestine:

Acharya Sushruta considered Pakwashaya as one among the eight ashayas⁴¹. It is the seat of Pakwa anna, which forms the pureesha as explained by Arunadatta⁴². This will come under the classification of Koshtangas according to Charaka⁴³ and Vagbhata⁴⁴. Pakwashaya (Pavanashaya) is located below the Tilam; which will be kloma and yakrit according to Acharya Sharangadhara⁴⁵. Large bowel or large intestine is horse shoe shaped extending from ileocecal valve to the anus. It is having the length of 1.5 meters and width of 7.5cms.

आशयस्तु-वाताशयः, पित्ताशयः, श्लेष्माशयो, रक्ताशयः, आमाशयः, पक्वाशयो, मूत्राशयः, स्त्रीणां गर्भाशयोऽष्टम इति । सु.शा.५/८

पक्वस्यान्नस्य-पुरीषतां प्राप्तस्य, य आधारः स पक्वशदेनोच्यते । अरुणदत्त ठीक (अ.ह.शा.३/११)

कोष्ठाङ्गानि स्थितान्येषु हृदयं क्लोमं पुष्फुसम् ।

यकृत्प्लीहोन्दुकं वृक्कौ नाभिदिम्भान्त्रबस्तयः ॥ अ.ह.सू.३/१२

तस्योपरि तिलं ज्ञेयं तदधः पवनाशयः ।

मलाशयस्त्वधस्तस्माद्धस्तिर्मूत्राशयस्त्वधः । शा.प्र.५/८-९

तिलमित्यनेन क्लोमं कथितम् तत्पिपासस्थानमित्यभिप्रायः । दीपिक ठीक(आढमल्ल) शा.प्र.५/८-९

Table No: 5 showing the subdivisions of large intestine

1	Caecum	T portion
2	Colon	Large portion 1.5m
3	Rectum	5inch
4	Anal Canal	4cm

Goblet cells present in Intestinal mucosa and tenia coli present in muscularis. Peristalsis, mass peristalsis and haustral churning are the mechanical movements of large intestine. Bacterial action in the large intestine is responsible for last stages of chemical digestion.

Some vitamins are synthesized in large intestine. Vitamins, water and electrolytes are absorbed in large intestine. Bacteria, water, undigested food, inorganic salts and epithelial cells are the content of fecal matter.

Absorption in Large Intestine:

Large intestine plays an important role in reabsorption of water. 200ml of feces will be eliminated out even after the intake of 1500ml of food material every day⁴⁶.

Table No: 6 showing the structure and functions of Rectum

Structure	Action	Function
Mucosa	Secretion of mucosa, absorption of water and some other soluble materials	Absorption of Vitamins and Electrolytes, sending toxic material to liver for detoxification, Solidification of Stool, Water balance maintenance, lubrication of colon and protection of mucosa.
Lumen	Activity of Bacteria	Undigested carbohydrates, protein and amino acids broken down to products, which will be absorbed or excreted through feces or detoxification by the liver, synthesis of Vitamin B and K
Muscularis	Haustral Churning	Muscular contraction will aid in movement of contents from haustrum to haustrum
	Peristalsis	Circular and longitudinal muscles contract to mobilize the contents along the length of the colon
	Mass Peristalsis	Peristaltic waves will direct the content into sigmoid colon and rectum
	Defecation	Contractions of the sigmoid colon and rectum will excrete the feces out

Vasti Karma:

Panchakarma plays an important role in managing various diseases. Panchakarmas are the five major treatment modalities include Vamana, Virechana, Anuvasana Vasti, Asthapana Vasti and Nasya Karma^{47, 48}. Vasti karma; one among the Panchakarma, is the prime therapy for Vastic ailments. Neurological and locomotor diseases can be easily tackled by means of vasti karma. Vasti karma is employed with proper consideration and utmost care will act like nectar in various pathologies.

पञ्चकर्म वमी, रेको, निरूहोऽन्वास-नावनम् इति । शा.उ.५/१

वमनं रेचनं नस्यं निरूहश्चानुवासनम् ।

एतानि पञ्चकर्माणि कथितानि मुनीश्वरैः ॥ शा.उ.८/६३

Importance of Vasti Karma:

Vasti Karma is considered as amrita according to Kashyapa due to its multifaceted application in children and adults⁴⁹. Vasti karma can be administered from birth to death in all age group and sex^{50, 51}. It can be administered in diseases pertaining to trividha roga margas like Shakha, Koshta, Marma, Asthi and Sandhi⁵². Multi dimensional actions of vastikarma such as Samshodhana, Samshamana, Sangrahana, Ksheena shukram Vajeekaroti, immediate nourishing and depleting, anti aging property etc^{53,54}. Vasti karma can be employed in healthy as well as diseased. Hence it is constituted as Ardha or Sampurna Chikitsa.

सुप्रयुक्तं तदेवेह प्राणीनामृतोपमम् । का.खि.८/५४

आजन्ममरणं शस्तः प्रतिमर्शस्तु बस्तिवत् । अ.हृ.सू.२०/३२

बस्तिर्वयःस्थापयिता सुखायुबलाग्निमेधास्वरवर्णकृच्च ।

सर्वार्थकारी शिशुवृद्धयूनां निरत्ययः सर्वगदापहश्च ॥

विट्श्लेष्मपित्तानिलमूत्रकर्षी दाढ्यावहः शुक्रबलप्रदश्च ।

विश्वक्स्थितं दोषचयं निरस्य सर्वान् विकारान् शमयेन्निरूहः ॥ च.सि.१/२७-२८

शाखागताः कोष्ठगताश्च रोगा मर्मोर्ध्वसर्वावयवाङ्गजाश्च ।

ये सन्ति तेषां न हि कश्चिदन्यो वायोः परं जन्मनि हेतुरस्ति ॥

विण्मूत्रपित्तादिमलाशयानां विक्षेपसंघातकरः स यस्मात् ।

तस्यातिवृद्धस्य शमाय नान्यद्वस्तिं विना भेषजमस्ति किञ्चित् ॥

तस्मात् चिकित्सार्थमिति ब्रुवन्ति सर्वा चिकित्सामपि बस्तिमेके । च.सि.१/३८-३९

इह खलु बस्तिर्नानाविधद्रव्यसंयोगाद्दोषाणां संशोधनसंशमनसंग्रहणानि करोति, क्षीणशुक्रं वाजीकरोति,

कृशं बृंहयति, स्थूलं कर्शयति, चक्षुः प्रीणयति, वलिपलितमपहन्ति, वयः स्थापयति ॥ सु.चि.३५/३

कर्मान्यद्वस्तिंसमं न विद्यते शीघ्रसुखविशोधित्वात् ।

आश्रपतर्पणतर्पणयोगाच्च निरत्ययत्वाच्च ॥ च.सि.१०/५

Importance of Vasti over Vata Dosha:

Vata is the prime dosha responsible for the motion of other two doshas⁵⁵. Vata having 80 nanatmaja vikaras⁵⁶. Vata can be controlled only by means of Vasti karma. If vata under control other doshas also remain in control. In Agryoushadha it is mentioned that, “Vastir vata haranam⁵⁷”. Even in Ashtanga Hridaya sootrasthana it is mentioned that Vasti for Vata, Virechana for Pitta and Vamana for Kapha dosha⁵⁸. While

explaining the importance of Anuvasana Vasti, sneha dravya used having exactly opposite qualities to that of Vata, hence capable of conquering Vata dosha⁵⁹. Acharya Arunadatta mentioned that, Vasti is the supreme therapy administered through rectum in the form of decoction, fatty material to curb the vatic ailments⁶⁰.

पित्तं पङ्क्तुं कफं पङ्क्तुं पङ्क्तुवो मलधातवः ।

वायुना यत्र नीयन्ते तत्र गच्छन्ति मेघवत् ॥ शा.प्र.ख ५/२५

बस्तिर्वातहराणाम् । च.सू.२५/४०

शरीरजानां दोषाणां क्रमेण परमौषधम् ।

वस्तिर्विको वमनं तथा तैल घृतं मधु ॥ अ.हृ.सू.१/२५

देहे निरूहेण विशुद्धमार्गं संस्नेहनं वर्णबलप्रदं च ।

न तैलदानात् परमस्ति किञ्चिद्द्रव्यं विशेषेण समीरणार्ते ॥

स्नेहेन रौक्ष्यं लघुतां गुरुत्वादीष्याच्च शैत्यं पवनस्य हत्वा ।

तैलं ददात्याशु मनःप्रसादं वीर्यं बलं वर्णमथाग्निपुष्टिम् ॥

मूले निषिक्तो हि यथा द्रुमः स्यान्नीलच्छदः कोमलपल्लवाग्र्यः ।

काले महान् पुष्पफलप्रदश्च तथा नरः स्यादनुवासनेन ॥ च.सि.१/२९-३१

तेन वातस्य बस्तिर्गुदप्रणिदेय स्नेहक्वाथादि परमौषधम् । अरुणदत्त ठीक (अ.हृ.सू.१/२५)

Importance of Vasti over Tridosha:

Acharya Sushruta has emphasized Vasti not only implies in Vatic ailments but also in Pitta, Kapha, Rakta, Samsarga and Sannipatic ailments⁶¹.

बस्तिर्वति च पित्ते च कफे रक्ते च शस्यते ।

संसर्गे सन्निपाते च बस्तिरेव हितः सदा ॥ सु.चि.३५/६

Supremacy of Vasti karma over Virechana karma:

Vasti Karma will eliminate the morbid matters rapidly without causing any discomfort. There is no question of palatability of the medicine as it is administered through rectal route. It will nourish and deplete the body as per the requirement with respective combination of the medicine. It can be accepted by all age group of individuals. Katu, teekshna and ushna guna dravyas are required in case of Vamana or Virechana will be capable enough to eliminate the doshas. Such dravyas will be irritant and cause discomfort to the children and old age people. As this particular shodhana administered through oral route signifies the palatability of the medicine⁶².

सत्यपि दोषहरत्वे कटुतीक्ष्णोष्णादि भेषजादानात् ।

दुःखोद्गरोत्क्लेशाहृद्यत्व कोष्ठरुजा विरेके स्युः ॥

अविरेच्यौ शिशुवृद्धौ तावप्राप्तप्रहीनधातुबलौ ।

आस्थापनमेव तयोः सर्वार्थकृदुत्तमं कर्म ॥

बलवर्णहर्षमार्दवगान्नस्नेहान्नृणां ददात्याशु । च.सि.१०/६-७

Classification of Vasti Karma:

There are different classifications of Vasti karma basing on the site of administration, medicine used, action, numbers, dose etc

Table No: 7 Adhishtana Bheda (Classification on the site of Administration) ⁶³:

Sl.No	Adhishtana	
1	Pakwashayagata	Vasti administered through the rectum will reach the Pakwashaya
2	Garabhashayagata	Vasti administered through vagina will reach the Garbhashaya
3	Mootrashayagata	Vasti administered through the urethral route will reach the Mootrashaya
4	Vranagata	Vasti administered in to the Vrana

Table No: 8 Sankhya Bheda (Classification on Numbers): According to Charaka⁶⁴

Sl.No	Vasti	Anuvasana	Asthapana	Total
1	Karma	18	12	30
2	Kala	10	6	16
3	Yoga	5	3	8

त्रिंशन्मताः कर्म नु बस्तयो हि कालस्ततोऽर्धेन ततश्च योगः ॥

सान्वासना द्वादश वै निरूहाः प्राक् स्नेह एकः परतश्च पञ्च ।

काले त्रयोऽन्ते पुरतस्तथैकः स्नेह निरूहान्तरिताश्च षट् स्युः ॥

योगे निरूहास्त्रय एव देयाः स्नेहाश्च पञ्चैव परादिमध्याः । च.सि.१/४७-४८

Table No: 9 Sankhya Bheda (Classification on Numbers): According to Vagbhata⁶⁵

Sl.No	Vasti	Anuvasana	Asthapana	Total
1	Karma	18	12	30
2	Kala	9	6	15
3	Yoga	5	3	8

Table No: 10 Sankhya Bheda (Classification on Numbers): According to Kashyapa⁶⁶

Sl.No	Vasti	Anuvasana	Asthapana	Total
1	Karma	24	6	30
2	Kala	12	3	15
3	Yoga	5	3	8

Table No: 11 Karma Bheda (Classification on Action): According to Sushruta⁶⁷ and Vagbhata⁶⁸

Sl.No	Vasti	Karma/Action
1	Brimhana	Nourishing
2	Lekhana	Scrapping
3	Snehana	Oleation
4	Shodhana	Purification
5	Utkleshana	Excitation
6	Doshahara	Elimination
7	Shamana	Palliative

Table No: 12 Karma Bheda (Classification on Action): According to Charaka⁶⁹

Sl.No	Vasti	Karma/Action
1	Vataghna	Mitigates Vata
2	Vrishatwakara	Virility
3	Krimighna	Helminthiasis
4	Bala Varnakara	Colour & complexion
5	Snehaneeya	Oleation
6	Shukrakara	Increases Semen

Table No: 13 Anushanga Bheda (Classification on Special Vasti yogas):

Sl.No	Vasti	Karma/Action	Indication
1	Lekhana Vasti ⁷⁰	Scrapping	Sthoulya
2	Vaitarana Vasti ⁷¹	Amahara	Amavata
3	Ksheera Vasti ⁷²	Nourishing	Vatarakta, Asthikshaya
4	Yapana Vasti ⁷³	Antioxidant	Pakshagata, Shukrakshaya
5	Yukta ratha Vasti ⁷⁴	Nourishing	Who travel in excess
6	Siddha Vasti ⁷⁵	Bala, Varnakara	Dhatu Kshaya
7	Ardhamatrika Vasti ⁷⁶	Dhatuvaradhaka	Rajayakshma
8	Mootra Vasti ⁷⁷	Lekhana	Sthoulya, Medoroga
9	Piccha Vasti ⁷⁸	Sangrahi	Jeevadana, Pravahika, Atisara
10	Rakta Vasti ⁷⁹	Haemostasis	Raktatisara, Jeevadana

Table No: 14 Dravya Bheda (Classification based on Medicine used):

Asthapana Vasti/Kashaya/Nirooha ⁸⁰	Madhutailika Vasti	Yapana Vasti
		Yuktaratha Vasti
		Siddha Vasti
Anuvasana/Taila/Sneha Vasti ⁸¹	Sneha Vasti	6 Pala
	Anuvasana Vasti	3 Pala
	Matra Vasti	1 & half Pala

तत्र द्विविधो बस्तिः-नैरूहिकः, स्नेहिकश्च । आस्थापनं निरूह इत्यनर्थान्तरम्; तस्य विकल्पो माधुतैलिकः; तस्य पर्यायशब्दो यापनो युक्तरथ सिद्ध बस्तिरिति । सु.चि.३५/१८

यथाप्रमाणगुणविहितः स्नेहबस्तिविकल्पोऽनुवासनः पादावकृष्टः ।

अनुवसन्नपि न दुष्यत्यनुदिवसं वा दीयत इति अनुवासनः ॥ सु.चि.३५/१८

तस्यापि विकल्पोऽर्धार्धमात्रावकृष्टोऽपरिहार्यो मात्राबस्तिरिति । सु.चि.३५/१८

तस्याप्यनुवासनस्य षड्पल प्रमाणस्यार्धार्धमात्रावकृष्टः पादावशिष्टो अर्धपलमात्रा इत्यर्थः । (डल्हण)

उत्तमस्य पलैः षड्भिर्मध्यमस्य पलैस्त्रिभिः ।

पलस्यार्धेन हीनस्य युक्तामात्राऽनुवासने ॥ शा.उ.५/२०

Table No: 15 Matra Bheda (Classification on Quantity of the material):^{82, 83}

Sl.No	Vasti	Matra/Quantity
1	Dwadasha Prasrita	12 Prasrita
2	Padaheena Vasti	1/4 th less to that of 12 Prasrita
3	Other Prasrita Vasti Yogas	4,5,6,7,8,9 & 10 Prasritas

Matra Vasti:

‘Matra Vasti’ comprises two words- Matra and Vasti, here Matra refers to the quantity, dose, measurement, size etc, whereas Vasti refers to procedure of Panchakarma, Urinary bladder etc. In general, Matra Vasti refers to the therapeutic procedure of panchakarma, where in minimum quantity of sneha dravya (fatty material) is administered through rectal route. Matra Vasti coming under the classification of Sneha vasti can be administered in conditions where other kinds of Vasti are contra indicated.

The quantity of sneha used is equalent to that of hriswa matra of snehapana (intake of fatty material) is called as matra vasti. This is the definition mentioned in Charaka Samhita⁸⁴, Ashtanga Hridaya⁸⁵ Sushruta Samhita⁸⁶ and Ashtanga Sangraha.⁸⁷

Matra Vasti is the classification of Vasti based on the quantity as mentioned by Acharya Adhamalla in Sharangadhara Samhita⁸⁸.

Matra Vasti can be administered in any time and season just like Madhutailika Vasti as mentioned in Ashtanga Sangraha⁸⁹.

कर्मव्यायाम भाराध्वयानस्त्रीकर्षितेषु च ।

दुर्बले वातभग्ने च मात्राबस्तिः सदा मतः ॥

यथेष्टाहारचेष्टस्य सर्वकालं निरत्ययः ।

हृस्वायाः स्नेहमात्रायाः मात्राबस्तिः समो भवेत् ॥

बल्यं सुखोपचर्यं च सुखं सृष्ट पुरीषकृत् ।

स्नेहमात्राविधानं हि बृंहणं वातरोगनुत् ॥ च.सि.५/५२-५४

तस्यापि विकल्पोऽर्धार्धमात्रावकृष्टोऽपरिहार्यो मात्राबस्तिरिति । सु.चि.३५/१८

हृस्वया स्नेहपानस्य मात्रया योजितः समः ॥

मात्राबस्तिः स्मृतः स्नेहः शीलनीयः सदा च सः ।

बालवृद्धाध्वभारस्त्रीव्यायामासक्तचिन्तकैः ॥

वातभग्नाबलाल्पाग्निनृपेश्वरसुखात्मभिः ।

दोषघ्नो निष्परीहारो बल्यः सृष्टमलः सुखः ॥ अ.हृ.सू.१९/६७-६९

अनुवासनं यथाहर्षिषथ सिद्धः स्नेहनार्थः स्नेहः स्नेहविधौ सचतुर्धाभिहितः । तस्य भेदो मात्राबस्तिः ।

स पेयस्नेहहृस्वमात्रातुल्यः । अ.सं.सू.२८/८

सेव्यः सदा च माधुतैलिकवत् । अ.सं.सू.२८/९

मात्राकृतभेदत्वान्मात्रा बस्तिः । दीपिक ठीक (शा.उ.५/५)

अनुवासनभेद मात्राबस्तिरुदीरितः । (शा.उ.५/४)

अनुवासनभेद एव मात्राबस्तिरुदीरितः कथितः । गूढार्थ दीपिक ठीक (शा.उ.५/४)

बालवृद्धाध्वभारयानव्यायामचिन्तास्त्रीनित्यस्त्रीनृपेश्वरसुकुमारदुर्बलानिलभग्नाल्पाग्निभिर्निष्परिहारतया

सुखो बल्यो वर्ण्यः सृष्टमलोदोषघ्नश्च । तथापि तौ नाजीर्णो योज्यौ न च दिवास्वप्नः सेव्यः । यथश्च

सोऽन्नमनुवसन्नपि न दुष्यत्यनुवासरमपि वा दीयत इत्यनुवासनम् । अ.सं.सू.२८/९

TableNo: 16 showing the Indications for Matra Vasti according to various Acharyas

Sl.No	Indications	Cha.Sa	A.Sa	A.Hri
1	Karma Karshita/Excess workload	+	-	-
2	Bhara Karshita/Lifting heavy weight	+	+	+
3	Adhwagamana/Walking for long	+	+	+
4	Yana/Traveling excess	+	+	-

5	Stree Karshita/Excess Sex	+	+	+
6	Vyayama/Excess Exercise	+	+	+
7	Durbala/Weak	+	+	+
8	Vatarogi/Vatic ailments	+	+	+
9	Bala/Children	-	+	+
10	Vriddha/Old age people	-	+	+
11	Stri/Women	-	+	-
12	Chintatura/Worried	-	+	+
13	Nripa/King	-	+	+
14	Sukumara/Tender constitution	-	+	-
15	Sukhatma/Likes comfort	-	+	+
16	Alpagni/Weak digestion	-	-	+

Contraindication:

There is no much description on contraindications of Matravasti, whereas Acharya Vagbhata has mentioned better to avoid in Ajeernavasta and who always indulges diwa swapna⁹⁰.

Table No: 17 Showing the Matra/Dose of Matra Vasti

Sl.No	Acharyas	Matra/Quantity/Dose
1	Charaka	Hriswa Sneha Matra
2	Vagbhata	Hriswa Snehapanasya matra/ Which digests in 2 Yamas
3	Sushruta	1 ½ Pala=6 Tola=72ml/Half of the anuvasana Ardhardha Matravakrishta
4	Chakrapani	1 ½ Pala=6 Tola=72ml
5	Sharangadhara ⁹¹	1 ½ Pala
6	Kashyapa ^{92,93}	Utaama-2 Pala
		Madhyama-1 ½ Pala
		Heena-1 Prakuncha

समासतः सा द्विविधस्तस्य मात्रा प्रचक्षते । प्रकुञ्चः कन्यसी मात्रा, ततोऽद्यर्था तु मध्यमा ॥

उत्तमा द्विपला मात्रा मात्राबस्तौ तु भार्गव । अपस्तनस्यार्धपलं परिहार्यानिरत्यया ॥ का.खि.८/१०४-

१०५

कर्षत्रयं त्रिवर्षस्य, चतुर्वर्षस्य वै पलम् । षड्वर्षस्य तु बालस्य स्व एव प्रसृतः स्मृतः ॥

द्वौ द्वौ द्वादशवर्षाणां चत्वारः प्रसृतास्तथा । देयाः षोडशकादीनां पूर्वाह्ने वाऽन्तरेषु च ॥

यावन्मध्यं वयो, वाऽर्थे त्वपकर्षेद्यथाक्रमम् । समीक्ष्य देहदोषाग्निबलं प्रकृतिमेव च ॥

स्नेहप्रमाणं यद्वस्तौ निरूहस्त्रिगुणस्ततः । का.खि.८/१०६-१०९

Table No: 18 showing the Matra of Matra Vasti according to Vaya/Age

Sl.No	Vaya/Age in years	Matra in Tola	Sl.No	Vaya/Age in years	Matra in Tola
1	1	¼	11	11	2 ¾
2	2	½	12	12	3
3	3	¾	13	13	3 ½
4	4	1	14	14	4
5	5	1 ¼	15	15	4 ½
6	6	1 ½	16	16	5
7	7	1 ¾	17	17	5 ½
8	8	2	18	18	6
9	9	2 ¼	19	18-70	6
10	10	2 ½	20	70 & Above	5

Arohana Krama Matra Vasti: ⁹⁴

Arohana Krama Matra Vasti is mentioned in Adhamalla's commentary on Sharangadhara Samhita.

तस्येति मात्रा बस्तेः पलद्वयं द्विपलप्रमाणम् ।

तस्मादिति द्विपलार्धपलप्रमाणमात्रा भवेत् । एतेनायमर्थः संपन्नः यस्योत्तमा पलादिमात्रार्हति तस्य द्विपलां प्रथमः ।

ततः पलार्धेन वृद्धिः एवं नवभिर्दिनैः षड्पली मात्रा पूर्णा भवति । तथा यस्य त्रिपली मात्रार्हति तस्य पलं प्रथमं देयं ततश्च कर्षेण वृद्धिः एवं नवभिर्दिनैः त्रिपली मात्रा भवति । एवं कनीयसि मात्राऽपि ज्ञेया सापि वाग्रहणादपि बोद्धव्या । दीपिक ठीक(आढमल्ल)-(शा.उ.५/५)

Table No: 19 showing the Arohana Krama Matra Vasti Matra/Dose

Matra	Day1	Day2	Day3	Day4	Day5	Day6	Day7	Day8	Day9
Uttama	2 Pala	2 ½ Pala	3 Pala	3 ½ Pala	4 Pala	4 ½ Pala	5 Pala	5 ½ Pala	6 Pala
Madhyama	1Pala	1 ¼ Pala	1 ½ Pala	1 ¾ Pala	2 Pala	2 ¼ Pala	2 ½ Pala	2 ¾ Pala	3 Pala
Avara	½ Pala	0.625 Pala	0.75 Pala	0.875 Pala	1 Pala	1.125 Pala	1.25 Pala	1.375 Pala	1 ½ Pala

Table No: 20 showing the Arohana Krama Matra Vasti Dose in Milli litre

Matra	Day 1	Day2	Day3	Day4	Day5	Day6	Day7	Day8	Day9
Uttama	96ml	120ml	144ml	168ml	192ml	216ml	240ml	264ml	288ml
Madhyama	48ml	60ml	72ml	84ml	96ml	108ml	120ml	132ml	144ml
Avara	24ml	30ml	36ml	42ml	48ml	54ml	60ml	66ml	72ml

There is description regarding the Arohana Krama Anuvāsana Vasti in Chakradatta⁹⁵ and Vangasena⁹⁶ Samhita. Both of them have mentioned Uttama matra as 6 Pala, Madhyama matra as 3 Pala and Avara matra as 1 ½ Pala. In Uttama matra starting with 2 Pala, increase every day by ½ Pala, so that it will reach 6 Pala on 9th day. In madhyama matra starting with 1 Pala, increase every day by 1/4th Pala, so that on the 9th day it will be 3 Pala. Starting with ½ Pala, increase every day by 1 kola (6ml), so that the dose on 9th day will be 1 ½ Pala in avara matra.

षड्पली च भवेच्छ्रेष्ठा मध्यमा त्रिपली भवेत् । कनीयसी सार्धपला त्रिधा मात्राऽनुवासने ॥

प्राग्देयमाद्ये द्विपलं पलार्धवृद्धिर्द्वितीये पलमक्षवृद्धिः ।

कर्षद्वयं वा वसुमाषवृद्धिर्बस्तौ तृतीये क्रम एष उक्तः ॥ च.द.अनुवासनाधिकार.७२/३-४

Benefits of Matra Vasti:

There is no diet restriction during the administration of Matra Vasti. It promotes strength and helps in easy expulsion of mala and mootra. It nourishes the body there by conquers vatic ailments. It can be administered in any time and season as mentioned by Charakacharya⁹⁷.

Acharya Vagbhata opined that, matravasti employed regularly, will not cause any adverse effect, there by promotes strength and colour of the body⁹⁸. It acts as doshaghna, still doesn't require any parihara.

Vasti Yantra:

The instrument used for administering the vasti karma is known as Vasti Yantra.

It consists of two parts- Vasti Netra/Enema Nozzle and Vasti Putaka/Enema Bag.

Vasti Netra/Enema Nozzle:

Vasti netra is made up of gold, silver, copper, long bones, bamboo or wood etc. It should be like the tail of cow with narrow opening and broad base. It should have a rounded tip. Its tip and base should be similar to the thickness of little finger and thumb of each individual respectively. It should have one karnika (circular ridge) at a distance of 1/4th angula from the tip and other two circular ridge placed at the base to tie the Vasti Putaka. Length of the Vasti Netra will vary according to respective age group.^{99, 100}

सुवर्णरूप्यत्रपुताम्ररीतिकांस्यास्थिशस्त्रदुमवेणुदन्तैः ।

नलैर्विषाणैर्मणिभिश्च तैस्तैनेत्राणि कार्याणि सुत्रिकर्णिकानि ॥ च.सि.३/७

षड्दशदशाष्टाङ्गुलसंमितानि षड्विंशतिद्वादशवर्षजानाम् ।

स्युर्मुद्गकर्कन्धुसतीनवाहिच्छिद्राणि वर्त्याऽपिहितानि चैव ॥

यथावयोऽङ्गुष्ठकनिष्ठिकाभ्यां मूलाग्रयोः स्युः परिणाहवन्ति ।

रुज्जुनि गोपुच्छसमाकृतीनि श्लक्ष्णानि च स्युर्गुडिकामुखानि ॥

स्यात् कर्णिकैकाऽग्रचतुर्थभागे मूलाश्रिते बस्तिनिबन्धने द्वे । च.सि.३/८-९

Vasti Putaka/Enema Bag:

Animal's bladder was used to administer enema in olden days. It should be free from flesh, devoid of foul smell and processed with certain drugs before administration. Animals such as goat, sheep, ox or deer were used. In the absence of bladder, thick skin of bat or skin of plava bird or thick cloth can be used. Now a day's disposable rubber bladder or polythene bag or enema can made up of plastic were used.^{101, 102}

जारद्भवो माहिषहारिणौ वा स्याच्छौकरो बस्तिरजस्य वाऽपि ॥

दृढस्तनुनष्टसिरो विगन्धः कषायरक्तः सुमृदुः सुशुद्धः ।

नृणां वयो वीक्ष्य यथानुरूपं नेत्रेषु योज्यस्तु सुबद्धसूत्रः ॥ च.सि.३/१०-११

Table No: 21 showing the Vasti Netra Dosha (Defective Enema nozzle) and its effects¹⁰³

Sl.No	Netra Dosha	Adverse Effects
1	Hriswa	Aprapti
2	Deergha	Atigati
3	Tanu	Kshobha
4	Sthoola	Karshana
5	Jeerna	Kshanana
6	Shithila Bandhana	Srava
7	Parshwa Chidra	Guda Peeda
8	Vakra	Jihma Gati

हृस्वदीर्घतनुस्थूलं जीर्णं शिथिलबन्धनम् ।

पार्श्वच्छिद्रं तथा वक्रमष्टौ नेत्राणि वर्जयेत् ॥

अप्राप्त्यतिगतिक्षोभकर्षणक्षणनस्रवाः ।

गुदपीडा गतिर्जिह्वा तेषां दोषा यथा क्रमम् ॥ च.सि.५/४-५

Table No: 22 showing the Vasti Putaka Dosha (Defective Enema bag) and its ill effects¹⁰⁴

Sl.No	Putaka Dosha	Adverse Effects
1	Vishama	Gati Vaishamya
2	Mamsala	Visrata
3	Chinna	Srava
4	Sthoola	Dourgrahya
5	Jalika	Nisrava
6	Vatala	Phenila
7	Snigdha	Chyuti
8	Klinna	Adharyatwam

विषममांसलच्छिन्नस्थूलजालिकावातलाः ।

स्निग्धःक्लिन्नज्वतानष्टौ बस्तीन् कर्मसु वर्जयेत् ॥

गतिवैषम्यविस्रत्वस्रावदौर्ग्राह्य निस्त्रवाः ।

फेनिलच्युत्यधार्यत्वं बस्तेः स्युर्बस्तिदोषतः ॥ च.सि.५/६-७

Table No: 23 Showing the Vasti Pranetru (Administrator) Dosha¹⁰⁵

Sl.No	Pranetru Dosha	Meaning
1	Sa Vata	Administration of Vatayukta Vasti dravya or complete squeezing without residue
2	Ati Drita	Fast insertion of Vasti Netra
3	Utkshipta	Insertion in upward direction
4	Tiryag	Oblique insertion
5	Ullupta	Frequent squeezing and releasing vasti putaka
6	Kampita	Shaking while inserting
7	Atiga	Excessive insertion
8	bahyaga	Inadequate insertion
9	Manda	Slowly squeezing the putaka
10	Ati Vega	Squeezing with much pressure

सवातातिद्रुतोत्क्षिप्ततिर्यगुल्लुप्तकम्पिताः ।

अतिबाह्यगमन्दातिवेगदोषाः प्रणेतृताः ॥ च.सि.५/८

Anuvasana Vasti Vyapat:¹⁰⁶

There is no specific complication for Matra Vasti; complications of anuvasana vasti can be considered to certain extent as it is part of Sneha Vasti only.

Table No: 24 showing the snehavasti vyapat

Sl.No	Sneha Vasti Vyapat	Features	Treatment
1	Vatavrita Sneha	Angamarda, Uru Peeda, Parshwa ruk, admana	Panchamoola sadhita Nirooha & Same Taila Anuvasana
2	Pittavrita Sneha	Daha, Jwara, Trishna, Moha	Swadu & Tikta Rasa Vasti
3	Kaphavrita Sneha	Tandra, sheeta jwara, praseka, alasya	Kashaya, Katu, Teekshna & Ushna Vasti, Anuvasna with Phala taila
4	Annavrita Sneha	Amalakshana	Pachana with Katu & Lavana rasa, mridu Virechana
5	Pureeshavrita Sneha	Vinmootranila sanga, adhmana, Hritgraha	Shyama Vilwadi anuvasana and nirooha, Udavarta chikitsa
6	Abhukta Praneeta Sneha	Comes out through kanta	Yava, kola, kulattha, trivrit & mootropa sadhita nirooha and anuvasana, Kanta graha, Virechana & chardighna chikitsa

वातपित्तकफात्यन्नपुरीषैरावृतस्य च ।

अभुक्ते च प्रणीतस्य स्नेहबस्तेः षडापदः ॥ च.सि.४/२५

शीतोऽल्पो वाऽधिके वाते पित्तेऽत्युष्णः कफे मृदुः ।

अतिभुक्ते गुरुर्वर्चः संचयेऽल्पबलस्तथा ।

दत्तस्तैरावृतः स्नेहो न यात्यभिभवादिपि ।

अभुक्तेऽनावृतत्वाच्च यात्यूर्ध्वं तस्य लक्षणम् ॥ च.सि.४/२६-२७

Procedure of Matra Vasti:

There is no specific description regarding the procedure of Matra Vasti. Matra Vasti is the part of Sneha Vasti, hence same procedure will be applicable here also. It includes trividha karma like Poorvakarma, Pradhanakarma and Paschatkarma.

Poorvakarma of Matra Vasti:

It includes collection of the material, examination of the patient, preparation of the patient, diet before the procedure and preparation of the medicine.

Collection of the material:

Materials such as Vasti Netra, Vasti Putaka, Measuring jar, Stove & Cylinder, Sneha Dravya, Water, Abhyanga and swedana measures, vessels, hand gloves etc kept ready before the procedure.

Examination of the patient:

Patient who is fit for Vasti karma should be selected. He should undergo trividha, ashtavidha and dashavidha pareeksha before the procedure. According to prakriti, dosha involvement in the disease is given due consideration before selecting the suitable medicine with suitable dose.

Preparation of the patient:

Patient should undergo Abhyanga with suitable taila followed by nadisweda before the Vasti karma. He should be instructed to have his food $1/4^{\text{th}}$ less than the usual quantity. Food must be neither snigdha nor rooksha, laghu in nature. Patient should walk at least hundred steps. Vasti karma should be done in ardra pani (wet hand), soon after the intake of food. Patient should lie down on a couch after eliminating the natural urges. The cot should be neither too high nor too low, without using any pillow lie down on left lateral posture. Patient should be covered with a surgical towel, only anus should be exposed. Anus should be lubricated with sneha dravya. Per rectal examination by wearing hand gloves to see the loaded rectum or underlying pathology.

Position of the patient:

Left lateral posture with left leg kept straight, right leg flexed at the knee and placed over left knee. Grahani and guda will be in normal position during left lateral posture. All three guda valis such as pravahini, visarjini and samvarani will be in submerged position. There will be large area for the absorption of Vasti material in this posture.

Diet before the procedure:

Diet must be $1/4^{\text{th}}$ less than usual quantity. It should be hot, light, neither too snigdha nor too rooksha in nature.

Preparation of the medicine:

Sneha dravya is made lukewarm indirectly by placing the container in a vessel containing hot water. Vasti dravya measured to the required quantity, filled in the Vasti putaka, Vasti netra fixed to the putaka and tied tightly with a thread. Air must be removed from the Vasti putaka.

Pradhana karma:

Tip of the Vasti netra should be smeared with sneha dravya for easy administration. Air inside the Vasti yantra to be removed by squeezing the Vasti putaka. Tip of the vasti netra closed with index finger, vasti netra inserted in to the anal aperture till the first karnika along the direction of vertebral column. Vasti putaka is squeezed with moderate pressure and little residue left as such in the putaka to prevent the entry of air. Withdraw the Vasti netra without causing any injury to the surrounding areas.

Paschat Karma:

After the administration of enema, patient should lie on supine position beaten on his buttocks with hands and his heels. Foot end of the cot should be raised thrice. He should be made to lie down on a pillow with body extended. Palms and soles should be massaged. Massage in anticlockwise direction is advised over the abdomen. If patient complains of any bodyache, an unctuous massage with pressure to be given. By doing all these measures, early expulsion of sneha dravya can be prevented. Patient is instructed to lie down in supine for a minimum of hundred matra kala. When there is urge for defecation he should attend the same. If there is immediate expulsion of snehadravaya, one more Vasti can be given. Patient is instructed to take very light diet unless he feels hunger. Maximum retention time of sneha dravya in Sneha Vasti is 3 yama's (9 hours). There may be possibility of absorption of sneha dravya in rooksha persons.

Samyak, heena and atiyoga lakshana of Matra Vasti:

Samyak, heena and atiyoga lakshana of Sneha Vasti is applicable for Matra Vasti.

Table No: 25 Showing the Samyak, heena and Atiyoga lakshana according to Charakacharya: ¹⁰⁷

अनुवासन सम्यक्योग लक्षणः

प्रत्येत्यसक्तं सशकृच्च तैलं रक्तादि बुद्धीन्द्रियसंप्रसादः ।

स्वप्नानुवृत्तिर्लघुता बलं च सृष्टाच्च वेगाः स्वनुवासिते स्युः॥ च.सि.१/४४

अनुवासन अतियोग लक्षणः

हृल्लासमोहक्लमसादमूर्च्छा विकर्तिका चात्यनुवासितस्य । च.सि.१/४६

अनुवासन अयोग लक्षणः

अधःशरीरोदरबाहुपृष्ठपार्श्वेषु रुग्रूक्षखरं च गात्रम्।

ग्रहञ्च विष्णुत्रसमीरणानामसम्यगेतान्यनुवासितस्य ॥ च.सि.१/४५

Sl.No	Heena Yoga	Samyak Yoga	Ati Yoga
1	Rookshata,kharata and ruja in Adha shareera	Pratyetyasaktam sa shakrit cha tailam	Hrillasa
2	Rookshata,ruja and khara in Udara	Raktadi dhatu samprasadana	Moha
3	Rookshata,ruja and khara in Bahu	Buddhi and indriya prasadana	Klama
4	Rookshata,ruja and khara in Prishta	Swapnanuvritti	Sada
5	Rookshata,ruja and khara in Parshwa	Laghuta of Shareera	Moorcha
6	Graha for Vit,mootra,sameerana	Bala	Vikartika
7	-	Srishta vega	-

Acharya Vagbhata mentioned that samyak; heena and atiyoga lakshana of Sneha Vasti will be similar to that of Snehapana¹⁰⁸.

Sadharana Krama Matravasti:

The word “साधारण” carries the meaning of ordinary, usual, routine or common. In “साधारण” type of matravasti always same dose of medicine is administered. This method is normally followed everywhere. समान, सामान्य, and सदृश are the meaning given to “साधारण” in Shabda kalpadruma¹⁰⁹.

Arohana Krama Matravasti:

“आरुह्यते अनेन” is the root word which derives the word आरोहण, defined as “नीचादूर्ध्वगमनमिति” means climbing, mounting, increasing, rising or ascending¹¹⁰. In this method gradual increase in dose of the medicine is done in a specified manner for a stipulated period of time.

REVIEW ON JANUSANDHIGATAVATA

Historical Review on Sandhigatavata:

Vedas/Puranas:

There is no direct reference available regarding Sandhigatavata in Vedic literatures. To denote knee joint “januni” and “asthivantau” were mentioned in Atharva Veda¹¹¹. Parva shoola and Vateekrita are the two disease entities identical to Sandhigatavata mentioned in Atharva Veda¹¹².

There is explanation regarding Vatavyadhi in Kaashika 5-2-129, Raghuvamsham 9-63, Brihat Jataka 23-13 and Brahma Samhita 87-44¹¹³. There is mentioning of word Janu in Atharva Veda^{114, 115}. Balasa will reside in Sandhi as mentioned in Atharva Veda¹¹⁶. The term Sandhi is mentioned in Yajurveda¹¹⁷.

Samhitas:

Charaka Samhita:

Acharya charaka mentioned the Sandhigata Vata as Sandhigata anila in Vatavyadhi chikitsa itself¹¹⁸. Janu bheda is mentioned under Vataja nanatmaja vikara instead of Janusandhigatavata¹¹⁹. Charaka has mentioned tikta ksheera vasti as chikitsa for Asthi dhatu pradoshaja vikaras¹²⁰.

Sushruta Samhita:

Hanti Sandhi and Asthi shosha are the lakshanas of Sandhigatavata mentioned by Sushrutacharya in Nidana Sthana¹²¹. Sneha, Upanaha, Agni karma, Bandhana and Unmardana are the treatment principle explained by Sushruta in Chikitsa Sthana¹²².

Ashtanga Sangraha:

Lakshana and Chikitsa of Sandhigatavata are mentioned in Nidana Sthana and Chikitsa Sthana of Ashtanga Sangraha respectively^{123, 124}.

Ashtanga Hridaya:

Lakshana and Chikitsa of Sandhigatavata are mentioned respectively in Nidana Sthana and Chikitsa Sthana of Ashtanga Hridaya^{125, 126}.

Sangraha Kala:

Madhava Nidana:

There is similar description to that of Sushruta Samhita Nidana, in addition to that, atopa (Crepitus of knee) also mentioned as one of the prime features of Sandhigatavata¹²⁷.

Bhavaprakasha:

Lakshana and chikitsa of Sandhigatavata is mentioned in Vata vyadhi adhikara of madhyama khanda. Externally Dahana, Snehana and Upanaha along with internally indravaruni moola, pippali and guda are to be used for Sandhigatavata chikitsa¹²⁸.

Yogaratnakara:

In Vata vyadhi adhikara of Poorvardha, mentioned about the lakshana and chikitsa of Sandhigatavata¹²⁹.

Bhela Samhita:

Sandhi Vichyuti is one of the features of Asthi majjagata vata as mentioned in Bhela Samhita. There is no separate description on Sandhigatavata¹³⁰.

Haritha samhita:

Acharya Haritha has mentioned the symptom of Shukragatavata as Sandhi Shotha where as chikitsa in Vata vyadhi chikitsa adhyaya itself¹³¹.

Chakradatta:

Description on chikitsa is similar to that of Sushruta Samhita, where as nidana aspect is not mentioned in Chakradatta¹³².

Bhaishajyaratnavali:

Description on chikitsa is similar to that of Sushruta Samhita, where as nidana aspect is not mentioned in Bhaishajyaratnavali also¹³³.

Siddhanta Nidana:

Acharya Gananathsen classified joint diseases as Rasavata, Raktavata, Vishavata, Jeernavata and Jaravata in Vividha Sandhivata nidana adhyaya¹³⁴.

Basavarajeeyam:

There is description on sandhivata available in vatavyadhi prakarana itself¹³⁵.

Etymology of Sandhivata:

The word Sandhigatavata is composed of three words-Sandhi, Gata and Vata

Vyutpatti of word Sandhi:

The word sandhi is derived from the root 'Dha' with prefix 'Sam' and suffix 'Ki:' which means joint union.

“सं+धा+किः”¹³⁶

Nirukti:

“सन्धिर्नाम संयोगः ।”¹³⁷

“अस्थिद्वयसंयोगस्थानः ।”¹³⁸

“सन्धिर्नाम अस्थनां अन्योन्य सङ्गमस्थानानि ।”¹³⁹

It is connection, junction, union, combination, transition from one to another¹⁴⁰.

The word sandhi means union of two or more structures in the body. There are innumerable junctions in the human body between peshi, snayu, sira, asthi etc, whereas in this context Sandhi refers to Asthi sandhi only as per Sushruta Samhita shareera sthana¹⁴¹. Even Dalhana also opined Sandhi means Asthyashraya Sandhi¹⁴².

Gata:

The word 'गत' and 'गति' is derived from the 'गम् धातु' with 'कित्' or 'क्तिन् प्रत्यय', which means gone to, situated in, directed to and arrived at.

Vyutpatti:

गम् +कित्¹⁴³

गच्छति जानाति यतीति वा ।¹⁴⁴

Nirukti:

वात, प्राप्ते, लब्दे, पतिते च, समीपे¹⁴⁵

गमने, वाहने, मार्ग, स्थाने, प्राप्ते, लब्दे, पतिते, समीपे, अभ्युपाये¹⁴⁶

Paribhasha: गतम्- स्त्रीलिङ्ग, गच्छति, जानाति, यतीति

The word 'गत' is स्त्रीलिङ्ग शब्द used to denote an initiation of movement, carrying, something along with to reach particular site, through any particular pathway, leads to occupancy at particular site.

Vata:

The word Vata is originated from the root “वा गति गन्धनयोः” which means to go, to blow, to smell, to strike, to hurt, to move and to enlighten¹⁴⁷.

Vyutpatti:

The word 'वात' is derived from 'वा' धातु and 'क्तिन् प्रत्यय',

The word 'गति' carries meaning of 'प्राप्ति' and 'ज्ञान' according to Panini where as 'गन्धन' comprises उत्साह, सूचन and प्रकाशन according to Shabdastoma mahanidhi.

It can be understood that Vata acts as stimulator as well as receptor. Vata is one of the biological force which stimulates and recognize all the activities in the body.

Gata Vata:

There is lot of theories behind the concept Gatavata. There are explanations in our classics such as Gatatva of Dhatu, Upadhatu, Ashaya, Indriya etc. Different terminologies used for Gatavata such as गते-गतम्, स्थिते-स्थितम्, आश्रिते-समाश्रिते etc¹⁴⁸. The disease Sandhigatavata coming under the classification of Gatavata group of disorders. Vata gets prakopa by its own nidana lodging in dhatu, ashaya, upadhatu etc will result in the manifestation of 'गत वात' type of disorder. We will not get the reference regarding janusandhigatavata in Ayurvedic classics. There is explanation on sandhigatavata in the context of vatavayadhi in samhitas.

Sandhi-Gata-Vata:

The vitiated vata gets lodged in the janu sandhi will result in the disease Janusanhigatavata with features such as वातपूर्णदृतिस्पर्श शोथ, प्रसारणाकुञ्चन वेदन etc.

Paryaya/Synonyms of Sandhigatavata:

कुडवात,¹⁴⁹ सन्धिवात,¹⁵⁰ सन्धिगत अनिल,¹⁵¹ जीर्ण वात¹⁵² etc

Sandhi Shareera:

This present protocol is on Janusandhigatvata, hence it is essential to know about the Anatomy and Physiology of Sandhi (Joints).

In Ayurveda Sandhi is classified into **Cheshtavanta** and **Sthira Sandhi**¹⁵³.

सन्धयस्तु द्विविधाश्चेष्टावन्तः स्थिराश्च ।

शाखासु हन्वोः कर्त्यां च चेष्टावन्तस्तु सन्धयः ।

शेषास्तु सन्धयः सर्वे विज्ञेया हि स्थिरा बुधैः ॥ सु.शा.५/२४-२५

Cheshtavanta:

These are freely movable sandhis and which is further subdivided into Alpa cheshta and Bahu Cheshta sandhi.

Alpa cheshta: These sandhis having less movements and situated in the Prishtavamsha.

Bahu cheshta: These types of sandhis are freely moving type and situated in the extremities.

Sthira sandhi: These are immobile sandhis.

Table No: 26 showing the Type of Sandhi with its site

SI No	Name of the Sandhi	Site
1	Kora	Anguli (interphalangeal joints), Manibandha (Wrist), Koorpara (Elbow), Gulpha (Ankle), Janu (Knee)
2	Ulookhala	Kaksha (shoulder), Vankshana (Hip) and danta (alveolar sockets and teeth)
3	Samudga	Amsa peetha (Sterno clavicular), Guda (sacrococcygeal), Bhaga (Symphysis pubis) and Nitamba (Lumbo Sacral)
4	Pratara	Greeva, Prishta (Intervertebral)
5	Tunna sevani	Shira, Kati, Kapala (Sutural Joints)
6	Vayasa tunda	Hanusandhi (Temporomandibular)
7	Shankhavarta	Shrotra (Cochlea/Ear)
8	Mandala	Kantha (tracheal rings)

Janu sandhi is mentioned under the Cheshtavanta or Chala sandhi with subclassification of Kora sandhi according to Acharya Sushruta¹⁵⁴.

तं एते सन्धयोऽष्टविधाः—कोरोलूखलसामुद्रप्रतरतुन्नसेवनीवायसतुण्डमण्डलशङ्खावर्ताः ।

तेषामङ्गुलिमणिबन्धगुल्फजानुकूपरीषु कोराः सन्धयः। सु.शा.५/२७

Relation of Kapha in Sandhi:

Shleshaka kapha, one among the five kapha bhedas located in the joints. It is responsible for the smooth functioning of the joints¹⁵⁵.

सन्धिसंश्लेषाच्छ्लेषकः सन्धिषु स्थितः । अ.हृ.सू.१२/१८

Relation of Shleshmadhara kala in Sandhi¹⁵⁶:

A type of kala present in all the joints responsible for lubrication of joints along with Shleshaka kapha, thereby prevents friction in the joints.

चतुर्थी श्लेषधरा सर्वसन्धिषु प्राणभृतां भवति ।

स्नेहाभ्यक्ते यथा ह्यक्षे चक्रं साधु प्रवर्तते ॥

सन्ध्यः साधु वर्तन्ते संप्लिष्टाः श्लेष्मणा तथा ॥ सु.शा.४/१४-१५

Relation of Vyana vata in Sandhi:

Vyana vata locating in the Hridaya does the motor functions of the body¹⁵⁷. Even Acharya Vagbhata mentioned Ashraya-Ashrayee sambandha between asthi and vata. When Vata aggravates Asthi kshaya will take place and vice versa¹⁵⁸.

कृत्स्नदेहचरो व्यानो रससंवहनोद्यतः ।

स्वेदासृक्सावणाश्चापि पञ्चधा चेष्टयत्यपि ॥

कृद्धश्च कुरुते रोगान् प्रायशः सर्वदेहगान् । सु.नि.१/१७-१८

तत्रास्थीनि स्थितो वायुः पित्तं तु स्वेद रक्तयोः ।

श्लेष्मा शेषेषु तेनैषामाश्रयिणां मिथः ॥

यदेकस्य तदन्यस्य वर्धनक्षपणौषधम् ।

अस्थिमारुतयोर्नैवं.....। अ.हृ.सू.११/२६-२७

Janu Sandhi (Knee joint):

Some of the structures coming under janu sandhi according to Acharya Sushruta are as follows.

Peshi (Muscle):

There are totally 500 peshis in the body, among which 400 peshis in the upper and lower extremities and 5 of them in janu sandhi. Peshis will cover all the sira, snayu, asthi, parva and sandhis¹⁵⁹.

पञ्च पेशीशतानि भवन्ति । तासां चत्वारि शतानि शाखासु, कोष्ठे षट्षष्टिः, ग्रीवां प्रत्यूर्ध्वं चतुस्त्रिंशत् ।.....पञ्च जानुनि.....॥ सु.शा.५/४५-४६

Snayu (Ligament):

There are totally 900 snayus present in the body among which 10 of them present in the janu sandhi. Pratana variety of snayu is present in shakha and sandhi. All joints are attached with snayus will provide compactness as well as capable of bearing weight¹⁶⁰.

नव स्नायुशतानि । तासां शाखासु षट् शतानि.....दश जानुनि॥ सु.शा.५/३४-३५

Sanghata (Assemblage):

Among 14 types of Assemblages, one is situated in the janu sandhi¹⁶¹.

चतुर्दशास्थानां संघातः- तेषां त्रयो गुल्फजानुवंक्षणेषु.....। सु.शा.५/१६

Marma (Vital Points):¹⁶²

Janu marma comes under vaikalyakara marma. Janu marma is situated between jangha and urvi, having the measurement of three angulas. Any injury to this marma will result in khanjata.

लोहिताक्षाणि जानूर्वीकूर्चविटपकूर्पराः ।

.....वैकल्यकरणान्याहुः रावर्तो द्वौ तथैव च ॥ सु.शा.६/१२-१३

Joint and its classification:¹⁶³

A point where contact between two bones or bone and cartilage or bone and teeth is called joint or articulation or arthrosis. Joint will be formed by the articulation of one bone with the other. The term arthrology means scientific study of joints.

Structural and functional classification of joints is based on their anatomical characteristics and type of movement they permit respectively. There are two criteria's for the structural classification of joints. They are presence or absence of space between articulating bones. Bone of the skull will bind together by a type of connective tissue and a synovial cavity.

Structural classification:

Fibrous joints: A fibrous connective tissue rich in collagen fibres and absence of synovial cavity will hold the bones together. Descriptions of three sub type of fibrous joints are as follows.

Sutures: A thin layer of dense fibrous connective tissue forms fibrous joint will unite only skull bones.

Example: Coronal suture between parietal and frontal bones.

Syndesmoses: A fibrous joint where much distance between the articulating bones and fibrous connective tissue.

Example: Distal tibiofibular joint.

Gomphoses: A fibrous joint where in socket is fixed by cone shaped peg.

Example: Roots of the teeth articulate with socket.

Cartilaginous joint: A cartilage will hold the bones together but there is lack of synovial cavity. Descriptions of two sub classifications of cartilaginous joints are as follows.

Symphyses: It is a type of cartilaginous joint where hyaline cartilage forms the connecting material.

Example: Joining between first rib and manubrium sterni.

Symphyses: It is a cartilaginous joint where hyaline cartilage forms covering of the ends of the articulating bones.

Example: Intervertebral joints between the bodies of the vertebrae.

Synovial joint: A bony joint having synovial cavity which is united by dense irregular connective tissue and accessory ligaments. Descriptions of six subdivisions of synovial joints are as follows.

Plantar joints: A type of joint where as articulating surface of bone is flat or slightly curved.

Example: Sternocostal joints

Hinge joints: A hinge joint is one where as convexity of one bone fits into concavity of another bone.

Example: Knee, Elbow, Ankle

Pivot joint: A ring formed partly by one bone and partly by a ligament articulated by pointed or rounded surface of another bone will constitute pivot joint.

Example: Radioulnar joint

Condylloid joints: The oval depression of one bone fitted by the convex oval projection of another bone.

Example: Wrist and metacarpophalangeal joint

Saddle joint: Articular surface of one bone is fitted by the saddle shaped articular surface of another bone in saddle joint.

Example: Carpometacarpal joint

Ball and Socket Joint: Cup like depression of one bone will be fitted by ball like surface of another bone.

Example: Shoulder and hip joint.

Functional classification:

Joints are classified based on the degree of movement they permit.

Synarthrosis: Immobile joint

Amphiarthrosis: Slightly mobile joint

Diarthrosis: Freely mobile joint

Janu Sandhi (Knee joint):

It is essential to know the structure and functions of knee joint.¹⁶⁴

Knee joint is the largest and most complex joint wherein three joints lie in single synovial cavity. Lateral condyle of the femur, lateral meniscus and lateral condyle of the tibia will constitute tibiofemoral joint laterally. Medial condyle of the femur, medial meniscus and medial condyle of the tibia will constitute 2nd tibiofemoral joint medially. Patella and patellar surface of the femur will constitute an intermediate patellofemoral joint.

Anatomical components:

Articular Capsule: Bone will be united but not completely by independent capsule.

Medial and lateral patellar retinacula: Insertion of the tendons of the quadriceps femoris muscle and the fascia lata.

Patellar ligament: Tendon of quadriceps femoris extending from patella to tibial tuberosity continues as patellar ligament.

Oblique popliteal ligament: A flat and broad ligament extending from the intercondylar fossa of the femur to tibial head.

Arcuate popliteal ligament: A ligament extending from the lateral condyle of femur to the styloid process fibula head.

Tibial collateral ligament: It is a broad and flat ligament present on the medial surface of the joint, extending from the medial condyle of femur to the medial condyle of tibia.

Fibular collateral ligament: It is rounded and strong ligament present on lateral surface of the joint, extending from the lateral condyle of the femur to the lateral side of the fibula head.

Intra capsular ligaments: Ligaments within the capsule, which connects the tibia and femur.

Anterior cruciate ligament: It extends posteriorly and laterally from a point anterior to the intercondylar area of the tibia to the posterior part of the medial surface of the lateral condyle of the femur.

Posterior cruciate ligament: It extends anteriorly and medially from a depression on the posterior intercondylar area of the tibia and lateral meniscus to the anterior part of the lateral surface of the medial condyle of the femur.

Articular Discs (Menisci): Between the tibial and femoral condyles there are two fibro cartilage discs. They help in circulating synovial fluids and to compensate the irregular shapes of the bones.

Medial meniscus: A fibro cartilage with semicircular shape. Anterior and posterior end of which is attached to the anterior and posterior inter condylar fossa of the tibia respectively.

Lateral meniscus: A fibro cartilage nearly semicircular in shape. Its anterior and posterior end is attached to the anterior and posterior inter condylar eminence of the tibia respectively.

Bursae: Three important bursae of the knee are as follows.

Prepatellar bursa: This is lying between patella and skin.

Intrapatellar bursa: This is lying between superior part of tibia and patellar ligament.

Suprapatellar bursa: This is lying between the inferior part of femur and deep surface of quadriceps femoris muscle.

Functions/Movements of knee joint:

Flexion, extension, slight medial rotation and lateral rotation of the leg in flexed position are the movements of knee joint.

Nidana Panchaka of Sandhigatavata:

Sandhigatavata comes under gatavata type of disorders. There is no specific mentioning of nidana panchakas of sandhigatavata. General vatavikara nidana panchaka to be followed here also.

Nidana of Sandhigatavata (Etiology/Causative factors): ^{165, 166, 167, 168, 169, 170, 171, 172}

Samanya vatavyadhi nidana is applicable in the context of janusandhigatavata. Even asthivaha and majjavaha srotodushti karanas also incorporated in sandhigatavata nidanas^{173, 174}.

रूक्षशीताल्पलघ्वन्नव्यवायाति प्रजागरैः ।

विषमादुपचाराच्च दोषासृक् स्रवणादति ॥

लङ्घनप्लवनात्यध्वव्यायामातिविचेष्टितैः ।

धातूनां संक्षयाच्चिन्ताशोकरोगातिकर्षणात् ॥

दुःखशय्यासनात् क्रोधाद्धिवास्वप्नाद्भयादपि ।

वेगसंधारणादामादभिघातादभोजनात् ॥

मर्माघाताद्भ्रजोष्ठाश्वशीघ्रयानापतंसनात् । च.चि.२८/१५-१८

अस्थिवह स्रोतो दुष्टि कारणः

व्यायामादतिसंक्षोभादस्थामतिविघट्टनात् ।

अस्थिवाहिनी दुष्यन्ति वातलानां च सेवनात् ॥॥ च.वि.५/१७

मज्जावह स्रोतो दुष्टि कारणः

उत्पेषादत्यभिष्यन्दादभिघातात् प्रपीडनात् ।

मज्जावाहिनी दुष्यन्ति वातलानां च सेवनात् ॥ च.वि.५/१८

Nidanas of various samhitas are compiled and classified into aharaja, viharaja and manasika nidanas. They are listed below here in the table.

Aharaja Nidanas:

Table no: 27 showing the Aharaja nidanas of Janusandhigatavata:

Nidana	Ch.S	S.S	A.S	A.H	Ma.Ni	Bha.Pra	Y.R	V.S
Tikta	-	+	+	+	-	+	-	-
Katu	-	+	+	+	-	+	-	-
Kashaya	-	+	+	+	-	+	-	-
Rooksha	+	+	+	+	+	+	+	+
Laghu	+	-	+	+	+	-	+	+
Sheeta	+	-	+	+	+	-	+	+
Abhojana	+	+	-	-	+	+	+	+
Alpabhojana	+	+	+	+	-	+	+	+
Pramitabhojana	-	-	+	+	-	-	-	-
Vallura	+	-	-	-	-	-	-	-
Tuvaraka	+	-	-	-	-	-	-	-
Uddalaka	-	+	-	-	-	-	-	-
Shushka shaka	-	+	-	-	-	-	-	-
Neevara	-	+	-	-	-	-	-	-
Mudga	+	-	-	-	-	-	-	-
Masura	+	-	-	-	-	-	-	-
Kalaya	+	-	+	-	-	-	-	-
Harenu	+	-	-	-	-	-	-	-
Adhaki	-	+	-	-	-	-	-	-
Bisa	-	-	+	-	-	-	-	-
Chanaka	-	-	+	-	-	-	-	-
Jambava	-	-	+	-	-	-	-	-
Kalinga	-	-	+	-	-	-	-	-
Shushkanna	-	-	+	-	-	-	-	-
Vishtambhi	-	-	+	-	-	-	-	-

तत्रबलवद्विग्रहातिव्यायामव्यवायाध्ययनप्रपतनप्रधावन

प्रपीडनाभिघातलङ्घनप्लवनतरणरात्रिजागरणभारहरणगजतुरङ्गरथपदाति

चर्याकटुकषायतिकरूक्षलघुशीतवीर्यशुष्कशाकवल्लूरवरकोद्दालककोरदूषश्यामाकनीवारमुद्गमसूराढकीहरे

णुकलायनिष्ठावानशनाध्यशनवातमूत्रपुरीषशुक्रच्छर्दिक्षवथूद्गारबाष्पवेगविघातादिभिर्विशेषैर्वायुः

प्रकोपमापद्यते । सु.सू. २१/१९

Viharaja nidanas:

Table no: 28 showing the Viharaja nidanas of Janusandhigatavata:

Viharaja Nidana	Cha.Sa	Su.Sa	A.S	A.H	Ma.Ni	Bha.P	Y.R	V.S
Ativyavaya	+	+	+	+	+	+	+	+
Ati vyayama	+	+	+	+	+	-	-	+
Atijagarana	+	+	+	+	+	+	+	+
Vishamopachara	+	-	-	-	+	-	+	+
Vegadharana	+	+	+	+	+	+	+	+
Shrama	-	-	-	-	-	+	-	-
Upavasa	+	+	-	+	+	+	+	-
Purovata sevana	-	-	-	-	-	+	-	-
Langhana	+	+	-	-	+	-	+	+
Plavana	+	+	-	-	+	-	+	+
Ati adhwagamana	+	-	-	-	+	-	+	+
Pradhawana	-	+	-	-	-	-	-	-
Pratarana	-	+	-	-	-	-	-	-
Atyuccha Bhashana	-	+	-	-	-	-	-	-
Balavadvigraha	-	+	+	-	-	-	+	-
Abhigata	+	+	+	-	+	+	-	-
Marmaghata	-	-	-	+	+	-	-	-
Bharaharana	+	-	-	-	-	-	+	-
Dhatukshaya	+	-	-	-	+	+	+	-
Ati adhyayana	-	+	+	-	-	-	-	-
Sheeghrayanapatamsa	+	-	-	+	+	-	-	-
Prapedana	-	+	-	-	-	-	-	-
Dukhasana	+	-	-	-	-	-	-	-
Dukhashayya	-	-	-	+	+	-	-	-
Atidoshasravana	+	-	-	-	+	+	+	-
Vyadhikarshana	+	-	-	-	+	+	+	-
Ashmabhramana	-	-	+	-	-	-	-	-
Ashmachalana	-	-	+	-	-	-	-	-
Ashmotkshepa	-	-	+	-	-	-	-	-
Ashmavikshepa	-	-	+	-	-	-	-	-
Go-Aja-Vaji Nigraha	-	-	+	-	-	-	-	-
Lohotkshepa	-	-	+	-	-	-	-	-
Lohachalana	-	-	+	-	-	-	-	-
Lohavikshepa	-	-	+	-	-	-	-	-
Paraghatana	-	-	+	-	-	-	-	-
Kashtabhramana	-	-	+	-	-	-	-	-
Kashtotkshepa	-	-	+	-	-	-	-	-
Kashtavikshepa	-	-	+	-	-	-	-	-
Kriyaatiyoga	+	-	+	+	+	+	+	+

Manasika Nidanas:

Table no: 29 showing the Manasika nidanas of Janusandhigatavata:

Nidana	Cha.Sa	Su.Sa	A.S	A.H	Ma.Ni	Bha.Pr	Y.R	V.S
Bhaya	-	-	+	-	-	-	+	+
Chinta	+	-		+	+	+	+	+
Shoka	-	+	+	+	+	-	+	+
Utkantha	-	-	+	-	-	+	-	-
Mada	-	-	-	-	-	-	-	-
Krodha	+	-	-		+	-	+	+

स शीतवाताभ्रप्रवातेषु घर्मान्ते च विशेषतः ।

प्रत्यूषस्य पराहे तु जीर्णोऽन्ने च प्रकुप्यति ॥ सु.सू.२१/२०

तिक्तोषणकषायाल्परूक्षप्रमितभोजनैः ।

धारणोदीरणनिशाजागरात्युच्चभाषणैः ॥

क्रियातियोगभीशोकचिन्ताव्यायाम्मैथुनैः ।

ग्रीष्माहोरात्रिभुक्तान्ते प्रकुप्यति समीरणः॥ अ.हृ.नि.१/१४-१५

कषायकटुतिक्तकप्रमितरूक्ष लघ्वन्नतः, पुरः पवनजागरप्रतरणाभिघातश्रमैः ।

हिमादनशानात्तथा निधुवनाच्च धातुक्षयान्मलादिरवधरणान्मदनशोकचिन्ताभयैः ॥

अतिक्षतजमोक्षणाद्दकृतातिमांसक्षयादतीवमनानृणामतिविरेचनादामतः ।

पयोदसमये दिनक्षणदयोस्तृतीयांशयोर्जरागतितेऽशिते शिशिरसंध्याकालेऽपि च । भा.प्र.मध्यम
खण्ड.२४/१-२

Vata gets prakopa not only in above mentioned conditions but also at the end of the day and night¹⁷⁵. Even the person attains old age (Vardhakya avastha), naturally aggravation of vata will be seen¹⁷⁶. Vata will aggravate even at the end of shishira, greeshma and varsha ritu. Vata prakriti persons are more prone to suffer with vatic ailments. Person residing in jangala desha will suffer with vatavikara¹⁷⁷.

अथ तिक्तकटु कषायरूक्षलघुशीतविष्टम्भिविरूढकतृणधान्यकलायचणककरीरतुम्बकालिङ्गचिर्भट

बिसशालूकजाम्बवतिन्दुकहीनशुष्क प्रमिततृषिताशनक्षुधिताम्बुपानासृक् क्षय

विरेचनादिकर्मातियोगवेगविधारणोदीरणरात्रिजागरणप्रवातव्यवायव्यायाम

बलवद्युद्धनिग्रहातिखरचापकर्षणात्युच्च विषमलङ्घनाध्वाध्ययन धावनसलिलतरणाभिघात

दम्यगोवाजिगजनिग्रहाश्मशिलालोहकाष्ठोत्क्षेपविक्षेपभ्रमणचालनगाढोच्छादन

पराघातनादिसाहसभयशोकोत्कण्ठादिभिरतिसेवितैः

ग्रीष्मवर्षापराह्लापररात्राहारपरिणामान्तेषुच वायुः प्रकोपमापद्यते ॥ अ.सं.नि.१/१३

ते व्यापिनोऽपि हृन्नाभ्योरधोमध्योर्ध्वसंश्रयाः।

वयोऽहोरत्रिभुक्तानां तेऽन्तमध्यादिगाः क्रमात् । अ.हृ.सू.१/७-८

जाङ्गलं वातभूयिष्ठमानूपं तु कफोल्बणम् ।

साधारणं सममलं त्रिधा भूदेशमादिशेत् ॥ अ.हृ.सू.१/२३

Poorvaroopo:

There is no specific poorva roopa of Vatavyadhi. Avyakta lakshana¹⁷⁸ itself is the poorva roopa, whereas Acharya Vijayarakshita mentioned avyakta lakshana means improper manifestation of symptoms. Whatever the lakshanas of janusandhigatavata will manifest in milder degree can be considered as the poorvaroopo.

अव्यक्त लक्षणं तेषां पूर्वरूपमिति स्मृतम् । च.चि.२८/१९

Roopa: ^{179,180,181,182,183,184,185,186}

Common signs and symptoms of sandhigatavata are applicable in janusandhigatavata also. Symptoms are listed below.

Table No: 30 showing the roopa of janusandhigatavata

Lakshana	Cha.Sa	Su.Sa	A.S	A.H	Ma.Ni	Bha.Pr	Y.R	V.S
Vatapooro driti sparsha	+	-	+	+	-	-	-	-
Sandhi Shotha	+	+	+	+	-	+	+	+
Prasarana akunchana vedana	+	-	+	+	-	-	-	-
Sandhi shoola	+	+	+	+	+	+	+	+
Atopa in sandhi	-	-	-	-	+	-	-	-
Hanti sandheen	-	+	-	-	+	+	+	+
Stabdhatta in sandhi	-	+	-	-	+	-	-	-
Asthibheda	-	+	-	-	-	-	-	-
Asthivishlesha	-	-	-	-	+	-	-	-

Acharya Charaka and Vagbhata have mentioned shotha as Vatapooro driti sparsha which means feeling of air filled ball or balloon on touch where as Acharya Sushruta not mentioned the nature of swelling in Sandhigatavata. Painful flexion and extension is the meaning of the word prasarana akunchana pravrittischa sa vedana. What we correlate the symptom atopa to crepitus of the affected joint which carries the meaning “Atopo guda guda shadhaha” mentioned by Bhavamishra¹⁸⁷ and

madhukosha mentioned it as “Atopaha chalachalanamiti”. Acharya Vijayarakshita mentioned the word sandhi sthabdata while commenting the word Hanti sandheen¹⁸⁸. Dalhana while commenting the lakshana Hanti sandheen mentioned by Sushruta that, Akunchanaprasaranayoho abhava and prasarana akunchanayoho asamarthya means inability to do normal joint movement. Even Sthabdata of Sandhi also carries the same meaning.

वातपूर्णदृतिस्पर्शः शोथः सन्धिगतेऽनिले ।

प्रसारणाकुञ्चनयोः प्रवृत्तिश्च सवेदना ॥ च.चि.२८/३७

हन्ति सन्धिगतः सन्धीन् शूलशोफौ करोति च । सु.नि.१/२८

हन्तीत्यादि एतेनाकुञ्चनप्रसारणयोरभाव उक्तः । डल्हण (सु.नि.१/२८)

आटोपम् आध्मानं । डल्हण (सु.सू.१५/१५)

आटोपमीषत्सशब्दमाध्मानम् इति । डल्हण (सु.सू.१५/१५)

वातपूर्णदृतिस्पर्शो शोफं सन्धिगतोऽनिलः ।

प्रसारणाकुञ्चनयोः प्रवृत्तिं च वेदना ॥ अ.हृ.नि.१५/१४, अ.सं.नि.१५/१६

हन्ति सन्धिगतः सन्धीन् शूलाटोपौ करोति च । मा.नि.२२/२१

हन्ति सन्धिगतः सन्धीन् इति सन्धिविश्लेषं स्तम्भादिकं वा करोति । मधुकोश व्याख्या

हन्ति सन्धिगतः सन्धीञ्छूलशोथौ करोति च । भा.प्र.मध्यम खण्ड.२४/२५८, यो.र. वात व्याधि २५

Samprapti of Janusandhigatavata:

Samprati of vatavyadhi can be attributed to janusandhigatavata also. Vata gets prakopa by dhatukshaya nimitta¹⁸⁹. Vata gets aggravated by its own causative factors, will circulate all over the body and settle in rikta srotas (snehadi guna shoonyata according to Chakrapani) to produce vatic ailments¹⁹⁰. Here ekanga can be considered as janusandhigatavata.

वायोर्धातुक्षयात् कोपो । च.चि.२८/५९

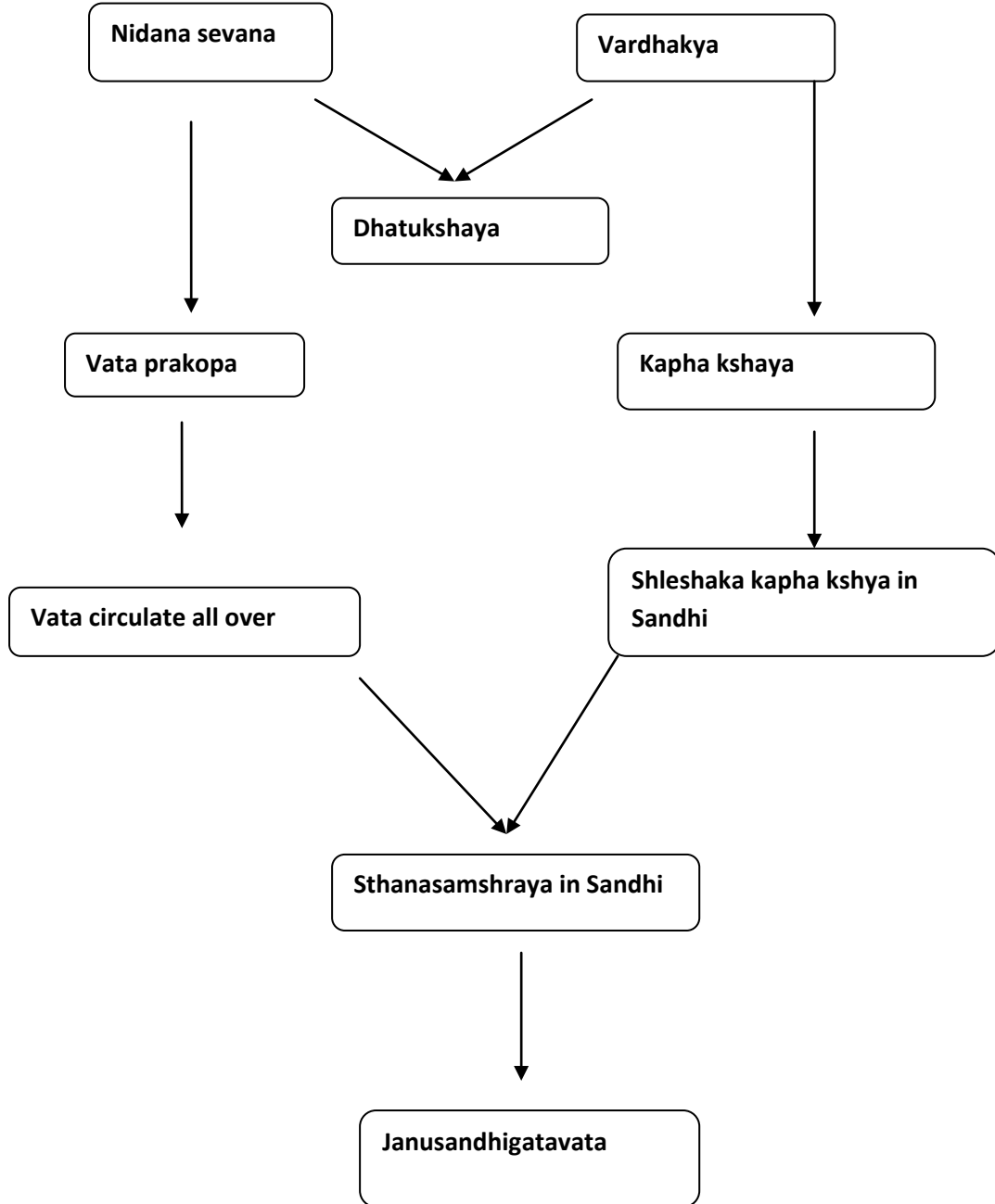
देहे स्रोतांसि रिक्तानि पूरयित्वाऽनिलो बली ॥

करोति विविधान् व्याधीन् सर्वाङ्गैकाङ्गसंश्रितान् । च.चि.२८/१८

In old age people naturally vata will dominate resulting in depletion of kapha. Decrease in shleshaka kapha in sandhis will result in sandhi atopa and sandhi

bandhana shaitilya. Asthi kshaya will result due to vata vriddhi¹⁹¹. Asthi present in the janusandhi will create riktata where vata occupies to develop janusandhigatavata.

Schematic representation of samprapti of dhatukshayajanya janusandhigatavata:



Note: In the present study only dhatu kshaya janya (nirupastambha, anavrita, kevala vataja) janusandhigatavata patients were included.

Samprapti Ghatakas of Janusandhigatavata:

Dosha- Vata vriddhi (Vyana) and Kapha kshaya (Shleshaka)

Dooshya- Snayu, Sandhi, Asthi, Peshi and Majja

Srotas involved- Asthivaha and Majjavaha
Agni- Asthidhatwagni
Ama- Dhatwagni mandya janya
Udbhawa sthana- Pakwashaya
Rogamarga-Madhyama
Sancharasthana- Sarvashareera/Vatavaha srotas
Vyaktasthana- Janusandhi
Adhishtana- Janusandhi
Vyadhi avastha- Chirakaaleena
Sadhyasadhyata- Krichra sadhya

Upashaya and Anupashaya:

Upashaya and anupashaya will help to diagnose the disease and to assess the sama and niramavastha. Drug, diet and regimen help in reduction of symptoms will constitute upashaya and which will worsen the condition known as anupashaya. Janusandhigatavata comes under the classification of nirama vatavikara, hence all snehadi kriyas will act as upashaya and rookshadi kriyas considered under anupashaya.

Sadhyasadhyata:

Acharya Sushruta mentioned Vatavyadhi as one of the mahagada, it is difficult to cure (dushchikitsya)¹⁹². Vatavyadhi is impossible to cure but always an effort should be made, patient may get rid of the ailment by god's grace¹⁹³. Acharya Charaka mentioned Sandhigatavata is incurable as it is gambheera sthaanashrita (involvement of asthi and majja) vatavikara¹⁹⁴. Acharya Chakrapani while commenting the word Khudha vata mentioned it as gulpha vata or sandhigatavata¹⁹⁵. Sandhigatavata falling under madhyama rogamarga, hence it is difficult to cure. It involves in depletion of dhatus (dhatukshayajanya vata vikara) there by making difficult to cure.

वातव्याधिः प्रमेहश्च कुष्ठमर्शो भगन्दरम् ।

अश्मरी मूढगर्भश्च तथैवोदरमष्टमम् ॥

अष्टावेते प्रकृत्यैव दुश्चिकित्स्या महागदाः । सु.सू. ३३/४-५

वातव्याधिरसाध्योज्यं दैव योगात् सुसिद्धति ।

अनुमानेन कुर्वन्ति चिकित्सा न तु प्रतिज्ञया ॥ यो.र. २५/४२१

सन्धिच्युतिर्हनुस्तम्भः कुञ्चनं कुब्जतार्दितः ॥

पक्षाघातोऽङ्गसंशोषः पङ्गुत्वं खुडवातता ।

स्तम्भनं चाढ्यवातश्च रोगा मज्जास्थिगाश्च ये ॥

एते स्थानस्य गाम्भीर्याद्यत्नात् सिद्ध्यन्ति वा न वा ।

नवान् बलवतस्त्वेतान् साधयेन्निरुपद्रवान् ॥ च.चि.२८/७२-७४

खुडवातता गुल्फवातता, किंवा संधिगतवातता । च.पा (च.चि.२८/७२-७४)

Chikitsa: 196,197,198,199,200,201,202,203

Ayurvedic approach towards managing the disease is of three kinds- Shodhana, shamana and rasayana. Acharya Charaka considered samanya vatavyadhi chikitsa to follow in the management of janusandhigatavata. Sushrutacharya mentioned specific line of treatment in sandhigatavata. Later other acharyas also gave importance on the chikitsa.

केवलं निरुपस्तम्भमादौ स्नेहैरुपाचरेत् ॥

वायुं सर्पिर्वसातैलमज्जापानैर्नरं ततः ।

स्नेहक्लान्तं समाश्वास्य पयोभिः स्नेहयेत् पुनः ॥

यूषैर्ग्राम्याम्बुजानूपरसैर्वा स्नेहसंयुतैः ।

पायसैः कृशरैः साम्ललवणैरनुवासनैः ।

....स्नेहश्च धातून्संशुष्कान् पुष्पात्याशुप्रयोजितः । च.चि.२८/७५-८१

अस्थ्याश्रयाणां व्याधीनां पञ्चकर्माणि भेषजम् ।

बस्तयोः क्षीरसर्पिषी तित्तकोपहितानि च ॥ च.सू.२८/२७

बाह्याभ्यन्तरतः स्नेहैरस्थिमज्जगतं जयेत् । च.चि.२८/९३

स्नेहोपनाहाग्निकर्मबन्धनोन्मर्दनानि च ।

स्नायुसन्ध्यस्थिसंप्राप्ते कुर्यात् वायावतन्द्रितः ॥ सु.चि.४/८

अस्थिमज्जोरन्तर्बहिः स्नेहाः.....। अ.सं.चि.२३/११

सिरास्नावसन्धिप्राप्तेऽभ्यङ्गमर्दनस्वेदोपनाहबन्धाग्निकर्माणि । अ.सं.चि.२३/१३

बाह्याभ्यन्तरतः स्नेहैरस्थिमज्जगतं जयेत् । अ.हृ.चि.२१/१९

स्नावसन्धिशिराप्राप्ते स्नेहदाहोपनाहनम् । अ.हृ.चि.२१/२२

कुर्यात् सन्धिगते वाते दाहस्नेहोपनाहनम् ॥

इन्द्रवारुणिकामूलं मागधीगुडसंयुतम् ।

भक्षयेत्कर्षमात्रं तत्सन्धिवातं व्यपोहति ॥ भा.प्र.मध्यम खण्ड.२४/२५८-२५९

स्नायुसंध्यस्थिसम्प्राप्ते कुर्याद्वाते विचक्षणः ।

स्वेदोपनाहसंमर्दस्नेहनादिकमादरात् ॥ यो.र.वातव्याधि.२५/१२०

सन्धिस्नायुगते वाते दाहस्नेहोपनाहनम् । वं.से.वातव्याधि.८८

Table No: 31 showing the line of treatment of janusandhigatavata:

Chikitsa	Su.S	A.S	A.H	Bh.P	Y.R	V.S	Bh.R
Snehana	+	+	+	+	+	+	+
Upanaha	+	+	+	+	+	+	+
Agnikarma	+	+	+	+	-	+	+
Bandhana	+	+	-	-	-	-	+
Unmardana	+	+	-	+	+	-	-

Pathya-Apathya:

All the pathya and apathyas mentioned in the context of vatavayadhi to be followed in janusandhigatavata also.

Pathya: ²⁰⁴

Table No: 32 showing the pathyas of janusandhigatavata

Sl.No	Nature of Ahara	Name of the Ahara
1	Jalavarga	Ushnodaka, Shritasheetodaka, Narikelodaka
2	Ksheeravarga	Goksheera, Ajaksheera, Dadhi, Ghrita, Kilata, dadhi koorchika
3	Madyavarga	Sura, Kanji, Dhanyamla
4	Mamsavarga	Gramya-Go, Ashwa, Kukkuta, Ushtra, Oudaka-Hamsa, Chakramada, Kadamba, Anoop-Gaja, Mahisha Bhileshaya-Godha, Nakula, Bheka
5	Mootrvarga	Gomootra
6	Shakavarga	Lashuna, Shigru, Patola, Vartaka
7	Shimbivarga	Masha, Kulatha, tila
8	Shookadhanya	Naveena shali, Shashtikashali, Raktashali, Nava Godhuma
9	Rasa	Madhura, Lavana, Amla
10	Snehavarga	Sarpi, Taila, Vasa, Majja
11	Vihara	Abhyanga, Mardana, Snana, Avagaha, Anulepana, Basti etc

अभ्यङ्गो मर्दनं बस्तिः स्नेहः स्वेदोऽवगाहनम् ।

संवाहनं संशमनं प्रावृतिर्वातवर्जनम् ॥

अग्निकर्मोपनाहश्च भूशय्या स्नानमासनम् ।
 तैलद्रोणी शिरोबस्तिः शयनं नस्यमातपः ॥
 संतर्पणं बृहणं च किलाटो दधिकूर्चिका ।
 सर्पिस्तैलं वसा मज्जा स्वाद्मल्लवणा रसाः ॥
 नवीनतिल गोधूमा माषाः संवत्सरोत्थिताः ।
 शालयः षष्ठिकाश्चापि कुलत्थानां रसः सुरा ॥
 ग्राम्यगोऽश्वतरोष्ट्राश्वरासभच्छागलादयः ।
 आनूपाः कोलमहिषन्यङ्कुखङ्गिगजादयः ॥
 औदका हंसकादम्बचक्रमद्गुरकादयः ।
 बिलेशया भेकगोधानकुलश्चाविदादयः ॥
 चटकः कुक्कुटो बर्ही तित्तिरश्चेति जाङ्गलाः ।
 शिल्लेन्ध्रः पर्वदो नक्रो गर्गरः कवयील्लिशः ॥
 एरङ्गश्चुल्लकी कूर्मः शिशुमारस्तिमिङ्गिलः ।
 रोहितो मद्गुरु शृङ्गी वर्मी च कुलिषो फषाः ॥
 पटोलं शिशुवार्ताकुलशुणं दाडिमद्वयम् ।
 पक्वतालं रसालं च नलदाम्बु परुषकम् ॥
 जम्बीरं बदरं द्राक्षा नारङ्गा मधुकजम् ।
 प्रसारिणी गोक्षुरकः शुक्लाङ्गी पारिभदकः ॥
 पयांसि च पयःपेटी रुबुतैलं गवां जलम् ।
 मत्स्यण्डिका च ताम्बूलं धान्याम्लं तित्तिडीफलम् ॥
 स्निग्धोष्णानि च भोज्यानि स्निग्धोष्णं चानुलेपनम् ।
 विशेषाद्वमनं कार्यमामाशयमुपागते ॥
 पक्वाशयस्ते मांसस्थे तथा स्निग्ध विरेचनम् ।
 प्रत्याध्मानाध्मानसंज्ञे वर्तिर्लङ्घनदीपनम् ॥
 अष्टीलिकाख्ये गिल्मविधिः शुक्रस्य क्षयजित् क्रिया ।
 त्वङ्मांसासृक्सिराप्राप्ते हितं शोणितमोक्षणम् ॥
 यथाश्रयं यथावस्थं यथावरणमेव हि ।

वातव्याधौ समुत्पन्ने पथ्यमेतन्नृणां भवेत् ॥ भै.र.वातव्याधि चिकित्सा (२६/६११-६२५)

Apathya: ²⁰⁵

Table No: 33 showing the apathyas of janusandhigatavata

Sl.No	Nature of Ahara	Name of the Ahara
1	Jalavarga	Sheetodaka
2	Ksheera varga	Gardabha ksheera
3	Mamsavarga	Paravata, Kapota mamsa
4	Shimbivarga	Rajamasha, mudga, kalaya, Yava, Chanaka, Nishpava
5	Shookavarga	Kangu, Shyamaka, Neevara
6	Phalavarga	Jambu, Kramuka, Tinduka, Udumbara
7	Rasa	Katu, Tikta, Kashaya
8	Others	Kshara, Kshoudra
9	Vihara	Ati vyayama, Ati Vyavaya, Ati Chankramana, Vegadharanodheerana, Chinta, Shoka, Bhaya

चिन्ताप्रजागणवेगविधारणानि छर्दिः श्रमोऽनशनता चणकाः कलायाः ।

नीवारकङ्कुशरभैणश्चकोरदूष श्यामाकचूर्णं कुरुविन्दमुखानि यानि ॥

धान्यानि तानि तृणजानि च राजमाषा मुद्गास्तडागसरिदम्बुयवाः करीरम् ।

जम्बूः कशेरुतृणकं क्रमुकं मृणालं निष्पावबीजमपि तालफलाश्चिमजा ॥

शालूकतिन्दुककठिल्लकबालतालं शिम्बी च पत्रभवशाकमुदुम्बरं च ।

शीताम्बु रासभयोऽपि विरुद्धमन्नं क्षारोऽपि शुष्कपललं क्षतजस्रुतिश्च ॥

क्षौद्रं कषायकटुतिक्तरसाः व्यवायो हस्त्यश्चयानमपि चङ्क्रमणं च खट्वा ।

आध्मानिनोऽर्दितवतोऽपि पुनर्विशेषात् स्नानं प्रदुष्ट सलिलं द्विजघर्षणं च ॥

निःशेषतन्त्रपरिकीर्तित एष वर्गोऽनृणां समीरणगदेषु मुदं न धत्ते ॥ भै.र.वातव्याधि चिकित्सा

(२६/६२६-६३०)

Osteoarthritis: 206, 207, 208, 209

Osteoarthritis is one of the musculoskeletal disorder affecting human beings will result in disability. It is one of the most common types of degenerative joint disorder. Osteoarthritis present clinically as pain in joint and crepitus in the elderly persons. The term Osteoarthritis was coined by “John Spondon”. The word Osteoarthritis comprises three words namely “osteon, arthron and itis” which means bone, joint and inflammation respectively. Decreased joint space, osteophytes and a variety of deformities will develop as the disease progresses which are evident radiographically.

Epidemiology:

Osteoarthritis is the second commonest problem of the the musculoskeletal system in the world population (30%) after back pain, which is 50% according to World Health Organization. Prevalence of Osteoarthritis in rural India is 5.78% as per the report from a study. Risk factors of Osteoarthritis of the knee is associated with obesity, nonsmoking, age, female sex, occupational bending of the knee and physical labour. 5% reduction in weight, reduces the risk of Osteoarthritis by 50%.

Risk factors of Osteoarthritis:**Age:**

Osteoarthritis usually begins in who is 40 years or more. Osteoarthritis is commonly seen in every individual by the age of 60. Most individual over 60 years of age will show radiological evidence of Osteoarthritis in one or both the knees.

Sex:

Women are having double the chance for getting osteoarthritis than men. However male below 45 years are less prone to osteoarthritis of knee, where as above 55 years prevalence rate is high. Post menopausal estrogen deficiency is thought to be linked in the incidence of osteoarthritis in female.

Hereditary:

Monozygotic twins have significant concordance of osteoarthritis than dizygotic twins suggestive of involvement of genetic component. Autosomal dominant mutation in Type-II collagen is an important genetic component of osteoarthritis shown in a study.

Trauma:

Trauma to the joint will disturb the alignment of joint; over a period of time will result in osteoarthritis.

Repetitive stress:

Unequal length of the lower limb, abnormal gait, carrying heavy load and abnormal posture will lead to stress and strain to the joint ultimately result in osteoarthritis.

Occupation:

Occupational bending of knee and repetitive use of joint will result in erosion and ultimately damage to the joint. On the long run, it will result in the manifestation of osteoarthritis.

Endocrine Disease:

Endocrine disorders like Acromegaly, Hyperparathyroidism and Obesity will result in the manifestation of osteoarthritis. Obesity plays a major role in the etiology osteoarthritis of knee. For those have body mass index at the baseline, relative risk of developing osteoarthritis of knee is 1.5 for men and 2.1 for women of 36 years. Relative risk of severe knee osteoarthritis is rise to 1.9 in men and 3.9 for women.

CPPD:

Calcium pyrophosphate dehydrate crystal deposition disease occurs when they deposit in the joint and surrounding tissues. Deposition of crystals will provoke the inflammation in the joint causing cartilage to break down.

Pathology of Osteoarthritis: (Harison)

Progressive loss of cartilages of articulation is the cardinal pathological feature of Osteoarthritis. It is not only disease of cartilage but also an organ, synovial joint and all the tissues are affected. Tissues such as subchondral bone, mensci, synovium, ligaments and cartilage as well as neuromuscular apparatus.

Morphological change is seen in load bearing areas in Osteoarthritis. Cartilages become thicker in early stage of the disease. Cartilages soften due to thinning of joint surface with the progression of disease. Cleft will be developed due to breach in the integrity of the surface. It is called fibrillation. It will result in development of ulcers in deep cartilage, even extending up to bone.

Remodeling and bone hypertrophy are the features of Osteoarthritis. Appearance of appositional growth in bone in the subchondral region is known as bony sclerosis, which can be seen radiographically. Osteophytes are formed due to growth in the bone and cartilage at margins of the joint. Osteophytes will resist the movement of joint due to alterations in the contour of the joint. Osteophytes are the hallmark of Osteoarthritis. Movement of the joint is further restricted due to chronic patchy synovitis and joint capsule thickening. Disability of the joint will develop due to periarticular muscle wasting.

Pathogenesis of Osteoarthritis: (API)

Chondrocytes are present normally in hyaline cartilage. Water, proteoglycans and type II collagens present in extracellular matrix where chondrocytes are embedded. There will be equally degeneration and regeneration take place where the cartilage remains stable. Osteoarthritis will result due to degeneration rather than regeneration. Numerous inactive matrix metalloproteinases (MMPs) are secreted by the chondrocytes include stromelysin, gelatinase and collagenase will destroy the whole cartilage framework. They will be activated by plasmin and stromelysin.

Tissue plasminogen activator (tPA) released by chondrocytes that converts blood or chondrocyte derived plasminogen in to active plasmin. Interleukin-I (IL-I) having pivotal role in the pathogenesis of Osteoarthritis. IL-I will increase the secretion and synthesis of inactive matrix metalloproteinases (MMPs) and plasminogen activator (tPA) and proteoglycan synthesis suppression will result in decrease in the cartilage repair. Matrix and cartilage degeneration as well as active chondrocyte replication with enhanced biosynthesis is seen in early stage of the disease. Pain in Osteoarthritis will originate from capsule, synovium, periosteum, subchondral bone, ligaments and bone as cartilage is devoid of nerve endings.

Clinical features: (API & Harrison)**Symptoms of Osteoarthritis:****Joint Pain:**

Pain in Osteoarthritis is deep aching with localized to the affected joint. It will aggravate by the use of joint and relieved by rest. Pain will be persistent with the progression of disease. Pain will present during ascending or descending stairs, squatting position in toilet, climbing to auto and buses etc.

Stiffness:

Stiffness of the affected joint will be seen early in the morning after awakening from the bed or after a period of inactivity. Stiffness will last less than 20 minutes. Sometimes it will be seen from 5 to 30 minutes. Stiffness is due to muscle spasm and muscle weakness. Morning stiffness is not associated with the severity of degeneration.

Signs of Osteoarthritis:

Common signs of knee arthritis include bony swelling, crepitus, synovial effusion, deformity of joint, restricted joint movement, muscle weakness and muscle wasting. Crepitus is very common in knee arthritis. Local warmthness and synovial effusion is

an indication of inflammation. Histologic evidence of inflammation of synovium is marked in advance stage of arthritis.

Joint space narrowing is seen as earliest feature of knee arthritis. Formation of Osteophytes in Osteoarthritis is the hall mark. All these are seen in advanced stage of Osteoarthritis. Diagnosis will be based on clinico-radiological. There is no radiological evidence in early stage where as only 50-60% are symptomatic radiologically. American rheumatology criteria can be used for the diagnosis of Osteoarthritis. Laboratory abnormalities are not seen in primary Osteoarthritis. Synovial fluid is essentially normal initially. Inorganic pyrophosphate concentration increase will be positively correlated with severe radiologic Osteoarthritis.

Management of Osteoarthritis:

Minimising pain, reducing disability and optimizing function are the main aim of treatment of Osteoarthritis. Non pharmacological, pharmacological and surgical approach is required in the management of Osteoarthritis.

Non-Pharmacological measures:

Patient education:

Patient should be well educated regarding joint protection measures like proper joint posture and reducing weight loading on joints. Modification in performing daily activities such as toilet posture changing Indian style to western type, avoid sitting on low chairs, descending and ascending stairs.

Exercise:

Exercise which strengthens the quadriceps muscle is ideal in knee Osteoarthritis.

Weight reduction:

Weight reduction is very much essential in obese patients.

Physiotherapy measures:

Hot packs (superficial heat) and paraffin bath on periarticular tissue will reduce pain, muscle spasm and joint stiffness. Deep heating modalities such as ultrasound and diathermy should be avoided.

Pharmacological measures:

Analgesics and Non steroidal anti inflammatory drugs (NSAID):

NSAIDs are commonly used measure in the management of pain and inflammation in Osteoarthritis. It is having untoward action on GIT and on renal system. Acetaminophen 1gm 3-4 times per day will be equally effective like other NSAIDs. Meloxicam, celecoxib and rofecoxib are COX-2 inhibitors have shown equal efficacy

with less side effects. Pain and tenderness can be relieved by topical application of Capsaicin cream. There will be marked improvement in symptoms with intra articular steroid injections. Repetitive large dosage will damage cartilage.

Disease modifying agents:

Chondroitin sulphate (800 mg/day) and glucosamine sulphate (1000-1500 mg/day) are used as pharmacological measures or as nutritional supplements in various countries. Hyaluronan used as intra articular injection has shown promising results.

Surgical measures:

Osteotomy, arthroplasty, synovectomy, arthrodesis, loose body removal, tendon repair, nerve decompression and debridement are the surgical measures used in Osteoarthritis. Total knee replacement surgery will improve the quality of life and reduce the morbidity in Osteoarthritis.

Stem Cell therapy for knee pain (Indian express 12th October 2017):

Platelet rich plasma therapy otherwise called PRP therapy, attempts to take advantage of the blood's natural healing properties to repair damaged cartilage, ligament and tendons. The goal is to reduce pain, improve joint function and to possibly slow, halt or even repair the damaged cartilage.

What does PRP therapy do?

Inhibit inflammation and slow down the progression of Osteoarthritis. Stimulate the formation of new cartilage. Increase the production of natural lubricating fluid in the joint, thereby easing painful joint friction. Contain protein that alter the patient's pain receptors and reduce pain.

Patients should keep in mind that PRP is not a cure all, it may be best used in combination with non surgical treatments and lifestyle changes, such as physical therapy, weight loss, bracing and NSAIDs.

REVIEW ON PREVIOUS RESEARCH WORKS

Some of the studies carried out on Sandhigatavata/Osteoarthritis

Clinical study on Sandhigatavata w.s.r to Osteoarthritis and its management by Panchatikta Ghrita Guggulu.

Akhtar B, Mahato RR, Dave AR, Shukla VD

Ayu. 2010 Jan; 31(1):53-7

Clinical effect of Nirgundi patrapinda sweda and Ashwagandhadi Guggulu yoga in the management of Sandhigatavata (Osteoarthritis).

Joshi A, Mehta CS, Dave AR, Shukla VD

Ayu. 2011 Apr; 32(2):207-12

Clinical study on Laksha Guggulu, Snehana, Swedana and amp, traction in Osteoarthritis (Knee joint).

Rajoria K, Singh SK, Sharma RS, Sharma SN

Ayu. 2010 Jan; 31(1):80-7

A clinical study of Matravasti and an ayurvedic indigenous compound drug in the management of Sandhigatavata (Osteoarthritis).

Shah MR, Mehta CS, Shukla VD, Dave AR, Bhatt NN

Ayu. 2010 Apr; 31(2):210-7

The effectiveness of Commiphora mukul for Osteoarthritis of knee an outcomes study.

Singh BB, Mishra LC, Vinjamury SP, Aquilina N, Singh VJ, Shepard N

Altern Ther Health Med. 2003 May-June; 9(3): 74-9

DRUG REVIEW

Panchatikta Ghrita is used for the administration of Arohana and Sadharana krama matravasti. It is mentioned that, the diseases arising from asthi dhatu, then tikta rasa sadhita vasti is the ideal treatment²¹⁰. Bahya and abhyantara sneha is mentioned in Asthi-majjagata vata vikara chikitsa²¹¹. Panchatikta Ghrita is prepared as mentioned in Sharangadhara samhita²¹². It is essential to know the properties of dravya belong to Panchatikta. They are as mentioned below.

Table no: 34 showing the rasa panchakas of panchatikta

Sl. No	Name/Family/ Botanical name	रस	गुण	वीर्य	विपाक	दोषघ्नत/ कर्म	प्रयोज्याङ्ग
1	Gudoochi ²¹³ / Menispermaceae/ Tinospora cordifolia	तिक्त, कषाय कटु	लघु	उष्ण	मधुर	त्रिदोषघ्न बल्य रसायन वेदनाहर	काण्ड
2	Nimba ²¹⁴ / Meliaceae/ Azadiracta indica	तिक्त, कटु, कषाय	लघु	शीत	कटु	कफपित्तघ्न बल्य शोथघ्न रसायन वेदनाहर	त्वक्
3	Vasa ²¹⁵ / Acanthaceae/ Justicia adhatoda	तिक्त, कषाय	लघु	शीत	कटु	कफपित्तघ्न शोथघ्न रसायन वेदनाहर	पत्र
4	Kantakari ²¹⁶ / Solanaceae/ Solanum virginianum	तिक्त, कटु	लघु	उष्ण	कटु	कफवातघ्न शोथघ्न वेदनाहर	पञ्चाङ्ग
5	Patola ²¹⁷ / Cucurbitaceae/ Tricosanthes dioica	तिक्त	लघु स्निग्ध	उष्ण	कटु	त्रिदोषघ्न बल्य दीपन पाचन	पञ्चाङ्ग

अस्थ्याश्रयाणां व्याधीनां पञ्चकर्माणि भेषजम् ।

बस्तयोः क्षीरसर्पिषी तिक्तकोपहितानि च ॥ च.सू.२८/२७

बाह्याभ्यन्तरतः स्नेहैरस्थिमज्जगतं जयेत् । च.चि.२८/९३

पञ्चतित्त घृतं:

वृषनिम्बामृताव्याघ्रीपटोलानां शृतेन च ॥

कल्केन पक्वं सर्पिस्तु निहन्याद्विषमज्वरान् ।

पाण्डुं कुष्ठं विसर्पं च क्रिमीनशांसि नाशयेत् ॥ शा.म.९/९१-९२

गुडूची मधुपर्णी स्यादमृताऽमृतवल्लरी ।

छिन्नाछिन्नरुहा छिन्नोद्भवा वत्सादनीति च ॥

जीवन्ती तन्निका सोमा सोमवल्ली च कुण्डली ।

चक्रलक्षणिका धीरा विशल्या च रसायनी ॥

चन्द्रहासा वयस्था च मण्डली देवनिर्मिता ।

गुडूची कटुका तित्ता स्वादुपाका रसायनी ॥

सङ्ग्राहिणी कषायोष्णा लघ्वी बल्याऽग्निदीपनी ।

दोषत्रयामतृद्दाहमेहकासांश्च पाण्डुताम् ॥

कामलाकुष्ठवातास्रज्वरक्रिमिवमीन्हरेत् ।

प्रमेहश्वासकासार्षः कृच्छ्रहृद्रोगवातनुत् ॥ भा.प्र.४/६-१० (वोल्फ्युम्-०१)

निम्बः स्यात्पिचुमर्दश्च पिचुमन्दश्च तित्तकः ।

अरिष्टः पारिभद्रश्च हिङ्गुनिर्यास इत्यपि ॥

निम्बः शीतो लघुग्राही कटुपाकोऽग्निवातनुत् ।

अहृद्यःश्रमतृट्कासज्वरारुचिक्रिमिप्रणुत् ॥

व्रणपित्तकफच्छर्दिकुष्ठहृल्लासमेहनुत् ॥

निम्बपत्रं स्मृतं नेत्र्यं क्रिमिपित्तविषप्रणुत् ।

वातलं कटुपाकश्च सर्वारोचककुष्ठनुत् ॥

निम्बपलं रसे तित्तं पाके तु कटुभेदनम् ।

स्निग्धं लघूष्णं कुष्ठघ्नं गुल्मार्शःक्रिमिमेहनुत् ॥ भा.प्र.४/९३-९६ (वोल्फ्युम्-०१)

वासको वासिकावासाभिषञ्जाता च सिंहिका ।

सिंहास्यो वाजिदन्ता स्यादाटरूषोऽऽटरूषकः ॥

आटरूषो वृषस्ताम्रः सिंहपर्णश्च स स्मृतः ।

वासको वातकृत्स्वर्यः कफपित्तास्रनाशनः ॥

तित्तस्तुवरको हृद्यो लघुशीतस्तृडार्तिहृत् ।
 श्वासकासज्वरच्छर्दिमेहकुष्ठक्षयापहः ॥ भा.प्र.४/८८-९० (वोल्याम्-०१)
 कण्टकारी तु दुःस्पर्शा क्षुद्राव्याघ्री निदिग्धिका ।
 कण्टालिका कण्टकिनी धावनी बृहती तथा ॥
 श्वेता क्षुद्रा चन्द्रहासालक्ष्मणाक्षेत्रदूतिका ।
 गर्भदा चन्द्रमा चन्द्री चन्द्रपुष्पा प्रियङ्करी ॥
 कण्टकारी सरा तित्ता कटुका दीपनी लघुः ।
 रूक्षोष्णा पाचनी कासश्वासज्वरकफानिलान् ॥
 निहन्ति पीनसं पार्श्वपीडाक्रिमिहृदामयान् ।
 तयोः फलं कटु रसे पाके च कटुकं भवेत् ॥
 शुक्रस्य रेचनम् भेदि तित्तं पित्ताग्निकृल्लघु ।
 हन्यात्कफमरुत्कण्डूकासमेदः क्रिमिज्वरान् ॥
 तद्वत्प्रोक्ता सिता क्षुद्रा गर्भकारिणी । भा.प्र.४/३८-४३ (वोल्याम्-०१)
 पटोलपत्रं पित्तघ्नं दीपनं पाचनं लघु ।
 स्निग्धं वृष्यम् तथोष्णं च ज्वरकासक्रिमिप्रणुत् ॥ भा.प्र.पू.१०/४० (वोल्याम्-०१)
 पटोलः कुलकस्तित्तः पाण्डुकः कर्कशच्छदः ।
 राजीफलः पाण्डुफला राजेश्चामृतफलः ॥
 बीजगर्भः प्रतीकश्च कुष्ठहा कासभञ्जनः ।
 पटोलं पाचनं हृद्यं वृष्यं लघ्वग्निदीपनम् ॥
 स्निग्धोष्णं हन्ति कासास्रज्वरदोषत्रयक्रिमीन् ॥ भा.प्र.पू.१०/६९-७० (वोल्याम्-०१)
 पटोलस्य भवेन्मूलं विरेचनकरं सुखात् ।
 नालं श्लेष्महरं पत्रं पित्तहारि फलं पुनः ॥
 दोषत्रयहरं प्रोक्तं तद्वत्तित्ता पटोलिका ॥ भा.प्र.पू.१०/७१-७२ (वोल्याम्-०१)

Go Ghrita/Cows Ghee:

Ghrita is one among the Chaturvidha sneha²¹⁸. Ghrita is best among the chaturvidha sneha due to its “samskarasya anuvartanat”²¹⁹. Ghrita is recommended in Vata vikaras due to its instant nourishment to the ksheena dhatus and even enhances the strength, digestive capacity and longevity.

सर्पिस्तैलं वसा मज्जा स्नेहोदिष्टश्चतुर्विधः ।
 पानाभ्यञ्जनबस्त्यर्थं नस्यार्थं चैव योगतः ॥ च.सू.१/८६
 सर्पिस्तैलं वसा मज्जा सर्वस्नेहोत्तमा मतः ।
 एषु चैवोत्तमं सर्पिः संस्कारस्यानुवर्तनात् ॥ च.सू.१३/१३
 स्नेहाद्घातं शमयति, शैत्यात् पित्तं नियच्छति ।
 घृतं तुल्यगुणं दोषं संस्कारात्तु जयेत् कफम् ॥
 नान्यः स्नेहस्तथा कश्चित् संस्कारमनुवर्तते ।
 यथा सर्पिरतः सर्पिः सर्वस्नेहोत्तमं मतम् ॥ च.नि.१/३९-४०

Table no: 35 showing properties of Ghrita according to different Acharyas

Charaka ²²⁰	Sushruta ²²¹	Vagbhata ²²²
Madhura Rasa, Sheeta Veerya, Madhura Vipaka, Vata Pitta Prashamana, Unmada, Apasmara, Moorcha, jwara, shosha, Gara visha, Yoni, Karna and Shiroroga nashana Sahasra veerya and Karma Sahasrakrit	Madhura Rasa, Sheeta Veerya, Madhura Vipaka, Vata Pitta Prashamana, Deepana, Smriti, Medhakara, Ojo Vardhaka, Vrishya, Vaya Sthapana, Chakshushya, Vishahara, Rakshogna, Unmada, Apasmara, jwara nashaka	Madhura Rasa, Sheeta Veerya, Madhura Vipaka, Vata Pitta Prashamana, Unmada, Apasmara, Moorcha, jwara, shosha, Gara visha, Yoni, Karna and Shiroroga Nashana Sahasra veerya and Karma Sahasrakrit, Kshataksheena, Visarpa

स्मृतिबुद्ध्यग्निशुक्रौजःकफमेदोविवर्धनम् ।
 वातपित्तविषोन्मादशोषालक्ष्मीज्वरापहम् ॥
 सर्वस्नेहोत्तमं शीतं मधुरं रसपाकयोः ।
 सहस्रवीर्यं विधिभिर्घृतं कर्मसहस्रकृत् ॥
 मदापस्मारमूर्च्छायशोषोन्मादगरज्वरान् ।
 योनिकर्णशिरःशूल घृतं जीर्णमपोहति ॥ च.सू.२७/२३१-२३३
 घृतं पित्तानिलहरं रसशुक्रौजसां हितम् ।
 निर्वापणं मृदुकरं स्वरवर्णप्रसादनम् ॥ च.सू.१३/१४
 वातपित्तप्रकृतयो वातपित्तविकारिणः ।

चक्षुःकामाः क्षताः क्षीणा वृद्धा बालास्तथाऽबलाः ॥

आयुःप्रकर्षकामाश्च बलवर्णस्वरार्थिनः ।

पुष्टिकामाः प्रजाकामाः सौकुमार्यार्थिनश्च ये ॥

दीप्त्योजःस्मृतिमेधाग्निबुद्धीन्द्रियबलार्थिनः ।

पिबेयुः सर्पिरार्ताश्च दाहशस्त्रविषाग्निभिः ॥ च.सू.१३/४१-४३

सर्पिः स्नेहयति । च.सू.२७/४

घृतंतुमधुरंसौम्यंमृदुशीतवीर्यमल्पाभिष्यन्दि

स्नेहनमुदावर्तोन्मादापस्मारशूलज्वरानाहवातपित्तप्रशमनमग्निदीपनं

स्मृतिमतिमेधाकान्तिस्वरलावण्यसौकुमार्यो जस्तेजोबलकरमायुष्यं वृष्यं मेध्यं वयः स्थापनं गुरु चक्षुष्यं

श्लेष्माभिवर्धनं पाप्मालक्ष्मीप्रशमनं विषहरं रक्षोघ्नञ्च । सु.सू.४५/९६

विपाके मधुरं शीतं वातपित्तविषापहम् ।

चक्षुष्यमग्र्यं बल्यं च गव्यं सर्पिर्गुणोत्तमम् ॥

आजं घृतं दीपनीयं चक्षुष्यं बलवर्धनम् ।

कासे श्वासे क्षये चापि पथ्यं पाके च तल्लघु ॥ सु.सू.४५/९७-९८

शस्तं धीस्मृतिमेधाग्निबलायुः शुक्रचक्षुषाम् ।

बालवृद्धप्रजाकान्तिसौकुमार्यस्वरार्थिनाम् ॥

क्षतक्षीणपरीसर्पशस्त्राग्निग्लपितात्मनाम् ।

वातपित्तविषोन्मादशोषालक्ष्मीज्वरापहम् ॥

स्नेहानामुत्तमं शीतं वयसः स्थापनं घृतम् । अ.ह.सू.५/३७-३८

Table no: 36 showing the chemical constituents of Ghee²²³:

Sl.No	Fats & Fatty acids	Amount per hundred grams of Ghee
1	Total Fat	99.5gm
2	Saturated Fat	61.9gm
3	Monounsaturated fat	28.7gm
4	Polyunsaturated Fat	3.7gm
5	Trans fat	4gm
6	Omega-3 fatty acid	1.447mg
7	Omega-6 fatty acid	2.247mg
8	Omega-9 fatty acid	25.026mg
9.	Vitamin-A	3069IU
10	Vitamin-E	15.7mg
11.	Vitamin-K	8.6 micro gram

MATERIALS AND METHODS

In Ayurveda, research is essential to revalidate the ancient scriptures and to establish authority on the subject.

Research Approach:

The main aim of the study was to compare the Arohana krama and Sadharana krama matravasti in janusandhigatavata. After the completion of full treatment, the results were assessed by comparing the baseline data with the after follow up data.

Research Design:

An open labelled randomized comparative clinical trial

Total 150 patients fulfilling the criteria of janusandhigatavata was randomly assigned and distributed in two groups. Results of Sadharana krama matravasti group was compared with Arohana krama matravasti group.

Source of Data:

a) **Patients:** Patients suffering from janusandhigatavata was selected from O.P.D and I.P.D, Department of Panchakarma, S.J.S.A.C and Hospital, Chennai.

b) **Literary:** Literary aspect of the study was collected from the Ayurvedic classics and modern texts with updated recent medical journals.

Selection criteria:

The patients were selected basing on the preset inclusion and exclusion criteria.

a) Inclusion criteria:

Patients with classical signs and symptoms of janusandhigatavata

Patients suffering from janusandhigatavata **of Nirupastambha vata (Anavrita vata)**

Patient fit for Matrabasti karma (Vastiyogya)

Patient between the age group of 40 and 70 years

No discrimination of sex and chronicity.

b) Exclusion criteria:

Patient below 40 and above 70 years are excluded

Pregnant women, lactating mother and mentally challenged people

Systemic diseases like Diabetes, Hypertension, Carcinoma, Tuberculosis, Obesity, Fractured knee etc.

Patient suffering from **Upastambhitavata (Avaranajanya), Kaphamedavritavata**

Patient having **Ama lakshana**

Patients of **Santarpanajanyavikara**

Patient suffering with **Arsha, gudabhramsha, parikartika** etc

Diagnostic criteria:

X-ray of Knee

ACR criteria of OA using history and physical examination

Pain in the knee along with any three of the following

Over 50 years of age

Morning stiffness less than 30 minutes

Crepitus on active motion

Bony tenderness

Bony enlargement

No palpable warmth on the synovium

Intervention and posology:

Sadharana krama matravasti: (Group-A)

Matravasti administered in 72ml of dose of Panchatiktaghrita for 09 days.

Arohana krama matravasti: (Group-B)

Matravasti administered for 09 days in the increasing order of dose of Panchatiktaghrita. First day 48ml (1pala), everyday increase 1/4th of pala (12ml), so that on 9th day 144ml dose was given.

Method of Assessment of clinical response:

Assessment was done on 0 day, 9th day and on 27th day.

Analysis was done by using **t test**.

Subjective and objective parameters were used to assess the clinical response.

Womac scale was used to probe the symptoms like pain, stiffness and physical function.

Gradation for assessment criteria:

Subjective Parameter:

1. Sandhi shoola(Pain)

Grade- 0- No Pain

Grade- 1- Reveals on enquiry

Grade- 2- Present during movement

Grade- 3- Persistent pain/Continuous

2. Sthambha (Morning Stiffness)

Grade- 0- Absent

Grade- 1- Present

Objective Parameter:

1. Sandhi Atopa (Crepitus)

Grade- 0-Absent

Grade- 1- Perception on touch

Grade- 2- Audible on attention

Grade- 3- Audible clearly

2. Sandhi Shotha (Swelling) (Measured with tape)

Grade- 0-Absent

Grade- 1- Slightly Obvious

Grade- 2- Covers well over the bony prominence

Grade- 3- Much Elevated

3. Sandhigati (Joint movement) (Measured with Goniometer)

Grade- 0- Full range of flexion

Grade- 1- >75% & <full range

Grade- 2- 50 to 75% of the full range of joint movement

Grade- 3- Up to 50% of the full range of joint movement

Grade- 4- Absence of movement

4. Walking Time to cover 20 meter distance

Grade- 0- Up to 20 seconds

Grade- 1- 21 to 30 seconds

Grade- 2- 31 to 40 seconds

Grade- 3- 41 to 50 seconds

Grade- 4- 51 to 60 seconds

5. SparshaAkshamatwa (Tenderness)

Grade-0-No Tenderness

Grade-1-Mild tenderness

Grade-2-Winces the affected joint is touched

Grade-3-Winces and withdraws the affected joint

6. WOMAC (Western Ontario & McMaster Universities Index of Osteo arthritis)

None-0

Slight-1

Moderate-2

Severe-3

Extreme-4

Interpretation:

Minimum total score-0

Maximum total score-96

Overall Assessment of Clinical Response:

Good Response- >75% of improvement in clinical parameters

Moderate response- 51 to 75% of improvement in clinical parameters

Mild response- 26 to 50% of improvement in clinical parameters

Poor Response- 1 to 25% of improvement in clinical parameters

No Response- 0% of improvement in clinical parameters

Materials

Standard Operating Procedure for Matravasti

Materials Required:

- Matravasti Syringe-01
- Gloves-01 pair
- Rubber catheter-01
- Vessel with handle-01
- PanchatiktaGhrita-Q.S
- Stove with cylinder-01
- Oil for Abhyanga-Q.S
- Nadisweda Yantra-01
- Wide vessel with warm water to heat the oil/ghrita
- Surgical Towel-01
- Abhyanga Table-01

Procedure:

Poorvakarma:

- General and per rectal examination of the patient was carried prior to the administration of matravasti
- Patient was instructed to eliminate the natural urge
- Abhyanga and Nadisweda was carried on the abdomen and low back region
- Laghu ahara which was 1/4th less than usual quantity given to the patient
- Patient was instructed to walk for hundred steps (shatapadi chankramana) before the procedure

- Patient was made to lie down on left lateral posture with left leg kept straight and right leg flexed and placed over left knee
- Phanchatikta Ghrita was made luke warm indirectly by placing it in a vessel containing hot water
- Required quantity of Phanchatikta Ghrita was measured and filled in the enema syringe

Pradhana Karma:

- The trapped air in the enema syringe was removed by gently pressing the plunger
- Then anal region and tip of the vastinetra was smeared with oil for easy administration of enema nozzle
- Vastinetra was carefully introduced into the anal canal in the direction of vertebral column
- Sneha dravya was pushed with uniform force neither too slow nor too fast
- A little amount of sneha dravya was retained in the vastiputaka
- Vastinetra was removed slowly and cautiously

Paschat Karma:

- Patient was made to lie in supine posture for 100 matra kala (10-15minutes)
- Massage was done on the abdomen in anticlockwise direction
- Palms and soles of the patient was rubbed
- Cot of the patient was raised for three times at the foot end
- Patient was instructed to lie down in supine by placing a pillow below the thighs
- Patient was instructed to attend the urge during its commencement
- Warm water was advised for all the purpose (drink & bath)

Note:

Day	Sadharanakramamatravasti	Arohana krama matravasti
Day1	72ml	48ml
Day2	72ml	60ml
Day3	72ml	72ml
Day4	72ml	84ml
Day5	72ml	96ml
Day6	72ml	108ml
Day7	72ml	120ml
Day8	72ml	132ml
Day9	72ml	144ml
Total	648ml	864ml

Standard operating procedure for the preparation of Panchatiktaghrita:

Panchatiktaghrita was prepared as per the guidelines mentioned in Sharangadhara Samhita madhyama khanda.

Materials required:

Gudoochi-31kg

Nimba-31kg

Vasa-31kg

Kantakari-31kg

Patola- 31kg

Go-Ghrita (Cows Ghee)-125kg

Water-Sufficient Quantity

Weighing machine, Khalwayantra, Wide mouthed vessel, Stainless steel ladle, Cotton cloth, measuring jar, Gas stove with LPG cylinder

Preparation:

Poorva karma:

All the drugs are cleaned properly.

Preparation of PanchatiktaKwatha:

Panchatiktakwathachoorna- 125kg

Water- 2000 litres

Panchatikthakwathachoorna (coarse powder) and water are taken in a wide vessel and kept on mild flame. It was boiled and reduced to 1/4th (500 litres) decoction. It was filtered and stored in another vessel.

Pradhana Karma:

Preparation of Ghrita:

Panchatikta Kalka-30kg (6kg of each drug)

Go-Ghrita-4 Parts 125kg

Panchatikta Kwatha-500 Litres

Above mentioned materials taken in a wide vessel and heated over mild flame for three days to get the madhyama paka siddha ghrita lakshana. Initially there will be appearance of bigger bubbles gradually it subsides to form smaller bubbles. It indicates the ghrita siddha lakshana. Total 115kilograms of the final product obtained. Ghrita was prepared at Shankara Ayur Pharmacy, Chennai under the supervision of Bhashajyakalpana expert.

Paschat Karma:

Vessel was taken out from the fire, filtered and stored in glass jars after becoming cool.

Note:

Ghrita siddha lakshana:

Phena shanti(reduction in bubbles)

Vartivatsnehakalka (thready appearance when rolled between fingers)

Agni pareeksha-Absence of crackling sound when kalka put into fire

Gandhapareeksha-Sneha emits the smell of dravya used

FLOW CHART SHOWING THE PLAN OF STUDY

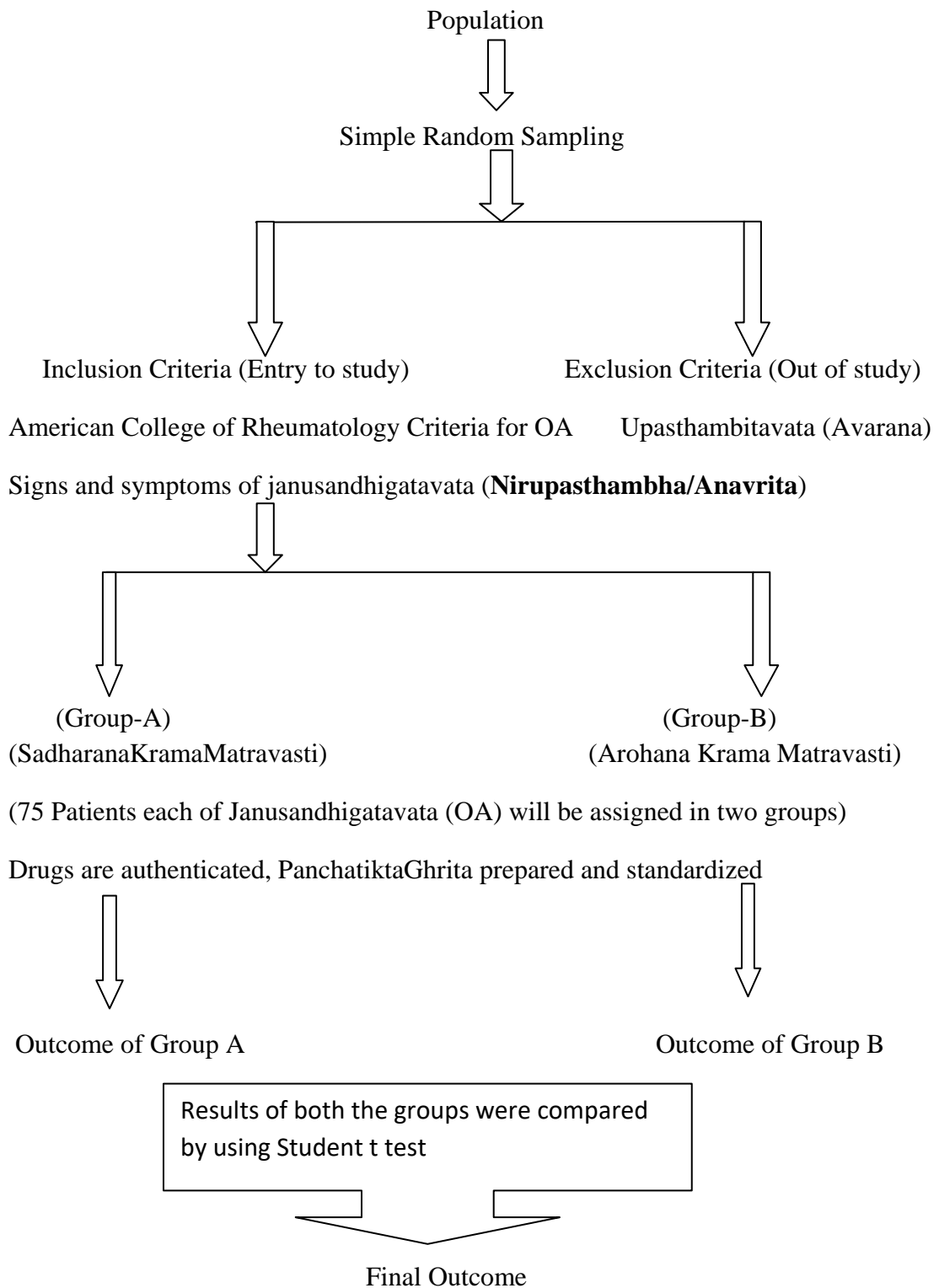


Table no: 38: Showing the demographic data of Group-A patients

Sl.No	OPD No	Age	Sex		Religion			Occupation			Economic status				Mode of onset		
			Male	Female	Hindu	Muslim	Christian	L	S	E	P	L	U	R	A	C	I
1	4746/16	66	+	-	+	-	-	-	+	-	-	-	+	-	-	+	-
2	12688/16	52	+	-	+	-	-	+	-	-	-	+	-	-	-	+	-
3	12883/16	60	+	-	+	-	-	-	+	-	-	+	-	-	-	+	-
4	12898/16	50	-	+	+	-	-	+	-	-	-	+	-	-	-	+	-
5	12918/16	59	+	-	+	-	-	-	+	-	-	-	+	-	-	+	-
6	12943/16	62	+	-	+	-	-	+	-	-	-	+	-	-	-	+	-
7	13022/16	55	-	+	+	-	-	+	-	-	-	+	-	-	-	+	-
8	13037/16	70	+	-	+	-	-	-	+	-	-	+	-	-	-	+	-
9	13052/16	59	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
10	13150/16	50	+	-	+	-	-	+	-	-	-	+	-	-	-	+	-
11	13738/16	56	-	+	+	-	-	-	+	-	-	-	+	-	-	+	-
12	13842/16	57	+	-	+	-	-	+	-	-	-	+	-	-	-	+	-
13	14175/16	56	+	-	+	-	-	-	+	-	-	+	-	-	+	-	-
14	14215/16	45	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
15	14294/16	50	-	+	+	-	-	+	-	-	-	+	-	-	-	+	-
16	14412/16	48	-	+	+	-	-	-	+	-	-	-	+	-	-	+	-
17	14451/16	56	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
18	25/17	67	+	-	+	-	-	+	-	-	+	-	-	-	-	+	-
19	43/17	69	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-

Note: L-Labour, S-Sedentary, E-Executive, P-Poor, L-Lower middle, U-Upper middle, R-Rich, A-Acute, C-Chronic, I-Insidious.

Table no: 39: Showing the demographic data of Group-A patients

Sl.No	OPD No	Age	Sex		Religion			Occupation			Economic status				Mode of onset		
			Male	Female	Hindu	Muslim	Christian	L	S	E	P	L	U	R	A	C	I
20	73/17	55	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
21	278/17	45	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
22	289/17	62	+	-	+	-	-	+	-	-	+	-	-	-	-	+	-
23	455/17	70	+	-	+	-	-	+	-	-	-	+	-	-	-	+	-
24	642/17	48	-	+	+	-	-	-	+	-	-	-	+	-	+	-	-
25	686/17	45	+	-	+	-	-	+	-	-	-	+	-	-	-	+	-
26	780/17	45	-	+	+	-	-	+	-	-	-	+	-	-	-	+	-
27	895/17	43	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
28	934/17	55	-	+	+	-	-	+	-	-	-	+	-	-	-	+	-
29	1410/17	60	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
30	1536/17	43	+	-	+	-	-	+	-	-	+	-	-	-	-	+	-
31	1647/17	55	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
32	1687/17	56	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
33	1799/17	45	+	-	-	-	+	+	-	-	-	+	-	-	-	+	-
34	1823/17	60	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
35	1911/17	49	+	-	+	-	-	+	-	-	+	-	-	-	-	+	-
36	2077/17	50	+	-	+	-	-	+	-	-	+	-	-	-	-	+	-
37	2065/17	50	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
38	2228/17	50	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-

Note: L-Labour, S-Sedentary, E-Executive, P-Poor, L-Lower middle, U-Upper middle, R-Rich, A-Acute, C-Chronic, I-Insidious.

Table no: 40: Showing the demographic data of Group-A patients

Sl.No	OPD No	Age	Sex		Religion			Occupation			Economic status				Mode of onset		
			Male	Female	Hindu	Muslim	Christian	L	S	E	P	L	U	R	A	C	I
39	2226/17	45	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
40	2327/17	60	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
41	2456/17	52	+	-	+	-	-	+	-	-	+	-	-	-	-	+	-
42	2474/17	60	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
43	2591/17	60	+	-	+	-	-	+	-	-	+	-	-	-	-	+	-
44	2719/17	58	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
45	2722/17	59	-	+	+	-	-	+	-	-	-	+	-	-	-	+	-
46	2835/17	52	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
47	2922/17	55	+	-	+	-	-	-	+	-	-	+	-	-	-	+	-
48	2961/17	56	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
49	3150/17	54	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
50	3179/17	40	-	+	+	-	-	-	+	-	-	+	-	-	+	-	-
51	3482/17	46	+	-	+	-	-	-	+	-	-	+	-	-	+	-	-
52	3722/17	59	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
53	3745/17	58	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
54	3989/17	62	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
55	3976/17	52	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
56	4021/17	55	-	+	-	-	+	+	-	-	+	-	-	-	-	+	-
57	5452/17	65	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-

Note: L-Labour, S-Sedentary, E-Executive, P-Poor, L-Lower middle, U-Upper middle, R-Rich, A-Acute, C-Chronic, I-Insidious.

Table no: 41: Showing the demographic data of Group-A patients

Sl.No	OPD No	Age	Sex		Religion			Occupation			Economic status				Mode of onset		
			Male	Female	Hindu	Muslim	Christian	L	S	E	P	L	U	R	A	C	I
58	5451/17	60	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
59	5482/17	65	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
60	5519/17	60	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
61	5669/17	59	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
62	5770/17	52	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
63	5783/17	53	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
64	5868/17	49	+	-	+	-	-	-	+	-	-	+	-	-	-	+	-
65	6176/17	42	+	-	+	-	-	+	-	-	+	-	-	-	-	+	-
66	6189/17	53	+	-	+	-	-	-	+	-	-	+	-	-	-	+	-
67	6299/17	49	+	-	+	-	-	+	-	-	+	-	-	-	-	+	-
68	6419/17	52	+	-	+	-	-	+	-	-	-	+	-	-	-	+	-
69	6532/17	50	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
70	6667/17	57	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
71	6749/17	59	+	-	+	-	-	+	-	-	+	-	-	-	-	+	-
72	6904/17	60	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
73	7477/17	63	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
74	7465/17	58	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
75	7566/17	53	+	-	+	-	-	+	-	-	-	-	+	-	-	+	-

Note: L-Labour, S-Sedentary, E-Executive, P-Poor, L-Lower middle, U-Upper middle, R-Rich, A-Acute, C-Chronic, I-Insidious.

Table no: 42: Showing the demographic data of Group-B patients

Sl.No	OPD No	Age	Sex		Religion			Occupation			Economic status				Mode of onset		
			Male	Female	Hindu	Muslim	Christian	L	S	E	P	L	U	R	A	C	I
1	13161/16	55	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
2	13260/16	55	-	+	+	-	-	+	-	-	-	+	-	-	-	+	-
3	13382/16	60	+	-	+	-	-	+	-	-	+	-	-	-	-	+	-
4	13353/16	55	-	+	+	-	-	+	-	-	-	+	-	-	-	+	-
5	13498/16	56	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
6	13507/16	58	+	-	+	-	-	-	-	+	-	-	+	-	-	+	-
7	13528/16	68	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
8	13600/16	45	+	-	+	-	-	+	-	-	-	+	-	-	-	-	-
9	13651/16	50	-	+	+	-	-	-	+	-	-	-	+	-	-	+	-
10	13640/16	68	+	-	+	-	-	+	-	-	+	-	-	-	-	+	-
11	13743/16	69	+	-	+	-	-	-	+	-	-	+	-	-	-	+	-
12	13851/16	67	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
13	14184/16	70	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
14	14296/16	62	+	-	+	-	-	+	-	-	+	-	-	-	-	+	-
15	14415/16	56	+	-	+	-	-	+	-	-	+	-	-	-	-	+	-
16	14422/16	70	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
17	14519/16	55	+	-	+	-	-	+	-	-	+	-	-	-	-	+	-
18	21/17	55	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
19	74/17	60	-	+	+	-	-	+	-	-	-	+	-	-	-	+	-

Note: L-Labour, S-Sedentary, E-Executive, P-Poor, L-Lower middle, U-Upper middle, R-Rich, A-Acute, C-Chronic, I-Insidious.

Table no: 43: Showing the demographic data of Group-B patients

Sl.No	OPD No	Age	Sex		Religion			Occupation			Economic status				Mode of onset		
			Male	Female	Hindu	Muslim	Christian	L	S	E	P	L	U	R	A	C	I
20	266/17	45	+	-	+	-	-	+	-	-	-	+	-	-	-	+	-
21	287/17	45	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
22	457/17	54	+	-	+	-	-	+	-	-	+	-	-	-	-	+	-
23	577/17	54	+	-	+	-	-	-	+	-	-	-	+	-	+	-	-
24	699/17	70	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
25	706/17	55	+	-	+	-	-	+	-	-	-	+	-	-	-	+	-
26	783/17	56	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
27	918/17	45	+	-	+	-	-	-	+	-	-	+	-	-	-	+	-
28	938/17	65	+	-	+	-	-	-	+	-	-	+	-	-	-	+	-
29	1538/17	45	-	+	+	-	-	+	-	-	-	+	-	-	-	+	-
30	1546/17	55	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
31	1660/17	55	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
32	1703/17	56	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
33	1801/17	40	-	+	+	-	-	+	-	-	-	+	-	-	+	-	-
34	1821/17	42	+	-	+	-	-	+	-	-	+	-	-	-	-	+	-
35	1912/17	50	+	-	-	+	-	+	-	-	-	+	-	-	-	+	-
36	2067/17	60	-	+	+	-	-	+	-	-	-	+	-	-	-	+	-
37	2185/17	52	+	-	+	-	-	+	-	-	-	+	-	-	-	+	-
38	2227/17	60	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-

Note: L-Labour, S-Sedentary, E-Executive, P-Poor, L-Lower middle, U-Upper middle, R-Rich, A-Acute, C-Chronic, I-Insidious.

Table no: 44: Showing the demographic data of Group-B patients

Sl.No	OPD No	Age	Sex		Religion			Occupation			Economic status				Mode of onset		
			Male	Female	Hindu	Muslim	Christian	L	S	E	P	L	U	R	A	C	I
39	2305/17	50	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
40	2408/17	50	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
41	2455/17	47	-	+	+	-	-	+	-	-	+	-	-	-	+	-	-
42	2473/17	55	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
43	2686/17	45	+	-	-	-	+	+	-	-	-	+	-	-	-	+	-
44	2710/17	60	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
45	2733/17	48	-	+	+	-	-	-	+	-	-	-	+	-	-	+	-
46	2844/17	55	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
47	2950/17	55	-	+	+	-	-	+	-	-	-	+	-	-	-	+	-
48	2968/17	58	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
49	3152/17	65	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
50	3240/17	45	-	+	+	-	-	-	+	-	-	+	-	-	+	-	-
51	3681/17	50	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
52	3750/17	53	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
53	3993/17	64	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
54	3994/17	62	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
55	4025/17	48	-	+	-	-	+	+	-	-	+	-	-	-	-	+	-
56	4014/17	60	-	+	+	-	-	-	+	-	-	-	+	-	-	+	-
57	5450/17	55	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-

Note: L-Labour, S-Sedentary, E-Executive, P-Poor, L-Lower middle, U-Upper middle, R-Rich, A-Acute, C-Chronic, I-Insidious.

Table no: 45: Showing the demographic data of Group-B patients

Sl.No	OPD No	Age	Sex		Religion			Occupation			Economic status				Mode of onset		
			Male	Female	Hindu	Muslim	Christian	L	S	E	P	L	U	R	A	C	I
58	5471/17	48	-	+	+	-	-	+	-	-	+	-	-	-	+	-	-
59	5523/17	58	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
60	5671/17	52	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
61	5673/17	48	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
62	5781/17	52	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
63	5865/17	50	+	-	+	-	-	-	+	-	-	+	-	-	-	+	-
64	5896/17	60	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
65	6185/17	52	+	-	+	-	-	-	+	-	-	+	-	-	-	+	-
66	6298/17	56	+	-	+	-	-	+	-	-	+	-	-	-	-	+	-
67	6433/17	53	+	-	+	-	-	-	+	-	-	+	-	-	-	+	-
68	6533/17	57	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
69	6650/17	52	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
70	6747/17	53	+	-	+	-	-	+	-	-	-	+	-	-	-	+	-
71	6899/17	57	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
72	7344/17	50	-	+	+	-	-	-	+	-	-	+	-	-	+	-	-
73	7431/17	50	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-
74	7550/17	51	-	+	+	-	-	+	-	-	+	-	-	-	-	+	-
75	7572/17	53	-	+	+	-	-	-	+	-	-	-	+	-	+	-	-

Note: L-Labour, S-Sedentary, E-Executive, P-Poor, L-Lower middle, U-Upper middle, R-Rich, A-Acute, C-Chronic, I-Insidious.

Table no: 46: Showing the Data of Personal history of Group-A patients

SI No	OPD No	Ahara		Vihara			Vyasana				Koshta			Nidra				Agni				Joints Involved		
		V	M	H	M	S	N	T	A	S	K	M	Mri	P	A	Adh	D	S	V	T	M	R	L	B
01	4746/16	-	+	-	-	+	-	+	-	-	-	+	-	-	+	-	-	+	-	-	-	-	-	+
02	12688/16	-	+	+	-	-	-	-	-	+	+	-	-	-	+	-	-	-	+	-	-	-	-	+
03	12883/16	+	-	-	-	+	-	-	+	-	-	-	+	+	-	-	-	-	-	+	-	+	-	-
04	12898/16	+	-	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
05	12918/16	+	-	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-
06	12943/16	-	+	+	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-
07	13022/16	-	+	+	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
08	13037/16	-	+	-	-	+	-	+	-	-	-	+	-	-	+	-	-	+	-	-	-	+	-	-
09	13052/16	-	+	+	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
10	13150/16	+	-	+	-	-	-	-	-	+	+	-	-	-	+	-	-	-	+	-	-	+	-	-
11	13738/16	+	-	-	-	+	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-
12	13842/16	-	+	+	-	-	-	-	-	+	-	+	-	+	-	-	-	+	-	-	-	+	-	-
13	14175/16	+	-	-	+	-	+	-	-	-	-	+	-	+	-	-	-	+	-	-	-	+	-	-
14	14215/16	-	+	-	+	-	+	-	-	-	-	+	-	+	-	-	-	+	-	-	-	-	+	-
15	14294/16	-	+	+	-	-	+	-	-	-	+	-	-	+	-	-	-	-	+	-	-	-	+	-
16	14412/16	+	-	-	-	+	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
17	14451/16	-	+	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
18	25/17	-	+	+	-	-	-	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	-	+
19	43/17	-	+	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	-	-	+

Note: V-Vegetarian, M-Mixed, H-Hard, M-Moderate, S-Sedentary, N-None, T-Tobacco, A-Alcohol, S-Smoking, K-Kroora, m-Madhyama, Mri-Mridu, P-Prakrita, A-Alpa, Adh-Adhika, D-Diwaswapna, S-Samagni, Vishamagni, T-Teekshnagni, M-Mandagni, R-right, L-Left, B-Both.

Table no: 47: Showing the Data of Personal history of Group-A patients

SI No	OPD No	Ahara		Vihara			Vyasana				Koshta			Nidra				Agni				Joints Involved		
		V	M	H	M	S	N	T	A	S	K	M	Mri	P	A	Adh	D	S	V	T	M	R	L	B
20	73/17	-	+	+	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
21	278/17	+	-	-	+	-	+	-	-	-	+	-	-	+	-	-	-	-	+	-	-	+	-	-
22	289/17	-	+	+	-	-	-	+	-	-	-	+	-	-	+	-	-	-	-	+	-	-	-	+
23	455/17	-	+	+	-	-	-	+	-	-	-	-	+	-	+	-	-	+	-	-	-	+	-	-
24	642/17	-	+	-	-	+	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
25	686/17	-	+	-	+	-	-	-	-	+	+	-	-	-	+	-	-	-	+	-	-	-	+	-
26	780/17	-	+	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-
27	895/17	-	+	+	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	-	-	+
28	934/17	-	+	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
29	1410/17	-	+	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
30	1536/17	-	+	+	-	-	+	-	-	-	-	+	-	-	+	-	-	+	-	-	-	+	-	-
31	1647/17	+	-	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-
32	1687/17	+	-	-	+	-	+	-	-	-	-	+	-	+	-	-	-	+	-	-	-	+	-	-
33	1799/17	-	+	+	-	-	-	-	+	-	-	+	-	+	-	-	-	+	-	-	-	+	-	-
34	1823/17	-	+	-	+	-	+	-	-	-	-	+	-	-	+	-	-	+	-	-	-	-	+	-
35	1911/17	-	+	+	-	-	-	-	-	+	-	-	+	-	+	-	-	-	-	+	-	-	+	-
36	2077/17	-	+	+	-	-	-	-	-	+	-	+	-	-	+	-	-	+	-	-	-	+	-	-
37	2065/17	+	-	-	+	-	+	-	-	-	+	-	-	+	-	-	-	-	+	-	-	+	-	-
38	2228/17	-	+	+	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-

Note: V-Vegetarian, M-Mixed, H-Hard, M-Moderate, S-Sedentary, N-None, T-Tobacco, A-Alcohol, S-Smoking, K-Kroora, m-Madhyama, Mri-Mridu, P-Prakrita, A-Alpa, Adh-Adhika, D-Diwaswapna, S-Samagni, Vishamagni, T-Teekshnagni, M-Mandagni, R-right, L-Left, B-Both.

Table no: 48: Showing the Data of Personal history of Group-A patients

SI No	OPD No	Ahara		Vihara			Vyasana				Koshta			Nidra				Agni				Joints Involved		
		V	M	H	M	S	N	T	A	S	K	M	Mri	P	A	Adh	D	S	V	T	M	R	L	B
39	2226/17	-	+	-	+	-	-	+	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
40	2327/17	-	+	-	+	-	-	+	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
41	2456/17	-	+	+	-	-	-	+	-	-	-	+	-	-	+	-	-	+	-	-	-	+	-	-
42	2474/17	+	-	-	+	-	+	-	-	-	-	+	-	-	+	-	-	+	-	-	-	+	-	-
43	2591/17	-	+	+	-	-	-	-	-	+	-	+	-	-	+	-	-	+	-	-	-	+	-	-
44	2719/17	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-
45	2722/17	+	-	-	+	-	+	-	-	-	-	+	-	-	+	-	-	+	-	-	-	+	-	-
46	2835/17	-	+	+	-	-	+	-	-	-	-	+	-	-	+	-	-	+	-	-	-	-	+	-
47	2922/17	+	-	-	+	-	-	+	-	-	-	-	+	-	+	-	-	-	-	+	-	+	-	-
48	2961/17	+	-	-	+	-	+	-	-	-	-	+	-	-	+	-	-	+	-	-	-	+	-	-
49	3150/17	-	+	-	+	-	-	+	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-
50	3179/17	+	-	-	-	+	+	-	-	-	-	+	-	+	-	-	-	+	-	-	-	+	-	-
51	3482/17	-	+	+	-	-	-	-	-	+	-	+	-	+	-	-	-	+	-	-	-	+	-	-
52	3722/17	+	-	-	+	-	-	+	-	-	-	-	+	-	+	-	-	-	-	+	-	-	+	-
53	3745/17	-	+	+	-	-	-	+	-	-	+	-	-	+	-	-	-	+	-	-	+	-	-	-
54	3989/17	-	+	+	-	-	-	+	-	-	-	+	-	-	+	-	-	+	-	-	-	+	-	-
55	3976/17	+	-	-	+	-	+	-	-	-	-	+	-	-	+	-	-	+	-	-	-	+	-	-
56	4021/17	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-
57	5452/17	+	-	-	+	-	+	-	-	-	-	+	-	-	+	-	-	+	-	-	-	-	+	-

Note: V-Vegetarian, M-Mixed, H-Hard, M-Moderate, S-Sedentary, N-None, T-Tobacco, A-Alcohol, S-Smoking, K-Kroora, m-Madhyama, Mri-Mridu, P-Prakrita, A-Alpa, Adh-Adhika, D-Diwaswapna, S-Samagni, Vishamagni, T-Teekshnagni, M-Mandagni, R-right, L-Left, B-Both.

Table no: 49: Showing the Data of Personal history of Group-A patients

SI No	OPD No	Ahara		Vihara			Vyasana				Koshta			Nidra				Agni				Joints Involved		
		V	M	H	M	S	N	T	A	S	K	M	Mri	P	A	Adh	D	S	V	T	M	R	L	B
58	5451/17	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
59	5482/17	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-
60	5519/17	+	-	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
61	5669/17	+	-	-	+	-	+	-	-	-	-	-	+	-	+	-	-	-	-	+	-	-	+	-
62	5770/17	+	-	+	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
63	5783/17	+	-	-	+	-	+	-	-	-	+	-	-	+	-	-	-	+	-	-	-	-	+	-
64	5868/17	+	-	+	-	-	+	-	-	-	-	+	-	-	+	-	-	-	-	+	-	+	-	-
65	6176/17	-	+	+	-	-	+	-	-	-	-	-	+	-	+	-	-	-	+	-	-	+	-	-
66	6189/17	+	-	+	-	-	+	-	-	-	-	+	-	-	+	-	-	+	-	-	-	-	+	-
67	6299/17	-	+	+	-	-	-	+	-	-	-	-	+	-	+	-	-	-	-	+	-	-	+	-
68	6419/17	-	+	+	-	-	-	-	-	+	+	-	-	-	+	-	-	-	+	-	-	-	+	-
69	6532/17	-	+	+	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
70	6667/17	-	+	+	-	-	-	+	-	-	-	+	-	-	+	-	-	+	-	-	-	+	-	-
71	6749/17	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
72	6904/17	+	-	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
73	7477/17	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-
74	7465/17	+	-	+	-	-	+	-	-	-	-	+	-	-	+	-	-	+	-	-	-	+	-	-
75	7566/17	-	+	+	-	-	-	-	-	+	+	-	-	-	+	-	-	-	+	-	-	+	-	-

Note: V-Vegetarian, M-Mixed, H-Hard, M-Moderate, S-Sedentary, N-None, T-Tobacco, A-Alcohol, S-Smoking, K-Kroora, m-Madhyama, Mri-Mridu, P-Prakrita, A-Alpa, Adh-Adhika, D-Diwaswapna, S-Samagni, Vishamagni, T-Teekshnagni, M-Mandagni, R-right, L-Left, B-Both.

Table no: 50: Showing the Data of Personal history of Group-B patients

SI No	OPD No	Ahara		Vihara			Vyasana				Koshta			Nidra				Agni				Joints Involved		
		V	M	H	M	S	N	T	A	S	K	M	Mri	P	A	Adh	D	S	V	T	M	R	L	B
1	13161/16	+	-	-	+	-	+	-	-	-	+	-	-	+	-	-	-	-	+	-	-	-	+	-
2	13260/16	+	-	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
3	13382/16	-	+	+	-	-	-	+	-	-	-	-	+	-	+	-	-	-	-	+	-	+	-	-
4	13353/16	-	+	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	-	-	+
5	13498/16	+	-	-	+	-	+	-	-	-	-	+	-	+	-	-	-	+	-	-	-	-	-	+
6	13507/16	+	-	-	-	+	+	-	-	-	-	+	-	+	-	-	-	+	-	-	-	+	-	-
7	13528/16	-	+	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	-	-	+
8	13600/16	-	+	+	-	-	-	-	-	+	+	-	-	-	+	-	-	-	+	-	-	-	+	-
9	13651/16	-	+	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	-	-	+
10	13640/16	-	+	+	-	-	-	-	-	+	+	-	-	-	+	-	-	-	+	-	-	+	-	-
11	13743/16	+	-	-	-	+	-	+	-	-	-	+	-	+	-	-	-	+	-	-	-	-	-	+
12	13851/16	-	+	+	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-
13	14184/16	-	+	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-
14	14296/16	+	-	+	-	-	-	-	-	+	-	+	-	+	-	-	-	+	-	-	-	+	-	-
15	14415/16	-	+	+	-	-	-	-	+	-	-	+	-	+	-	-	-	+	-	-	-	+	-	-
16	14422/16	-	+	-	-	+	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
17	14519/16	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
18	21/17	+	-	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
19	74/17	-	+	+	-	-	+	-	-	-	-	+	-	-	+	-	-	+	-	-	-	-	+	-

Note: V-Vegetarian, M-Mixed, H-Hard, M-Moderate, S-Sedentary, N-None, T-Tobacco, A-Alcohol, S-Smoking, K-Kroora, m-Madhyama, Mri-Mridu, P-Prakrita, A-Alpa, Adh-Adhika, D-Diwaswapna, S-Samagni, Vishamagni, T-Teekshnagni, M-Mandagni, R-right, L-Left, B-Both.

Table no: 51: Showing the Data of Personal history of Group-B patients

SI No	OPD No	Ahara		Vihara			Vyasana				Koshta			Nidra				Agni				Joints Involved		
		V	M	H	M	S	N	T	A	S	K	M	Mri	P	A	Adh	D	S	V	T	M	R	L	B
20	266/17	-	+	+	-	-	-	-	+	-	-	+	-	-	+	-	-	+	-	-	-	+	-	-
21	287/17	-	+	-	+	-	+	-	-	-	+	-	-	+	-	-	-	-	+	-	-	-	+	-
22	457/17	-	+	+	-	-	-	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-
23	577/17	-	+	-	-	+	+	-	-	-	-	-	+	+	-	-	-	-	-	+	-	-	+	-
24	699/17	+	-	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	-	-	+
25	706/17	-	+	+	-	-	-	-	+	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
26	783/17	-	+	-	+	-	+	-	-	-	-	+	-	-	+	-	-	+	-	-	-	-	-	+
27	918/17	+	-	-	+	-	+	-	-	-	-	+	-	-	+	-	-	+	-	-	-	+	-	-
28	938/17	-	+	-	+	-	-	+	-	-	-	-	+	-	+	-	-	-	-	+	-	+	-	-
29	1538/17	-	+	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
30	1546/17	+	-	-	+	-	+	-	-	-	-	+	-	-	+	-	-	+	-	-	-	-	+	-
31	1660/17	-	+	-	+	-	-	+	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-
32	1703/17	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
33	1801/17	+	-	-	+	-	+	-	-	-	+	-	-	+	-	-	-	-	+	-	-	+	-	-
34	1821/17	-	+	+	-	-	-	-	-	+	-	+	-	+	-	-	-	+	-	-	-	-	+	-
35	1912/17	-	+	-	+	-	-	+	-	-	-	-	+	-	+	-	-	-	-	+	-	-	+	-
36	2067/17	-	+	+	-	-	-	+	-	-	-	+	-	-	+	-	-	+	-	-	-	+	-	-
37	2185/17	-	+	+	-	-	-	-	+	-	-	+	-	-	+	-	-	+	-	-	-	-	+	-
38	2227/17	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-

Note: V-Vegetarian, M-Mixed, H-Hard, M-Moderate, S-Sedentary, N-None, T-Tobacco, A-Alcohol, S-Smoking, K-Kroora, m-Madhyama, Mri-Mridu, P-Prakrita, A-Alpa, Adh-Adhika, D-Diwaswapna, S-Samagni, Vishamagni, T-Teekshnagni, M-Mandagni, R-right, L-Left, B-Both.

Table no: 52: Showing the Data of Personal history of Group-B patients

SI No	OPD No	Ahara		Vihara			Vyasana				Koshta			Nidra				Agni				Joints Involved		
		V	M	H	M	S	N	T	A	S	K	M	Mri	P	A	Adh	D	S	V	T	M	R	L	B
39	2305/17	-	+	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
40	2408/17	+	-	-	+	-	+	-	-	-	-	+	-	-	+	-	-	+	-	-	-	-	+	-
41	2455/17	-	+	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
42	2473/17	+	-	-	+	-	+	-	-	-	-	-	+	-	+	-	-	-	-	+	-	+	-	-
43	2686/17	-	+	-	+	-	-	-	-	+	+	-	-	-	+	-	-	-	+	-	-	-	+	-
44	2710/17	-	+	+	-	-	-	+	-	-	-	+	-	-	+	-	-	+	-	-	-	+	-	-
45	2733/17	-	+	-	+	-	+	-	-	-	-	+	-	+	-	-	-	+	-	-	-	-	+	-
46	2844/17	+	-	-	+	-	+	-	-	-	-	+	-	-	+	-	-	+	-	-	-	-	+	-
47	2950/17	-	+	+	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
48	2968/17	+	-	+	-	-	-	+	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-
49	3152/17	+	-	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
50	3240/17	+	-	-	-	+	+	-	-	-	-	+	-	-	+	-	-	+	-	-	-	+	-	-
51	3681/17	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-
52	3750/17	-	+	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
53	3993/17	+	-	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-
54	3994/17	+	-	-	+	-	+	-	-	-	-	-	+	-	+	-	-	-	-	+	-	+	-	-
55	4025/17	-	+	+	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
56	4014/17	+	-	-	+	-	+	-	-	-	-	-	+	-	+	-	-	-	-	+	-	+	-	-
57	5450/17	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-

Note: V-Vegetarian, M-Mixed, H-Hard, M-Moderate, S-Sedentary, N-None, T-Tobacco, A-Alcohol, S-Smoking, K-Kroora, m-Madhyama, Mri-Mridu, P-Prakrita, A-Alpa, Adh-Adhika, D-Diwaswapna, S-Samagni, Vishamagni, T-Teekshnagni, M-Mandagni, R-right, L-Left, B-Both.

Table no: 53: Showing the Data of Personal history of Group-B patients

SI No	OPD No	Ahara		Vihara			Vyasana				Koshta			Nidra				Agni				Joints Involved		
		V	M	H	M	S	N	T	A	S	K	M	Mri	P	A	Adh	D	S	V	T	M	R	L	B
58	5471/17	-	+	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
59	5523/17	+	-	-	+	-	+	-	-	-	-	+	-	+	-	-	-	+	-	-	-	+	-	-
60	5671/17	+	-	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
61	5673/17	-	+	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
62	5781/17	+	-	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
63	5865/17	-	+	+	-	-	-	-	-	+	-	+	-	-	+	-	-	+	-	-	-	+	-	-
64	5896/17	-	+	+	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-	-	-	+	-
65	6185/17	+	-	+	-	-	-	+	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
66	6298/17	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
67	6433/17	+	-	-	+	-	-	-	-	+	-	-	+	-	+	-	-	-	-	+	-	+	-	-
68	6533/17	-	+	+	-	-	-	+	-	-	+	-	-	-	+	-	-	-	+	-	-	+	-	-
69	6650/17	+	-	-	+	-	+	-	-	-	-	-	+	-	+	-	-	-	-	+	-	-	+	-
70	6747/17	-	+	+	-	-	-	-	-	+	+	-	-	-	+	-	-	-	+	-	-	+	-	-
71	6899/17	+	-	-	+	-	+	-	-	-	-	+	-	-	+	-	-	+	-	-	-	-	+	-
72	7344/17	-	+	-	-	+	+	-	-	-	-	-	+	-	+	-	-	-	-	+	-	+	-	-
73	7431/17	+	-	-	+	-	+	-	-	-	-	+	-	-	+	-	-	+	-	-	-	+	-	-
74	7550/17	+	-	+	-	-	+	-	-	-	+	-	-	+	-	-	-	-	+	-	-	+	-	-
75	7572/17	-	+	-	+	-	+	-	-	-	-	+	-	+	-	-	-	+	-	-	-	+	-	-

Note: V-Vegetarian, M-Mixed, H-Hard, M-Moderate, S-Sedentary, N-None, T-Tobacco, A-Alcohol, S-Smoking, K-Kroora, m-Madhyama, Mri-Mridu, P-Prakrita, A-Alpa, Adh-Adhika, D-Diwaswapna, S-Samagni, Vishamagni, T-Teekshnagni, M-Mandagni, R-right, L-Left, B-Both.

Table No: 54: Showing the Data of Dashavidha Pareeksha of Group-A Patients

Sl.No	OPD No	Prakriti	Sara	Samhanana	Pramana	Satmya	Satwa	Aharashakti A.S/J.S		Vyayama shakti	Vaya	Vikriti
1	4746/16	PK	Av	Ma	Av	Ma	Pr	Ma	Ma	Ma	Vr	Av
2	12688/16	VK	Ma	Ma	Ma	Ma	Pr	Av	Av	Pr	Ma	Av
3	12883/16	PK	Ma	Ma	Pr	Pr	Pr	Pr	Pr	Ma	Vr	Av
4	12898/16	VP	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma
5	12918/16	VK	Ma	Ma	Ma	Pr	Pr	Ma	Ma	Ma	Ma	Av
6	12943/16	VK	Ma	Ma	Ma	Ma	Ma	Av	Av	Ma	Vr	Ma
7	13022/16	VP	Ma	Ma	Ma	Ma	Pr	Ma	Ma	Ma	Ma	Av
8	13037/16	PK	Av	Ma	Av	Ma	Ma	Ma	Ma	Av	Vr	Pr
9	13052/16	VP	Av	Ma	Av	Ma	Av	Ma	Ma	Ma	Ma	Ma
10	13150/16	VK	Ma	Pr	Ma	Ma	Pr	Av	Av	Ma	Ma	Av
11	13738/16	VP	Av	Ma	Ma	Ma	Ma	Ma	Ma	Av	Ma	Ma
12	13842/16	PK	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma
13	14175/16	PK	Ma	Sus	Sp	Vy	Ma	Ma	Ma	Ma	Ma	Ma
14	14215/16	PK	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma
15	14294/16	VK	Av	Ma	Ma	Ma	Ma	Ma	Ma	Pr	Ma	Av
16	14412/16	VK	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Av
17	14451/16	VK	Av	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma
18	25/17	VK	Ma	Ma	Ma	Ma	Ma	Av	Av	Av	Vr	Ma
19	43/17	VP	Av	Ma	Av	Av	Av	Ma	Ma	Av	Vr	Pr

Note: PK-Pittakapha, VK-Vatakapha, VP-Vatapitta, Pr-Pravara, Ma-Madhyama, Av-Avara, Vr-Vridha, A.S-Ahara shakti, J.S-Jarana shakti

Table No: 55: Showing the Data of Dashavidha Pareeksha of Group-A Patients

Sl.No	OPD No	Prakriti	Sara	Samhanana	Pramana	Satmya	Satwa	Aharashakti A.S/J.S	Vyayama shakti	Vaya	Vikriti	
20	73/17	VK	Ma	Ma	Ma	Ma	Pr	Av	Av	Ma	Ma	Ma
21	278/17	VP	Av	Ma	Ma	Av	Ma	Ma	Ma	Ma	Ma	Av
22	289/17	PK	Ma	Ma	Ma	Ma	Ma	Pr	Pr	Ma	Vr	Ma
23	455/17	PK	Av	Av	Av	Ma	Ma	Ma	Ma	Av	Vr	Pr
24	642/17	VP	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Av
25	686/17	VK	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Av
26	780/17	VP	Av	Ma	Ma	Ma	Pr	Ma	Ma	Ma	Ma	Av
27	895/17	VK	Ma	Ma	Ma	Ma	Pr	Ma	Ma	Ma	Ma	Av
28	934/17	VP	Av	Av	Ma	Ma	Ma	Av	Av	Av	Ma	Pr
29	1410/17	VK	Av	Ma	Ma	Ma	Ma	Av	Av	Av	Vr	Ma
30	1536/17	PK	Ma	Ma	Ma	Ma	Pr	Ma	Ma	Ma	Ma	Av
31	1647/17	VK	Ma	Av	Ma	Ma	Ma	Av	Av	Av	Ma	Ma
32	1687/17	PK	Av	Av	Av	Ma	Av	Ma	Ma	Av	Ma	Ma
33	1799/17	PK	Ma	Ma	Ma	Ma	Pr	Ma	Ma	Ma	Ma	Ma
34	1823/17	PK	Av	Av	Av	Ma	Ma	Ma	Ma	Av	Vr	Ma
35	1911/17	PK	Ma	Ma	Ma	Ma	Ma	Pr	Pr	Av	Ma	Ma
36	2077/17	PK	Ma	Ma	Pr	Ma	Pr	Ma	Ma	Ma	Ma	Av
37	2065/17	VK	Av	Ma	Ma	Ma	Ma	Ma	Ma	Av	Ma	Ma
38	2228/17	VP	Av	Ma	Ma	Ma	Ma	Ma	Ma	Av	Ma	Ma

Note: PK-Pittakapha, VK-Vatakapha, VP-Vatapitta, Pr-Pravara, Ma-Madhyama, Av-Avara, Vr-Vridha, A.S-Ahara shakti, J.S-Jarana shakti

Table No: 56: Showing the Data of Dashavidha Pareeksha of Group-A Patients

Sl.No	OPD No	Prakriti	Sara	Samhanana	Pramana	Satmya	Satwa	Aharashakti A.S/J.S	Vyayama shakti	Vaya	Vikriti
39	2226/17	VK	Av	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma
40	2327/17	VP	Av	Av	Av	Av	Av	Av	Av	Vr	Ma
41	2456/17	PK	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Pr	Ma
42	2474/17	PK	Av	Ma	Ma	Ma	Ma	Ma	Ma	Av	Vr
43	2591/17	PK	Av	Ma	Ma	Ma	Pr	Ma	Ma	Ma	Vr
44	2719/17	VK	Av	Ma	Ma	Ma	Ma	Ma	Ma	Av	Ma
45	2722/17	PK	Ma	Ma	Ma	Pr	Ma	Ma	Ma	Av	Ma
46	2835/17	PK	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma
47	2922/17	PK	Av	Ma	Ma	Ma	Ma	Pr	Pr	Av	Ma
48	2961/17	PK	Ma	Ma	Av	Av	Av	Ma	Ma	Ma	Ma
49	3150/17	VP	Av	Ma	Ma	Ma	Av	Av	Av	Ma	Ma
50	3179/17	PK	Ma	Ma	Pr	Pr	Ma	Ma	Ma	Ma	Ma
51	3482/17	PK	Ma	Ma	Ma	Ma	Pr	Ma	Ma	Ma	Ma
52	3722/17	PK	Ma	Ma	Ma	Ma	Ma	Pr	Pr	Ma	Ma
53	3745/17	VK	Av	Ma	Av	Av	Ma	Ma	Ma	Ma	Ma
54	3989/17	PK	Av	Ma	Ma	Ma	Av	Ma	Ma	Av	Vr
55	3976/17	PK	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma
56	4021/17	VK	Av	Av	Av	Av	Ma	Av	Av	Av	Ma
57	5452/17	PK	Av	Av	Ma	Ma	Av	Ma	Ma	Av	Vr

Note: PK-Pittakapha, VK-Vatakapha, VP-Vatapitta, Pr-Pravara, Ma-Madhyama, Av-Avara, Vr-Vridhdha, A.S-Ahara shakti, J.S-Jarana shakti

Table No: 57: Showing the Data of Dashavidha Pareeksha of Group-A Patients

Sl.No	OPD No	Prakriti	Sara	Samhanana	Pramana	Satmya	Satwa	Aharashakti A.S/J.S	Vyayama shakti	Vaya	Vikriti	
58	5451/17	VP	Av	Av	Av	Av	Av	Av	Av	Av	Vr	Pr
59	5482/17	VP	Av	Av	Av	Av	Ma	Av	Av	Ma	Vr	Pr
60	5519/17	VP	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Av	Vr	Av
61	5669/17	PK	Ma	Ma	Ma	Ma	Ma	Pr	Pr	Ma	Ma	Ma
62	5770/17	VK	Av	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma
63	5783/17	PK	Ma	Ma	Ma	Ma	Pr	Ma	Ma	Ma	Ma	Av
64	5868/17	PK	Ma	Ma	Ma	Pr	Ma	Pr	Pr	Ma	Ma	Av
65	6176/17	VK	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Av
66	6189/17	PK	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Av
67	6299/17	PK	Ma	Ma	Ma	Ma	Ma	Pr	Pr	Ma	Ma	Ma
68	6419/17	VP	Ma	Ma	Ma	Ma	Av	Ma	Ma	Ma	Ma	Ma
69	6532/17	VK	Av	Ma	Ma	Ma	Av	Ma	Ma	Ma	Ma	Ma
70	6667/17	PK	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma
71	6749/17	VK	Ma	Ma	Ma	Ma	Pr	Ma	Ma	Ma	Ma	Av
72	6904/17	VP	Av	Av	Ma	Ma	Av	Ma	Ma	Ma	Vr	Ma
73	7477/17	VP	Av	Ma	Ma	Av	Pr	Ma	Ma	Ma	Vr	Ma
74	7465/17	PK	Ma	Ma	Ma	Pr	Pr	Ma	Ma	Ma	Ma	Av
75	7566/17	VK	Ma	Ma	Ma	Ma	Pr	Ma	Ma	Ma	Ma	Ma

Note: PK-Pittakapha, VK-Vatakapha, VP-Vatapitta, Pr-Pravara, Ma-Madhyama, Av-Avara, Vr-Vridha, A.S-Ahara shakti, J.S-Jarana shakti

Table No: 58: Showing the Data of Dashavidha Pareeksha of Group-B Patients

Sl.No	OPD No	Prakriti	Sara	Samhanana	Pramana	Satmya	Satwa	Aharashakti A.S/J.S	Vyayama shakti	Vaya	Vikriti	
1	13161/16	VP	Av	Ma	Av	Ma	Ma	Ma	Ma	Ma	Ma	Ma
2	13260/16	VK	Ma	Ma	Ma	Ma	Pr	Ma	Ma	Ma	Ma	Av
3	13382/16	PK	Av	Ma	Ma	Ma	Ma	Pr	Pr	Ma	Vr	Ma
4	13353/16	VK	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma
5	13498/16	PK	Ma	Ma	Ma	Ma	Pr	Ma	Ma	Ma	Ma	Ma
6	13507/16	PK	Av	Av	Av	Ma	Av	Ma	Ma	Av	Ma	Pr
7	13528/16	VP	Av	Av	Av	Ma	Av	Av	Av	Av	Vr	Pr
8	13600/16	VK	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Pr	Ma	Av
9	13651/16	VK	Ma	Ma	Ma	Ma	Pr	Ma	Ma	Ma	Ma	Av
10	13640/16	VK	Av	Av	Ma	Av	Ma	Av	Av	Ma	Vr	Ma
11	13743/16	PK	Av	Av	Av	Ma	Ma	Ma	Ma	Av	Vr	Pr
12	13851/16	VP	Av	Av	Av	Av	Av	Ma	Ma	Av	Vr	Ma
13	14184/16	VP	Av	Av	Av	Ma	Ma	Av	Av	Av	Vr	Ma
14	14296/16	PK	Av	Av	Ma	Av	Ma	Ma	Ma	Ma	Vr	Ma
15	14415/16	PK	Ma	Ma	Ma	Ma	Pr	Ma	Ma	Ma	Ma	Av
16	14422/16	VP	Av	Av	Av	Av	Av	Av	Av	Av	Vr	Pr
17	14519/16	VP	Ma	Ma	Ma	Ma	Pr	Ma	Ma	Ma	Ma	Av
18	21/17	VK	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma
19	74/17	PK	Ma	Ma	Ma	Ma	Av	Ma	Ma	Av	Vr	Ma

Note: PK-Pittakapha, VK-Vatakapha, VP-Vatapitta, Pr-Pravara, Ma-Madhyama, Av-Avara, Vr-Vridha, A.S-Ahara shakti, J.S-Jarana shakti

Table No: 59: Showing the Data of Dashavidha Pareeksha of Group-B Patients

Sl.No	OPD No	Prakriti	Sara	Samhanana	Pramana	Satmya	Satwa	Aharashakti A.S/J.S	Vyayama shakti	Vaya	Vikriti	
20	266/17	PK	Ma	Ma	Ma	Ma	Pr	Ma	Ma	Ma	Ma	Av
21	287/17	VK	Ma	Ma	Ma	Ma	Pr	Ma	Ma	Ma	Ma	Av
22	457/17	VP	Av	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma
23	577/17	PK	Av	Ma	Ma	Av	Av	Pr	Pr	Av	Ma	Ma
24	699/17	VP	Av	Av	Av	Ma	Av	Av	Av	Av	Vr	Pr
25	706/17	VK	Ma	Ma	Ma	Ma	Pr	Ma	Ma	Ma	Ma	Av
26	783/17	PK	Av	Av	Ma	Av	Av	Ma	Ma	Av	Ma	Ma
27	918/17	PK	Ma	Ma	Ma	Ma	Pr	Ma	Ma	Ma	Ma	Ma
28	938/17	PK	Ma	Ma	Ma	Ma	Pr	Pr	Pr	Av	Vr	Ma
29	1538/17	VK	Ma	Ma	Ma	Ma	Ma	Av	Av	Ma	Ma	Av
30	1546/17	PK	Av	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma
31	1660/17	VP	Ma	Av	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma
32	1703/17	VK	Av	Ma	Ma	Ma	Ma	Ma	Ma	Av	Ma	Ma
33	1801/17	VP	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Av
34	1821/17	PK	Ma	Av	Ma	Ma	Pr	Ma	Ma	Ma	Ma	Ma
35	1912/17	PK	Av	Av	Ma	Ma	Ma	Pr	Pr	Ma	Ma	Ma
36	2067/17	PK	Av	Av	Av	Ma	Ma	Ma	Ma	Av	Vr	Ma
37	2185/17	PK	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma
38	2227/17	VP	Av	Av	Av	Ma	Av	Av	Av	Av	Vr	Pr

Note: PK-Pittakapha, VK-Vatakapha, VP-Vatapitta, Pr-Pravara, Ma-Madhyama, Av-Avara, Vr-Vridha, A.S-Ahara shakti, J.S-Jarana shakti

Table No: 60: Showing the Data of Dashavidha Pareeksha of Group-B Patients

Sl.No	OPD No	Prakriti	Sara	Samhanana	Pramana	Satmya	Satwa	Aharashakti A.S/J.S	Vyayama shakti	Vaya	Vikriti	
39	2305/17	VK	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Av
40	2408/17	PK	Ma	Ma	Ma	Ma	Av	Ma	Ma	Av	Ma	Pr
41	2455/17	VK	Ma	Ma	Ma	Ma	Ma	Av	Av	Ma	Ma	Ma
42	2473/17	PK	Av	Ma	Ma	Ma	Ma	Pr	Pr	Ma	Ma	Ma
43	2686/17	VK	Ma	Ma	Ma	Ma	Ma	Av	Av	Ma	Ma	Ma
44	2710/17	PK	Av	Ma	Ma	Ma	Av	Ma	Ma	Av	Vr	Pr
45	2733/17	PK	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma
46	2844/17	PK	Av	Ma	Ma	Av	Ma	Ma	Ma	Ma	Ma	Ma
47	2950/17	VP	Av	Av	Av	Av	Pr	Av	Av	Ma	Ma	Av
48	2968/17	VP	Av	Ma	Av	Av	Ma	Ma	Ma	Ma	Ma	Ma
49	3152/17	VP	Av	Ma	Av	Ma	Ma	Av	Av	Av	Vr	Pr
50	3240/17	PK	Ma	Ma	Ma	Ma	Pr	Ma	Ma	Ma	Ma	Av
51	3681/17	VP	Av	Ma	Av	Av	Ma	Av	Av	Ma	Ma	Ma
52	3750/17	VP	Av	Ma	Av	Ma	Ma	Ma	Ma	Ma	Ma	Ma
53	3993/17	VK	Av	Ma	Ma	Av	Av	Av	Av	Av	Vr	Pr
54	3994/17	PK	Ma	Ma	Ma	Ma	Ma	Pr	Pr	Av	Vr	Ma
55	4025/17	VK	Ma	Ma	Ma	Pr	Pr	Ma	Ma	Ma	Ma	Av
56	4014/17	PK	Ma	Av	Ma	Ma	Av	Pr	Pr	Av	Vr	Pr
57	5450/17	VK	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Av

Note: PK-Pittakapha, VK-Vatakapha, VP-Vatapitta, Pr-Pravara, Ma-Madhyama, Av-Avara, Vr-Vridha, A.S-Ahara shakti, J.S-Jarana shakti

Table No: 61: Showing the Data of Dashavidha Pareeksha of Group-B Patients

Sl.No	OPD No	Prakriti	Sara	Samhanana	Pramana	Satmya	Satwa	Aharashakti A.S/J.S	Vyayama shakti	Vaya	Vikriti	
58	5471/17	VK	Ma	Ma	Av	Ma	Ma	Ma	Ma	Ma	Ma	Ma
59	5523/17	PK	Av	Ma	Ma	Ma	Av	Ma	Ma	Ma	Ma	Ma
60	5671/17	VK	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma
61	5673/17	VK	Ma	Ma	Ma	Ma	Pr	Ma	Ma	Ma	Ma	Av
62	5781/17	VP	Av	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma
63	5865/17	PK	Ma	Ma	Ma	Ma	Pr	Ma	Ma	Ma	Ma	Av
64	5896/17	VK	Av	Av	Ma	Ma	Ma	Av	Av	Av	Vr	Ma
65	6185/17	VK	Ma	Ma	Ma	Ma	Ma	Av	Av	Ma	Ma	Av
66	6298/17	VP	Av	Ma	Ma	Ma	Pr	Ma	Ma	Ma	Ma	Av
67	6433/17	PK	Ma	Ma	Ma	Ma	Ma	Pr	Pr	Ma	Ma	Ma
68	6533/17	VP	Ma	Ma	Ma	Ma	Av	Ma	Ma	Ma	Ma	Ma
69	6650/17	PK	Ma	Ma	Ma	Pr	Ma	Pr	Pr	Ma	Ma	Av
70	6747/17	VP	Ma	Ma	Ma	Ma	Pr	Ma	Ma	Ma	Ma	Av
71	6899/17	PK	Ma	Ma	Av	Ma	Ma	Ma	Ma	Ma	Ma	Ma
72	7344/17	PK	Ma	Ma	Ma	Pr	Ma	Pr	Pr	Ma	Ma	Av
73	7431/17	PK	Ma	Ma	Ma	Pr	Pr	Ma	Ma	Ma	Ma	Ma
74	7550/17	VP	Av	Av	Ma	Av	Ma	Ma	Ma	Ma	Ma	Ma
75	7572/17	PK	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Ma	Av

Note: PK-Pittakapha, VK-Vatakapha, VP-Vatapitta, Pr-Pravara, Ma-Madhyama, Av-Avara, Vr-Vridha, A.S-Ahara shakti, J.S-Jarana shakti

Table no: 62: Showing the Chronicity of the Patient in Group-A

Sl.No	OPD No	Chronicity					Sl.No	OPD No	Chronicity				
		<1yr	1-2yr	2-3yr	3-4yr	>4yr			<1yr	1-2yr	2-3yr	3-4yr	>4yr
1	4746/16	-	+	-	-	-	21	278/17	-	+	-	-	-
2	12688/16	-	-	+	-	-	22	289/17	-	-	-	+	-
3	12883/16	-	+	-	-	-	23	455/17	-	-	-	-	+
4	12898/16	-	+	-	-	-	24	642/17	+	-	-	-	-
5	12918/16	-	+	-	-	-	25	686/17	+	-	-	-	-
6	12943/16	-	-	+	-	-	26	780/17	+	-	-	-	-
7	13022/16	-	+	-	-	-	27	895/17	+	-	-	-	-
8	13037/16	-	-	-	-	+	28	934/17	-	+	-	-	-
9	13052/16	-	+	-	-	-	29	1410/17	-	-	+	-	-
10	13150/16	+	-	-	-	-	30	1536/17	+	-	-	-	-
11	13738/16	-	+	-	-	-	31	1647/17	-	+	-	-	-
12	13842/16	-	-	+	-	-	32	1687/17	-	-	+	-	-
13	14175/16	+	-	-	-	-	33	1799/17	-	+	-	-	-
14	14215/16	+	-	-	-	-	34	1823/17	-	-	+	-	-
15	14294/16	-	+	-	-	-	35	1911/17	-	+	-	-	-
16	14412/16	-	+	-	-	-	36	2077/17	+	-	-	-	-
17	14451/16	-	+	-	-	-	37	2065/17	-	+	-	-	-
18	25/17	-	-	+	-	-	38	2228/17	+	-	-	-	-
19	43/17	-	-	-	+	-	39	2226/17	+	-	-	-	-
20	73/17	-	-	+	-	-	40	2327/17	-	-	+	-	-

Table No: 63: Showing the Chronicity of the Patient in Group-A

Sl.No	OPD No	Chronicity					Sl.No	OPD No	Chronicity				
		<1yr	1-2yr	2-3yr	3-4yr	>4yr			<1yr	1-2yr	2-3yr	3-4yr	>4yr
41	2456/17	-	+	-	-	-	61	5669/17	-	+	-	-	-
42	2474/17	-	-	-	+	-	62	5770/17	-	+	-	-	-
43	2591/17	-	+	-	-	-	63	5783/17	-	+	-	-	-
44	2719/17	-	+	-	-	-	64	5868/17	+	-	-	-	-
45	2722/17	-	-	+	-	-	65	6176/17	+	-	-	-	-
46	2835/17	-	+	-	-	-	66	6189/17	-	+	-	-	-
47	2922/17	-	-	+	-	-	67	6299/17	-	-	+	-	-
48	2961/17	-	+	-	-	-	68	6419/17	-	+	-	-	-
49	3150/17	-	+	-	-	-	69	6532/17	-	+	-	-	-
50	3179/17	+	-	-	-	-	70	6667/17	-	+	-	-	-
52	3722/17	-	+	-	-	-	71	6749/17	-	+	-	-	-
53	3745/17	-	+	-	-	-	72	6904/17	-	-	+	-	-
54	3989/17	-	-	+	-	-	73	7477/17	-	+	-	-	-
55	3976/17	-	+	-	-	-	74	7465/17	-	+	-	-	-
56	4021/17	-	+	-	-	-	75	7566/17	-	+	-	-	-
57	5452/17	-	-	+	-	-							
58	5451/17	-	-	+	-	-							
59	5482/17	-	+	-	-	-							
60	5519/17	-	+	-	-	-							

Table No: 64: Showing the chronicity of patient in Group-B:

Sl.No	OPD No	Chronicity					Sl.No	OPD No	Chronicity				
		<1yr	1-2yr	2-3yr	3-4yr	>4yr			<1yr	1-2yr	2-3yr	3-4yr	>4yr
1	13161/16	-	+	-	-	-	21	287/17	+	-	-	-	-
2	13260/16	-	+	-	-	-	22	457/17	-	+	-	-	-
3	13382/16	-	+	-	-	-	23	577/17	+	-	-	-	-
4	13353/16	-	+	-	-	-	24	699/17	-	-	-	-	+
5	13498/16	-	+	-	-	-	25	706/17	-	+	-	-	-
6	13507/16	+	-	-	-	-	26	783/17	-	-	-	-	+
7	13528/16	-	-	-	+	-	27	918/17	-	+	-	-	-
8	13600/16	+	-	-	-	-	28	938/17	-	+	-	-	-
9	13651/16	-	+	-	-	-	29	1538/17	+	-	-	-	-
10	13640/16	-	-	+	-	-	30	1546/17	-	+	-	-	-
11	13743/16	-	+	-	-	-	31	1660/17	-	+	-	-	-
12	13851/16	-	-	+	-	-	32	1703/17	-	-	+	-	-
13	14184/16	-	-	-	-	+	33	1801/17	+	-	-	-	-
14	14296/16	-	-	-	+	-	34	1821/17	-	+	-	-	-
15	14415/16	-	+	-	-	-	35	1912/17	+	-	-	-	-
16	14422/16	-	-	-	-	+	36	2067/17	-	-	+	-	-
17	14519/16	-	+	-	-	-	37	2185/17	-	+	-	-	-
18	21/17	-	+	-	-	-	38	2227/17	-	-	+	-	-
19	74/17	-	+	-	-	-	39	2305/17	+	-	-	-	-
20	266/17	-	+	-	-	-	40	2408/17	-	+	-	-	-

Table No: 65: Showing the chronicity of patient in Group-B:

Sl.No	OPD No	Chronicity					Sl.No	OPD No	Chronicity				
		<1yr	1-2yr	2-3yr	3-4yr	>4yr			<1yr	1-2yr	2-3yr	3-4yr	>4yr
41	2455/17	+	-	-	-	-	61	5673/17	+	-	-	-	-
42	2473/17	-	+	-	-	-	62	5781/17	-	+	-	-	-
43	2686/17	-	+	-	-	-	63	5865/17	-	+	-	-	-
44	2710/17	-	-	+	-	-	64	5896/17	-	-	+	-	-
45	2733/17	-	+	-	-	-	65	6185/17	-	+	-	-	-
46	2844/17	-	+	-	-	-	66	6298/17	-	+	-	-	-
47	2950/17	-	+	-	-	-	67	6433/17	-	+	-	-	-
48	2968/17	-	-	+	-	-	68	6533/17	-	+	-	-	-
49	3152/17	-	-	-	+	-	69	6650/17	-	+	-	-	-
50	3240/17	+	-	-	-	-	70	6747/17	-	-	+	-	-
51	3681/17	-	+	-	-	-	71	6899/17	-	+	-	-	-
52	3750/17	-	+	-	-	-	72	7344/17	+	-	-	-	-
53	3993/17	-	-	+	-	-	73	7431/17	-	+	-	-	-
54	3994/17	-	-	+	-	-	74	7550/17	-	+	-	-	-
55	4025/17	+	-	-	-	-	75	7572/17	+	-	-	-	-
56	4014/17	-	-	+	-	-							
57	5450/17	-	+	-	-	-							
58	5471/17	+	-	-	-	-							
59	5523/17	-	+	-	-	-							
60	5671/17	-	+	-	-	-							

Table No: 66: Showing the Average retention time of the Vasti dravya in Group-A patients:

Sl.No	OPD No	Average retention time of Vastidravya	Sl.No	OPD No	Average retention time of Vasti dravya
1	4746/16	5 hours 44 minutes	21	278/17	6 hours 12 minutes
2	12688/16	6 hours 27 minutes	22	289/17	4 hours 01 minute
3	12883/16	1 hour 50 minutes	23	455/17	1 hour 10 minutes
4	12898/16	6 hours 35 minutes	24	642/17	7 hours 40 minutes
5	12918/16	6 hours 45 minutes	25	686/17	7 hour 55 minutes
6	12943/16	7 hours 35 minutes	26	780/17	6 hour 55 minutes
7	13022/16	5 hours 55 minutes	27	895/17	6 hour 10 minutes
8	13037/16	4 hours 55 minutes	28	934/17	10 hours 05 minutes
9	13052/16	6 hours 20 minutes	29	1410/17	7 hours 45 minutes
10	13150/16	6 hours 50 minutes	30	1536/17	3 hours 35 minutes
11	13738/16	5 hours 45 minutes	31	1647/17	6 hours 05 minutes
12	13842/16	4 hours 15 minutes	32	1687/17	6 hours 01 minute
13	14175/16	4 hour 50 minutes	33	1799/17	4 hour 12 minutes
14	14215/16	3 hours 20 minutes	34	1823/17	4 hours 50 minutes
15	14294/16	5 hours 45 minutes	35	1911/17	1 hour 55 minutes
16	14412/16	5 hours 45 minutes	36	2077/17	5 hours 10 minutes
17	14451/16	6 hour 55 minutes	37	2065/17	6 hours 06 minutes
18	25/17	6 hours 20 minutes	38	2228/17	7 hours 50 minutes
19	43/17	7 hours 10 minutes	39	2226/17	6 hours 35 minutes
20	73/17	7 hours 10 minutes	40	2327/17	6 hours 35 minutes

Table No: 67: Showing the Average retention time of the Vasti dravya in Group-A patients:

Sl.No	OPD No	Average retention time of Vastidravya	Sl.No	OPD No	Average retention time of Vasti dravya
41	2456/17	4 hour 20 minutes	61	5669/17	2 hours 25 minutes
42	2474/17	6 hours 05 minutes	62	5770/17	7 hours 55 minutes
43	2591/17	4 hours 10 minutes	63	5783/17	6 hours 25 minutes
44	2719/17	5 hour 50 minutes	64	5868/17	3 hours 06 minutes
45	2722/17	6 hours	65	6176/17	7 hours 15 minutes
46	2835/17	3 hours 45 minutes	66	6189/17	5 hours 10 minutes
47	2922/17	1 hour 10 minutes	67	6299/17	2 hours
48	2961/17	3 hours 03 minutes	68	6419/17	7 hours 05 minutes
49	3150/17	8 hours 45 minutes	69	6532/17	8 hours 05 minutes
50	3179/17	5 hours	70	6667/17	5 hours
51	3482/17	5 hours 45 minutes	71	6749/17	8 hours 15 minutes
52	3722/17	1 hours 10 minutes	72	6904/17	8 hours 05 minutes
53	3745/17	7 hour 30 minutes	73	7477/17	7 hours 10 minutes
54	3989/17	4 hours 05 minutes	74	7465/17	4 hours 06 minutes
55	3976/17	3 hours	75	7566/17	8 hours
56	4021/17	6 hours 55 minutes			
57	5452/17	5 hours 10 minutes			
58	5451/17	7 hours 45 minutes			
59	5482/17	7 hours 35 minutes			
60	5519/17	6 hours 20 minutes			

Table No: 68: Showing the Average retention time of the Vasti dravya in Group-B patients:

Sl.No	OPD No	Average retention time of Vastidravya	Sl.No	OPD No	Average retention time of Vasti dravya
1	13161/16	5 hours 40 minutes	21	287/17	7 hours 18 minutes
2	13260/16	7 hours 10 minutes	22	457/17	6 hours 18 minutes
3	13382/16	1 hour 25 minutes	23	577/17	2 hours 30 minutes
4	13353/16	6 hours 10 minutes	24	699/17	5 hours 50 minutes
5	13498/16	3 hours 15 minutes	25	706/17	5 hours 30 minutes
6	13507/16	4 hours 45 minutes	26	783/17	4 hours 15 minutes
7	13528/16	6 hours 10 minutes	27	918/17	5 hours 30 minutes
8	13600/16	5 hours 45 minutes	28	938/17	1 hour 05 minutes
9	13651/16	6 hours 02 minutes	29	1538/17	6 hours 05 minutes
10	13640/16	7 hours 35 minutes	30	1546/17	5 hours 05 minutes
11	13743/16	5 hours 05 minutes	31	1660/17	5 hours 50 minutes
12	13851/16	5 hours 35 minutes	32	1703/17	5 hours 35 minutes
13	14184/16	7 hours 55 minutes	33	1801/17	6 hours 06 minutes
14	14296/16	4 hours 50 minutes	34	1821/17	3 hours 35 minutes
15	14415/16	5 hours 50 minutes	35	1912/17	1 hour 20 minutes
16	14422/16	6 hours 15 minutes	36	2067/17	5 hours 10 minutes
17	14519/16	6 hours 10 minutes	37	2185/17	3hour 32 minutes
18	21/17	6 hours 10 minutes	38	2227/17	6 hours 15 minutes
19	74/17	4 hours 55 minutes	39	2305/17	6 hours 07 minutes
20	266/17	4 hours 07 minutes	40	2408/17	3 hours 05 minutes

Table No: 69: Showing the Average retention time of the Vasti dravya in Group-B patients:

Sl.No	OPD No	Average retention time of Vastidravya	Sl.No	OPD No	Average retention time of Vasti dravya
41	2455/17	6 hours 10 minutes	61	5673/17	5 hours 20 minutes
42	2473/17	2 hours 06 minutes	62	5781/17	6 hours 45 minutes
43	2686/17	6 hours 12 minutes	63	5865/17	5 hours 08 minutes
44	2710/17	5 hours	64	5896/17	6 hours 30 minutes
45	2733/17	4 hours 05 minutes	65	6185/17	7 hours 05 minutes
46	2844/17	4 hours 05 minutes	66	6298/17	6 hours 06 minutes
47	2950/17	7 hours 04 minutes	67	6433/17	2 hours
48	2968/17	5 hours 05 minutes	68	6533/17	5 hours 44 minutes
49	3152/17	7 hours 20 minutes	69	6650/17	2 hours 05 minutes
50	3240/17	5 hours	70	6747/17	6 hours 15 minutes
51	3681/17	5 hours 40 minutes	71	6899/17	5 hours
52	3750/17	5 hours 50 minutes	72	7344/17	1 hour 30 minutes
53	3993/17	6 hours 45 minutes	73	7431/17	5 hours 15 minutes
54	3994/17	1 hour 10 minutes	74	7550/17	6 hours 05 minutes
55	4025/17	5 hours 30 minutes	75	7572/17	3 hours 35 minutes
56	4014/17	1 hour 10 minutes			
57	5450/17	5 hours 35 minutes			
58	5471/17	6 hours 40 minutes			
59	5523/17	3 hours 10 minutes			
60	5671/17	7 hours 05 minutes			

Table No: 01: Showing the total percentage of Gender involved in the study

Sl No	Gender	Group A	Group B	Total	Percentage
01	Male	28	23	51	34%
02	Female	47	52	99	66%

There are totally 51 male patients, among which 28 and 23 from Group-A and Group-B respectively. Among 99 female patients, 47 and 52 were from group-A and Group-B respectively.

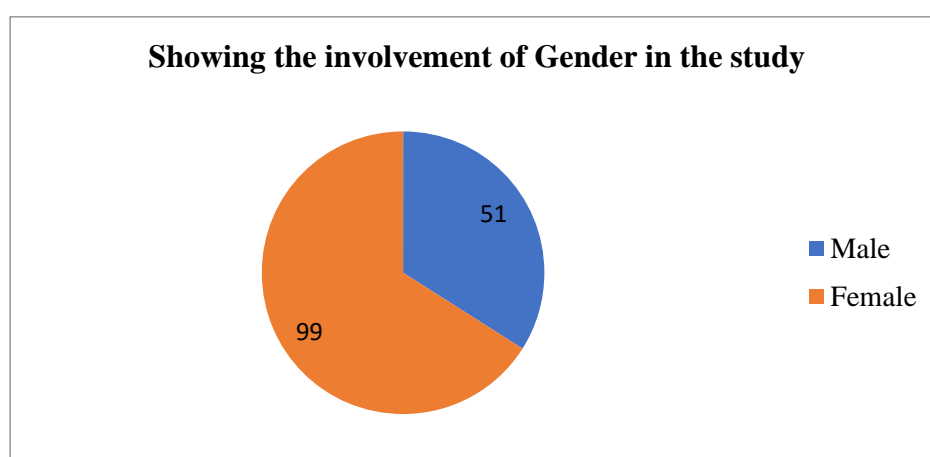


Table No: 02: Showing the classification on religion of Patients

Sl.No	Religion	Group A	Group B	Total	Percentage
1	Hindu	73	72	145	96.67%
2	Muslim	00	01	01	0.66%
3	Christian	02	02	04	2.67%

Majority of the patients belong to Hindu community (145), among which 73 were in Group-A and 72 were from Group-B. Among 5 patients, 1 and 4 were belong to Muslim and Christian community respectively.

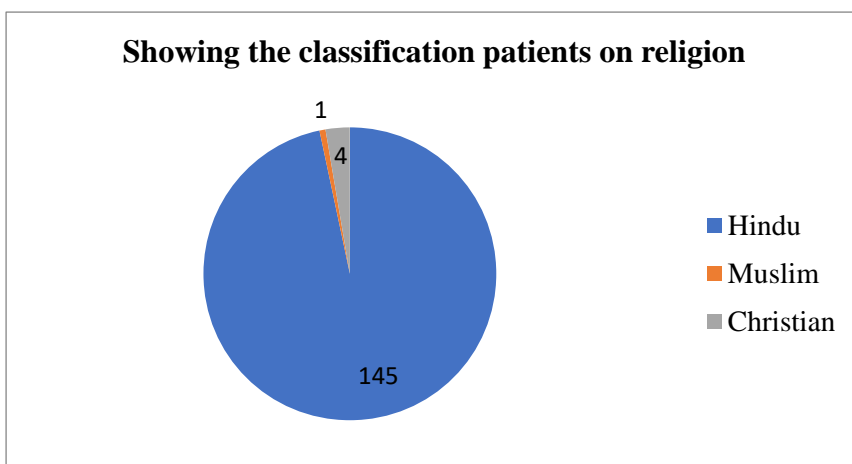


Table No: 03: Showing the Classification of Patients on Age

Sl.No	Age Group	Group A	Group B	Total	Percentage
1	41-50	16	14	30	20%
2	51-60	42	39	81	54%
3	61-70	20	19	39	26%

Among 150 patients, 30 belong to range of 41-50 age group, 81 belong to 51-60 age group and the remaining 39 were belong to 61-70 age group.

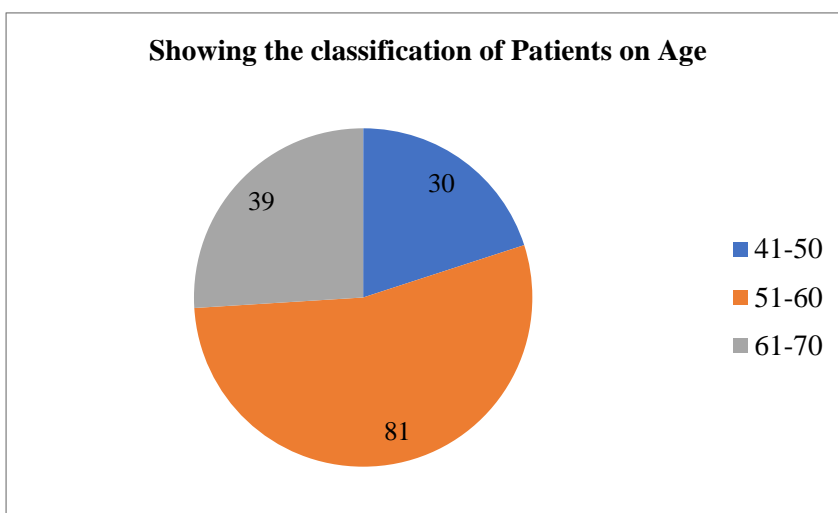


Table No: 04: Showing the classification of Patients on Occupation

Sl.No	Occupation	Group A	Group B	Total	Percentage
1	Labor	49	41	90	60%
2	Sedentary	26	33	59	39.33%
3	Executive	00	01	01	0.67%

Among 150 patients, 90, 59 and 01 belong to labor, sedentary and executive class respectively. There are 49 and 41 patients belong to Group-A and Group-B respectively of labor class. There are 23 and 26 patients belong to Group-A and Group-B respectively of sedentary class. One patient belongs to executive class.

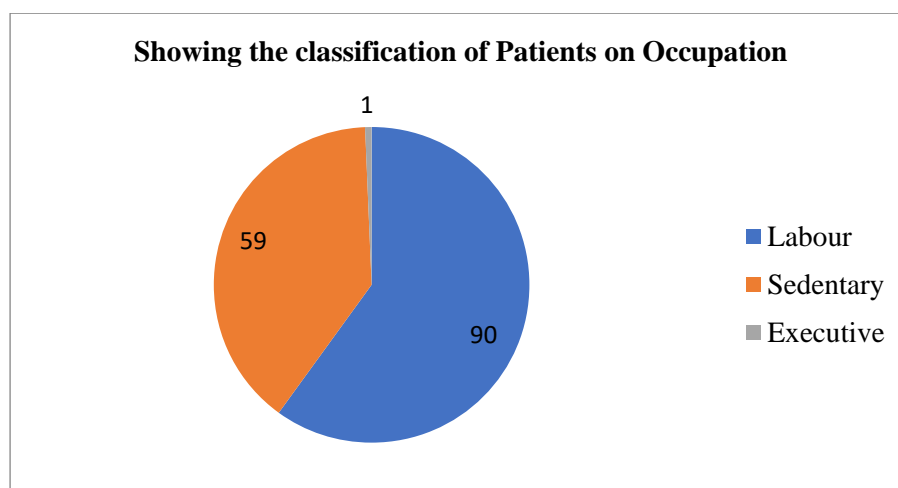


Table No: 05: Showing the classification of patients on economic status

Sl.No	Economic status	Group A	Group B	Total	Percentage
1	Poor	34	27	61	40.67%
2	Lower Middle	35	42	77	51.33%
3	Upper Middle	06	06	12	08%
4	Rich	00	00	00	00%

Among 61 poor class patients, 34 and 27 were belong to group-A and Group-B respectively. Among 77 lower middle-class patients 35 and 42 were belong to Group-

A and Group-B respectively. 06 each patient belongs to Group-A and Group-B of Upper middle class.

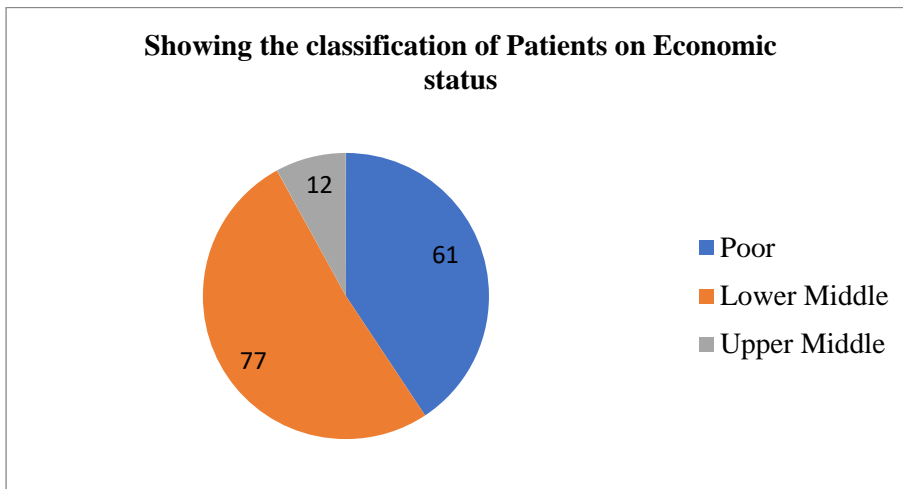


Table No: 06: Showing the classification of Patients on Diet

Sl.No	Diet	Group A	Group B	Total	Percentage
1	Vegetarian	27	29	56	37.33%
2	Mixed	48	46	94	62.67%

In Group-A 27 patients and in Group-B 29 patients belong to vegetarian pattern of diet whereas 48 and 46 in Group-A and Group-B respectively belong to mixed diet pattern.

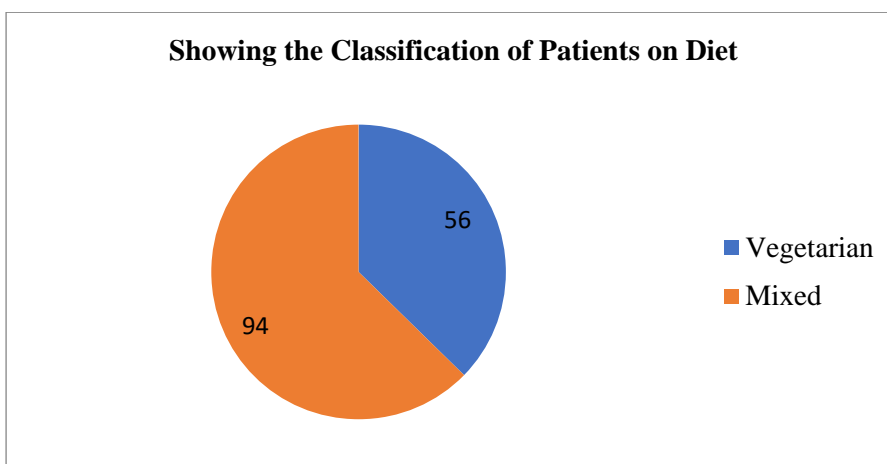


Table No: 07: Showing the Classification of Patients on Agni

Sl.No	Agni	Group A	Group B	Total	Percentage
1	Samagni	26	23	49	32.67%
2	Vishamagni	41	42	83	55.33%
3	Teekshnagni	08	10	18	12%
4	Mandagni	00	00	00	00%

Among 49 patients 26 in Group-A and 23 in Group-B had samagni, among 83 patients 41 in Group-A and 42 in Group-B had vishamagni, among 18 patients 08 in Group-A and 10 in Group-B had teekshnagni, whereas none of the patients had mandagni in Group-A and Group-B respectively.

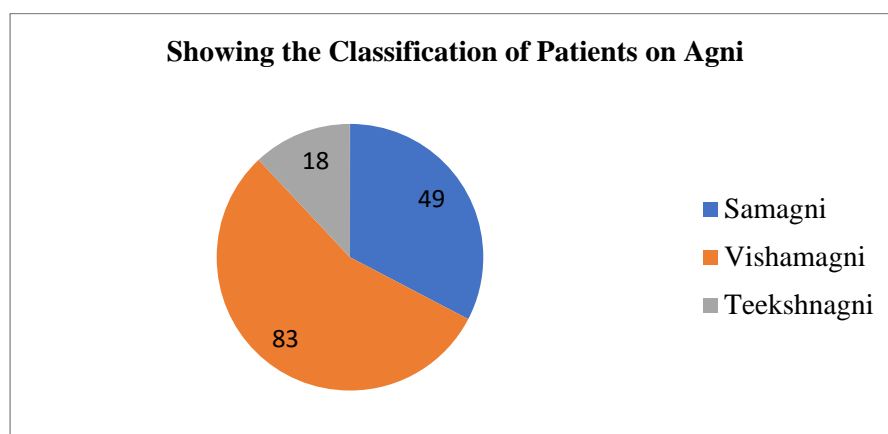


Table No: 08: Showing the Classification of Patients on Koshta

Sl.No	Koshta	Group A	Group B	Total	Percentage
1	Kroora	41	42	83	55.33%
2	Madhyama	26	23	49	32.67%
3	Mridu	08	10	18	12%

41 and 42 patients belong to Kroora pattern of Koshta (Bowel movements) in Group-A and Group-B respectively, 26 and 23 in Group-A and Group –B respectively belong

to Madhyama type of koshta, whereas 08 in Group-A and 10 in Group-B belong to mridu type of koshta.

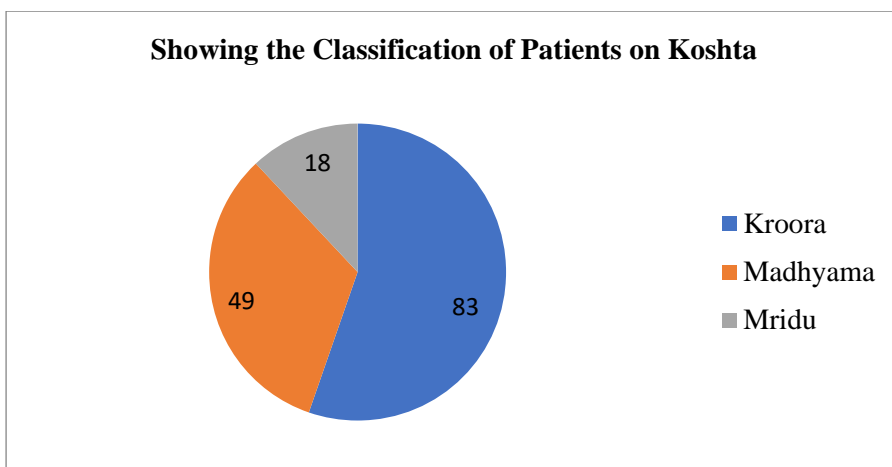


Table No: 09: Showing the classification of patients on joints involved

Sl.No	Joint involved	Group A	Group B	Total	Percentage
1	Right Knee	46	45	91	60.67%
2	Left Knee	23	23	46	30.67%
3	Both	06	07	13	8.66%

46 and 45 patients in Group-A and Group-B respectively affected with right knee joint, 23 each in Group-A and Group-B affected with left knee joint whereas 06 in Group-A and 07 in Group-B affected with both the knee joints.

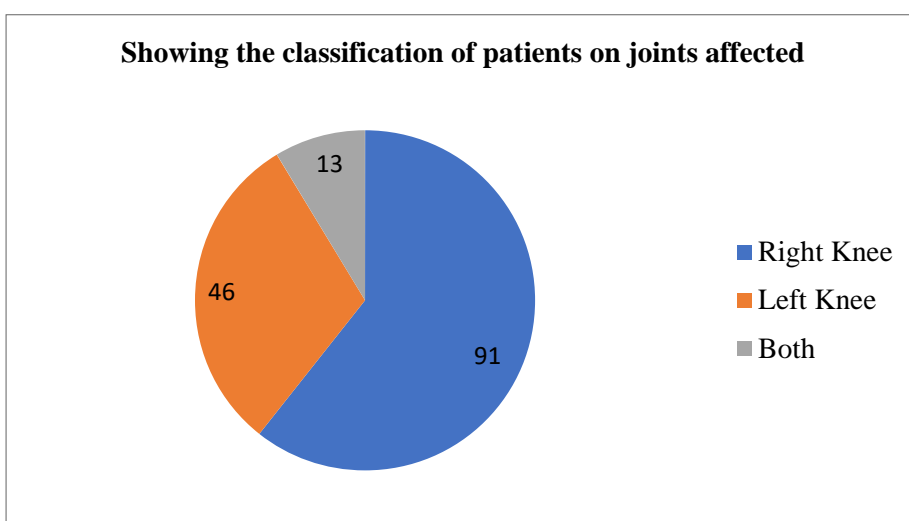
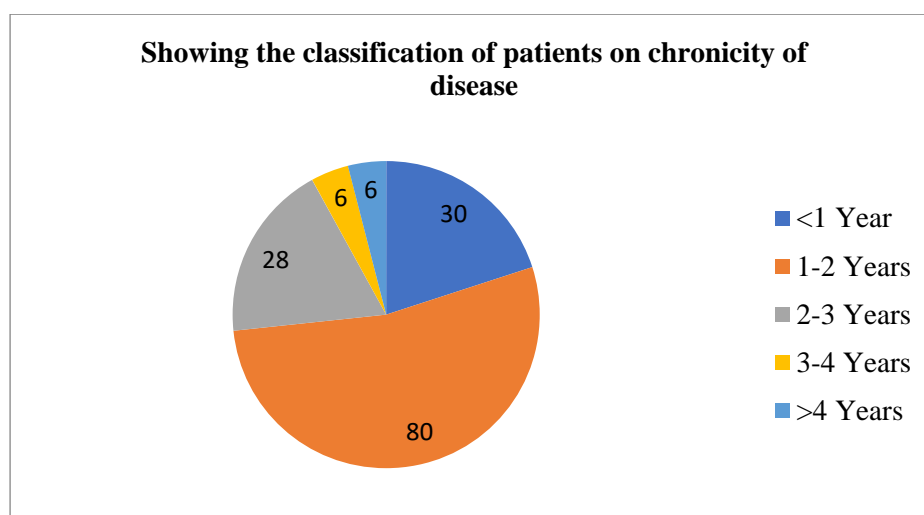


Table no: 10: Showing the classification of patients on chronicity of the disease

Sl.No	Chronicity in Years	Group A	Group B	Total	Percentage
1	<1 Year	15	15	30	20%
2	1-2 Years	39	41	80	53.33%
3	2-3 Years	16	12	28	18.67%
4	3-4 Years	03	03	06	04%
5	>4 Years	02	04	06	04%



15 patients each in Group-A and Group-B had less than one year of chronicity, 39 in Group-A and 41 in Group-B had 1-2 years of chronicity, 16 in Group-A and 12 in Group-B had 2-3 years of chronicity, 03 each in Group-A and Group-B had 3-4 years of chronicity and 02 in Group-A and 04 in Group-B had more than four years of chronicity.

Table no: 11: Showing the mode of onset of disease in Group-A & Group-B patients

Sl.No	Mode of onset	Group-A	Group-B	Total	Percentage
1	Acute	04	07	11	7.33%
2	Chronic	71	68	139	92.67%

04 and 07 patients in Group-A and Group-B respectively had acute onset and 71 in Group-A and 68 in Group-B had chronic onset of the disease.

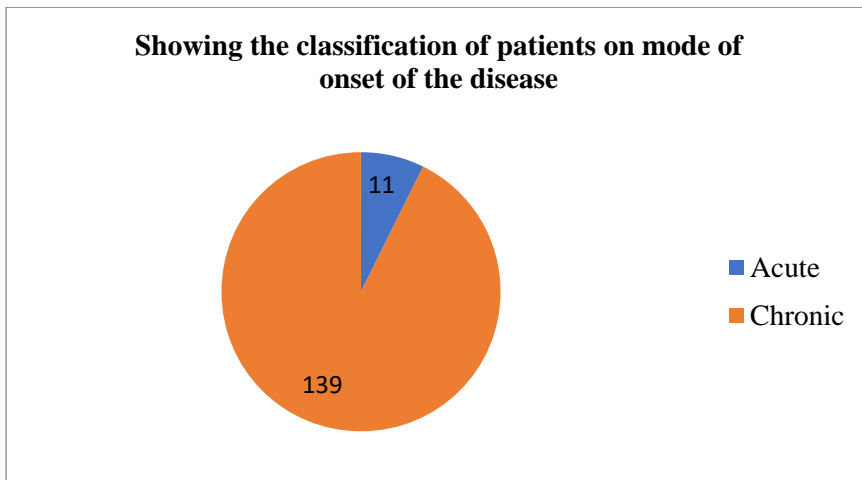


Table no: 12: Showing the type of nidra of Group-A & Group-B patients

Sl.No	Nidra	Group-A	Group-B	Total	Percentage
1	Prakrita	13	14	27	18%
2	Alpa	62	61	123	82%

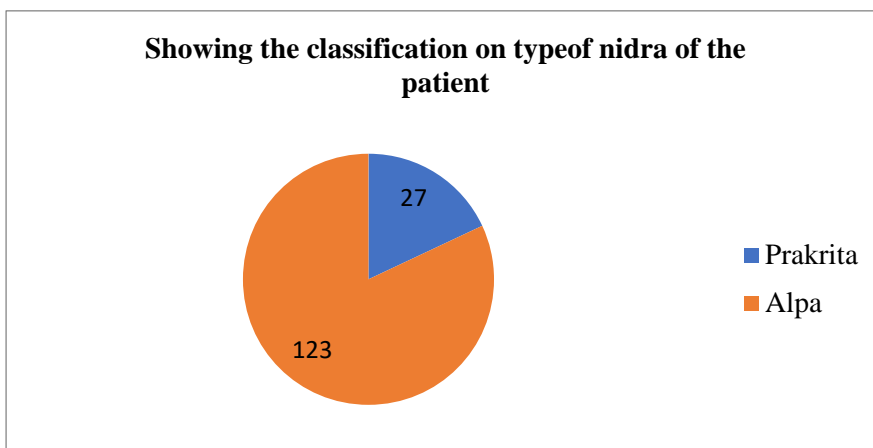


Table no: 13: Showing the classification on type of vyasana of Group-A & Group-B patients

Sl.No	Vyasana	Group-A	Group-B	Total	Percentage
1	None	42	46	88	58.67%
2	Tobacco	20	16	36	24%
3	Alcohol	03	05	08	5.33%
4	Smoke	10	08	18	12%

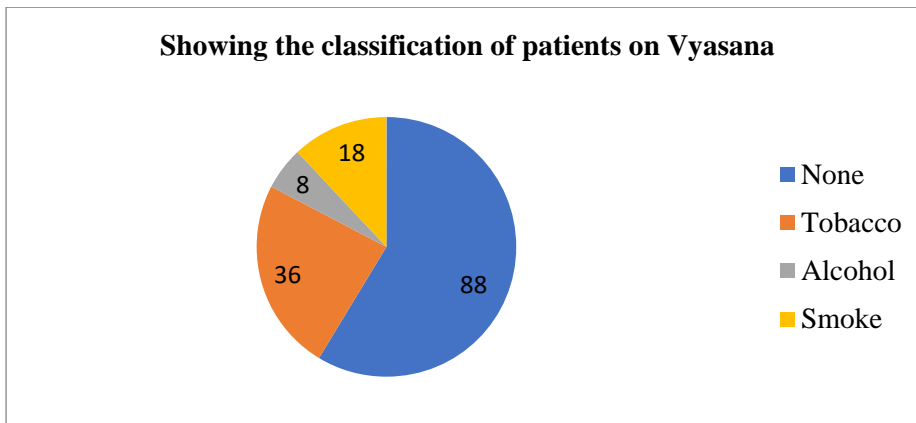


Table no: 14: Showing the classification on type of Prakriti of Group-A & Group-B patients

Sl.No	Prakriti	Group-A	Group-B	Total	Percentage
1	Vatapitta	18	21	39	26%
2	Vatakapha	23	21	44	29.33%
3	Pittakapha	34	33	67	44.67%

Showing the classification of patients on type of Prakriti

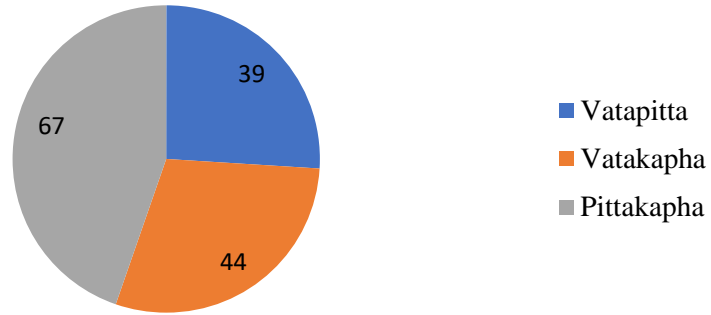


Table no: 15: Showing the retention time of vasti dravya of Group-A & Group-B patients

Sl.No	Time in hours	Group-A	Group-B	Total	Percentage
1	1-3 hours	12	16	28	18.67%
2	4-6 hours	43	52	95	63.33%
3	7-9 hours	19	07	26	17.33%
4	> 9 hours	01	00	01	0.67%

Showing the retention time of Vasti dravya

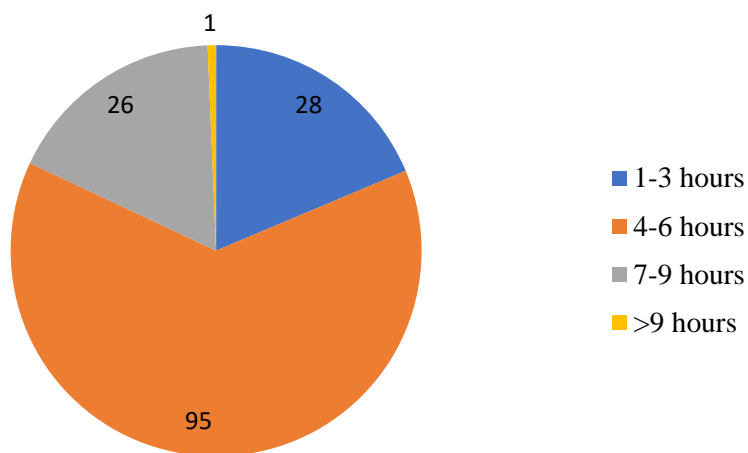


Table no: 16: Showing the gradation of sandhi shoola (pain) before and after follow up in Group-A patients

Sl.No	Pain Grade	Group-A before treatment	Group-A after follow up
1	0	00	34 (45.33%)
2	1	26 (34.67%)	37 (49.33%)
3	2	44 (58.67%)	04 (5.33%)
4	3	05(6.67%)	00

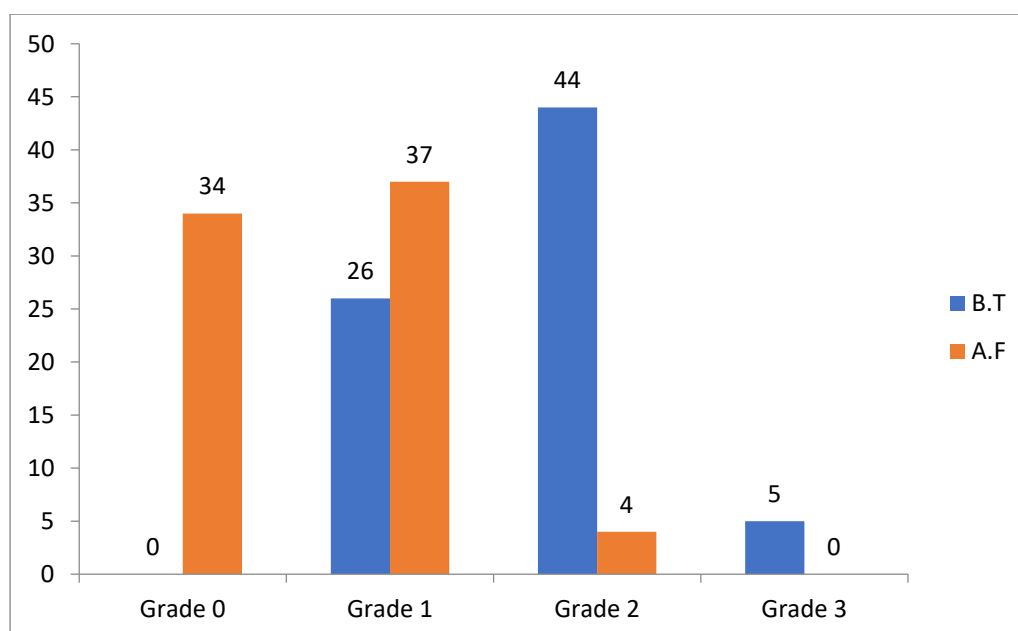


Table no: 17: Showing the gradation of sandhi shoola (pain) before and after follow up in Group-B patients

Sl. No	Pain Grade	Group-B before treatment	Group-B after follow up
1	0	00	33(44%)
2	1	30 (40%)	36 (48%)
3	2	35 (46.67%)	06 (8%)
4	3	10 (13.33%)	00

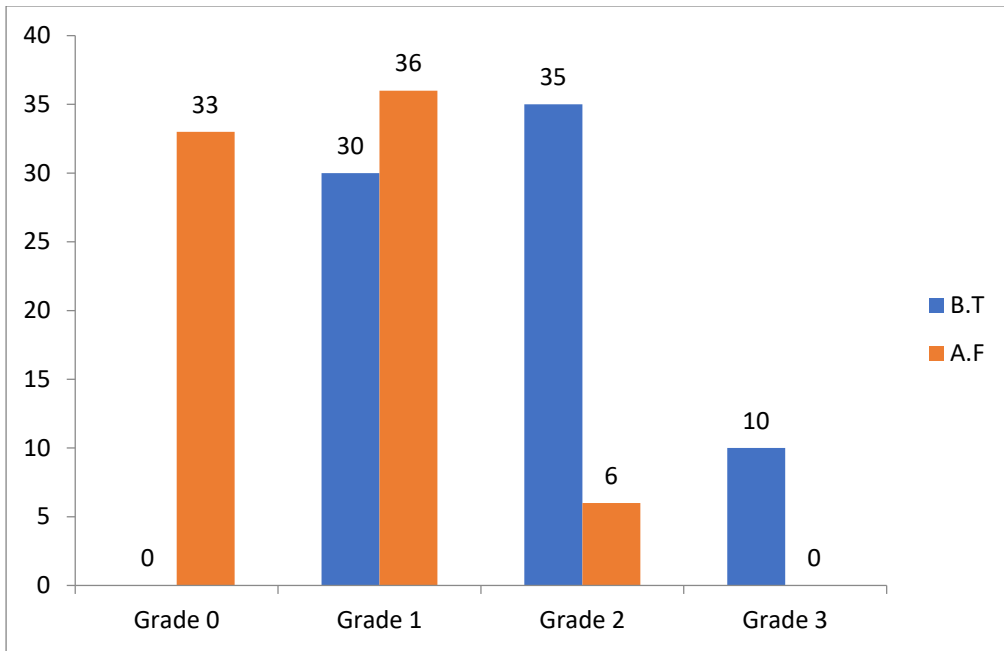


Table no: 18: Showing the sandhi shoola (pain) gradation after follow up in Group-A & Group-B patients

Sl. No	Pain Grade	Group-A after follow up	Group-B after follow up
1	0	34 (45.33%)	33(44%)
2	1	37 (49.33%)	36 (48%)
3	2	04 (5.33%)	06 (8%)
4	3	00	00

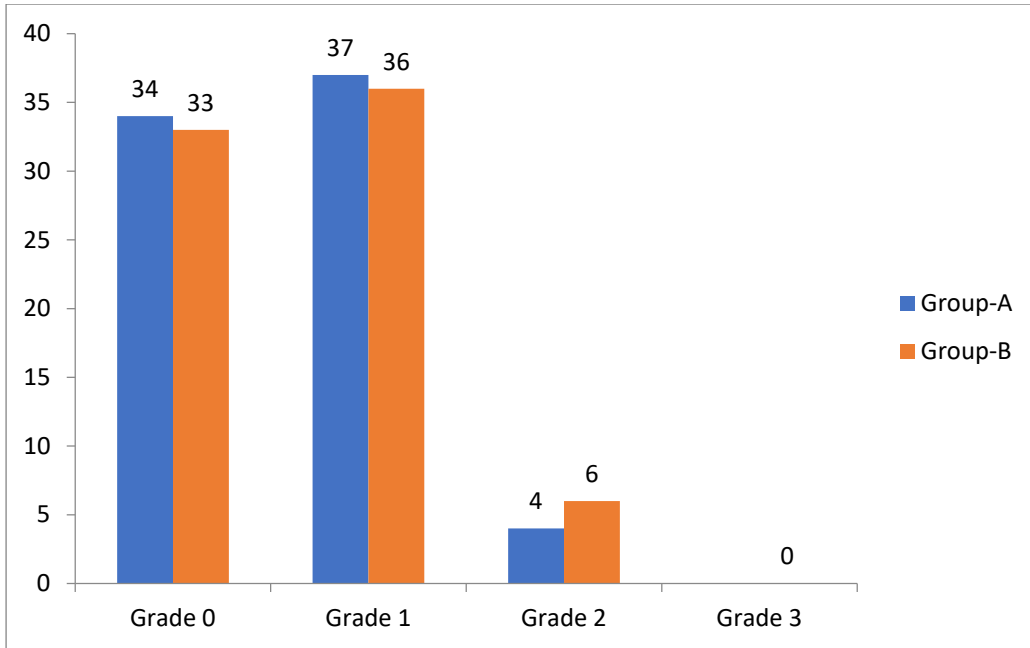


Table no: 19: Showing the gradation of sthambha (stiffness) before and after follow up in Group-A patients

Sl.No	Stiffness Grade	Group-A treatment before	Group-A after follow up
1	0	00	60 (80%)
2	1	75 (100%)	15 (20%)

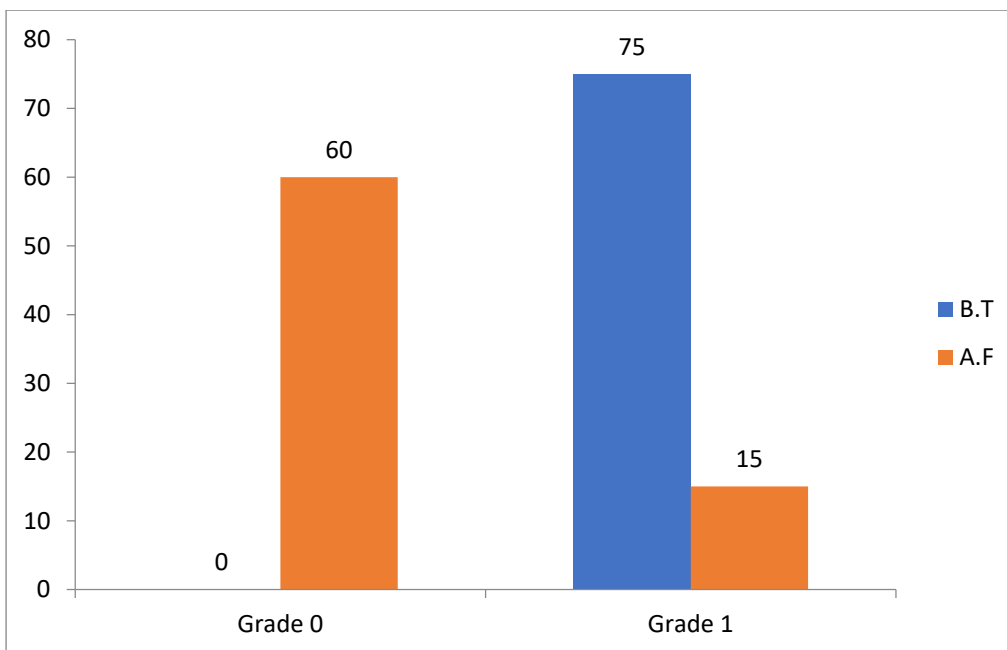


Table no: 20: Showing the gradation of sthambha (stiffness) before and after follow up in Group-B patients

Sl.No	Stiffness Grade	Group-B before treatment	Group-B after follow up
1	0	00	63 (84%)
2	1	75 (100%)	12 (16%)

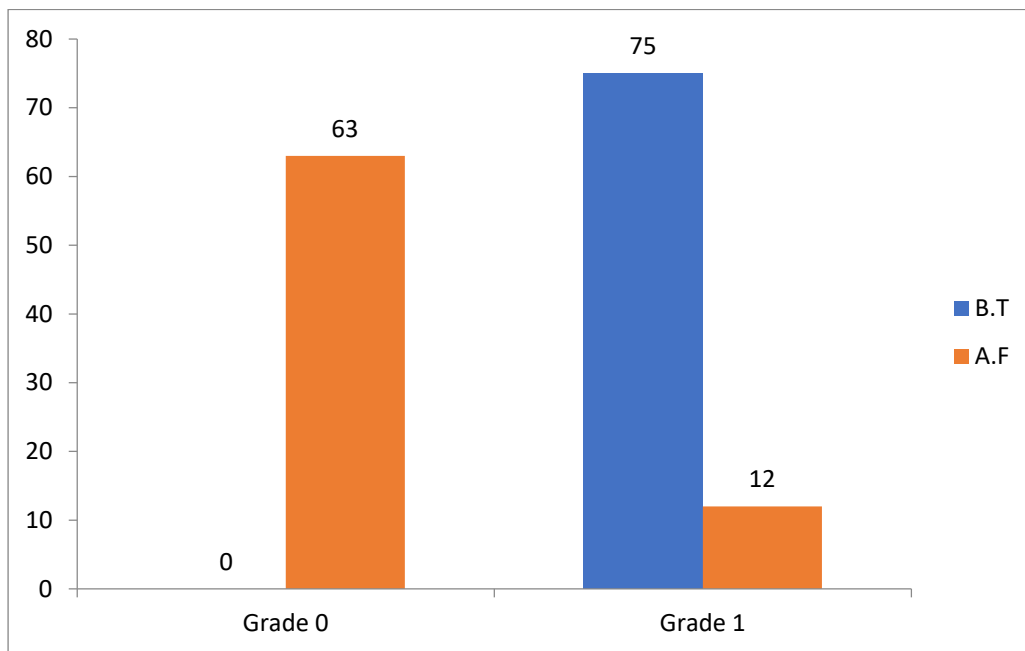


Table no: 21: Showing the gradation of sthambha (stiffness) after follow up in Group-A & Group-B patients

Sl.No	Stiffness Grade	Group-A after follow up	Group-B after follow up
1	0	60 (80%)	63 (84%)
2	1	15 (20%)	12 (16%)

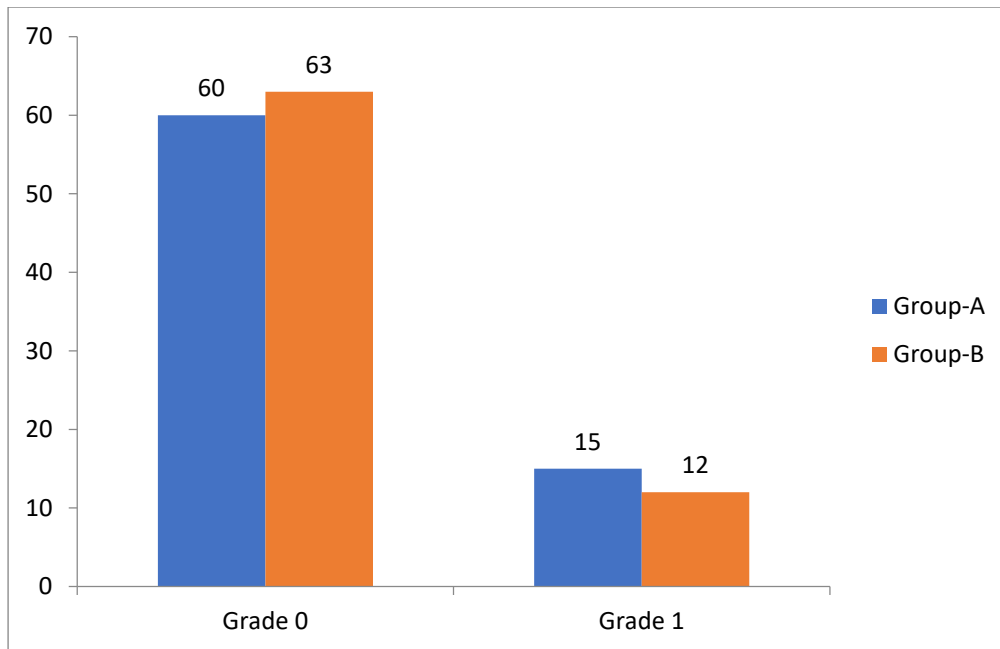


Table no: 22: Showing the gradation of sparsha akshamatva (tenderness) before treatment & after follow up in Group-A patients

Sl.No	Tenderness Grade	Group-A treatment before	Group-A after follow up
1	0	00	33 (44%)
2	1	28 (37.33%)	40 (53.33%)
3	2	43 (57.33%)	02 (2.67%)
4	3	04(5.33%)	00

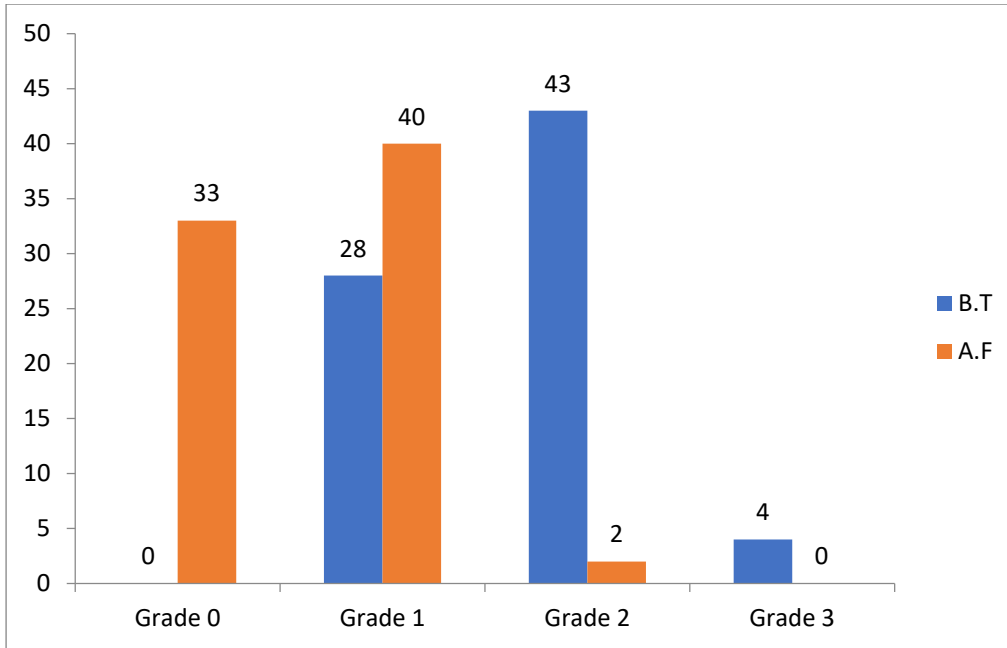


Table no: 23: Showing the gradation of sparsha akshamatva (tenderness) before treatment & after follow up in Group-B patients

Sl.No	Tenderness Grade	Group-B treatment before	Group-B after follow up
1	0	00	31 (41.33%)
2	1	27 (36%)	39 (52%)
3	2	45 (60%)	05 (6.67%)
4	3	03 (4%)	00

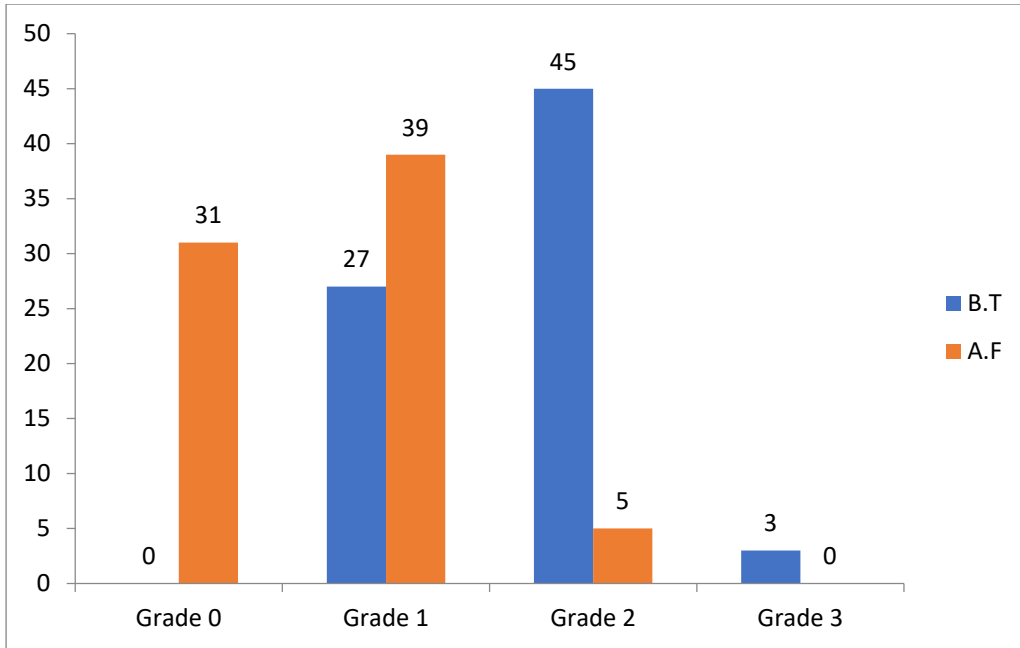


Table no: 24: Showing the gradation of sparsha akshamatva (tenderness) after follow up in Group-A & Group-B patients

Sl.No	Tenderness Grade	Group-A after follow up	Group-B after follow up
1	0	33 (44%)	31 (41.33%)
2	1	40 (53.33%)	39 (52%)
3	2	02 (2.67%)	05 (6.67%)
4	3	00	00

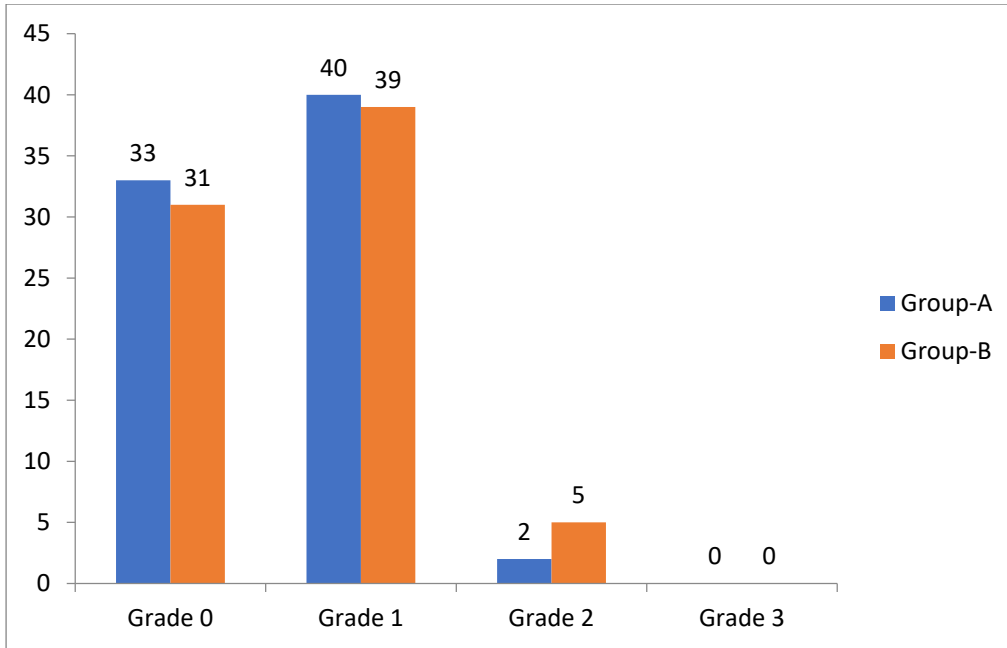


Table no: 25: Showing the gradation of sandhi gati (range of movement) of before treatment & after follow up in Group-A patients

Sl.No	Range of movement Grade	Group-A treatment before	Group-A follow up after
1	0	18 (24%)	54 (72%)
2	1	55 (73.33%)	21(28%)
3	2	02 (2.67%)	00

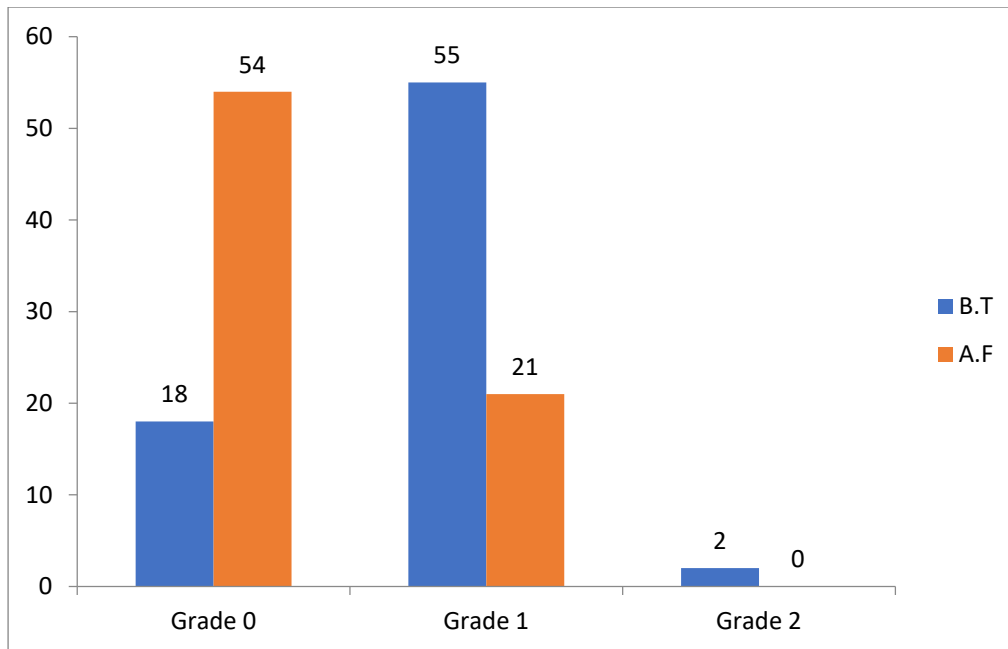


Table no: 26: Showing the gradation of sandhi gati (range of movement) of before treatment & after follow up in Group-B patients

Sl.No	Range of movement Grade	Group-B treatment before	Group-B follow up after
1	0	24 (32%)	51 (68%)
2	1	49 (65.33%)	23(30.67%)
3	2	02 (2.67%)	01 (1.33%)

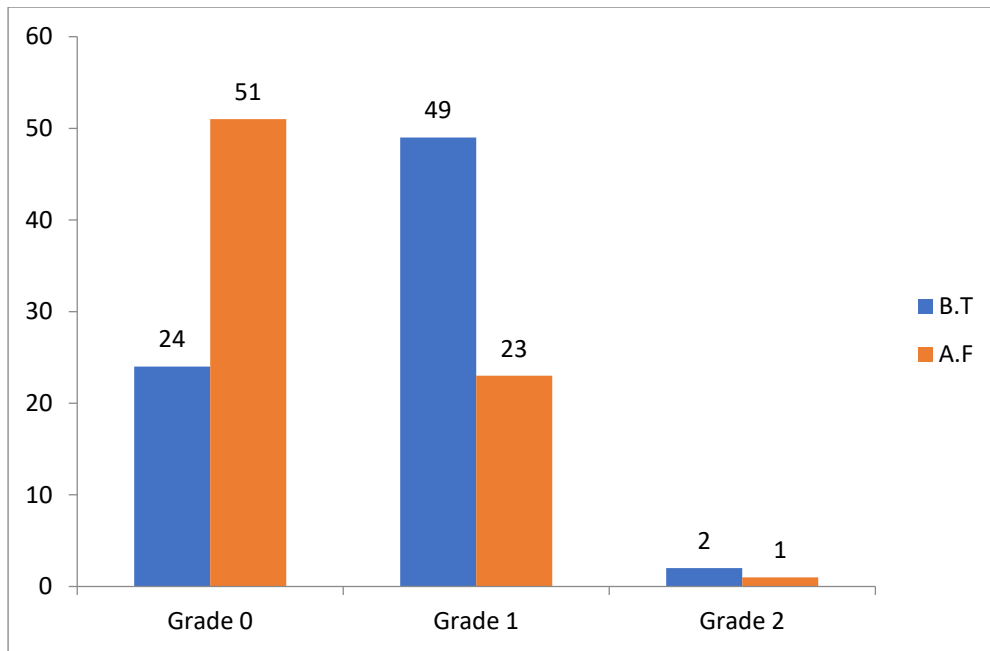


Table no: 27: Showing the gradation of sandhi gati (range of movement) of after follow up in Group-A & Group-B patients

Sl.No	Range of movement Grade	Group-A follow up after	Group-B follow up after
1	0	54 (72%)	51 (68%)
2	1	21(28%)	23(30.67%)
3	2	00	01 (1.33%)

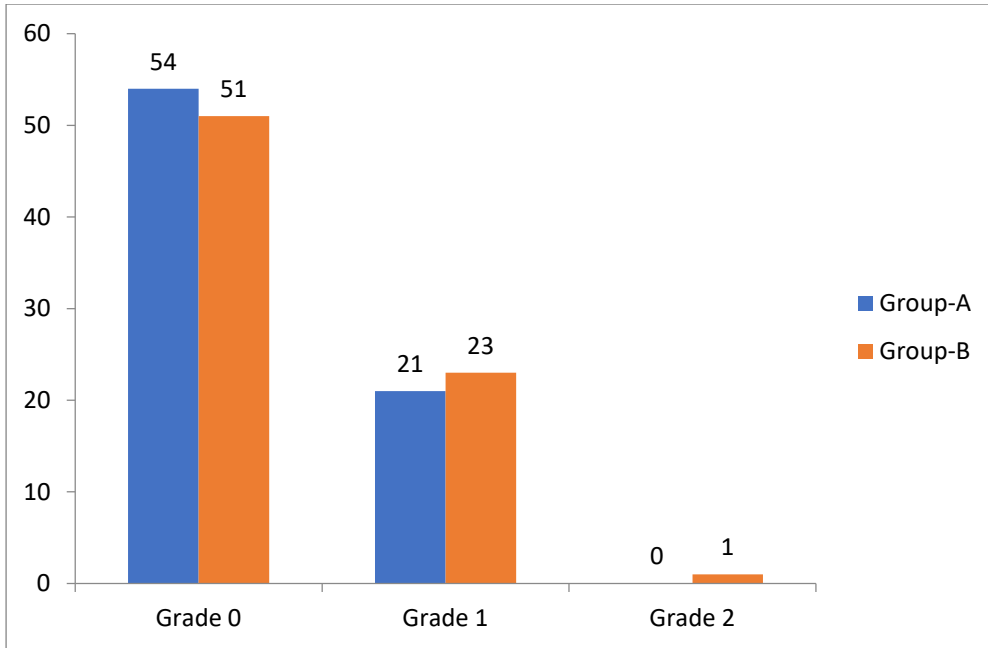


Table no: 28: Showing the gradation of sandhi shotha (swelling) before treatment & after follow up in Group-A patients

Sl.No	Swelling Grade	Group-A treatment before	Group-A after follow up
1	0	00	42 (56%)
2	1	32 (42.67%)	32 (42.67%)
3	2	39 (52%)	01 (1.33%)
4	3	04(5.33%)	00

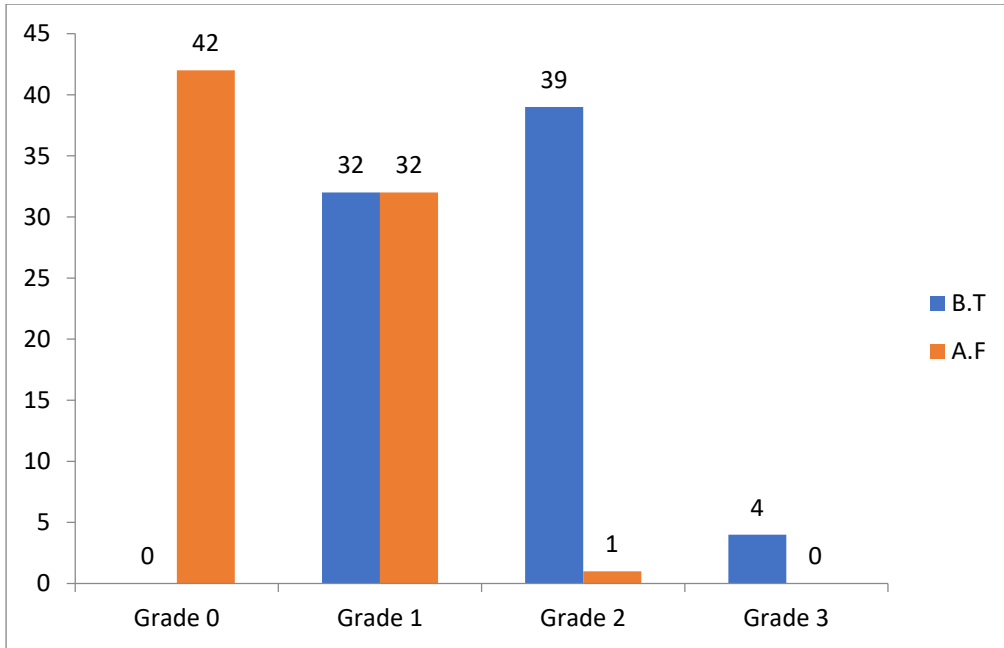


Table no: 29: Showing the gradation of sandhi shotha (swelling) before treatment & after follow up in Group-B patients

Sl.No	Swelling Grade	Group-B treatment before	Group-B after follow up
1	0	00	43 (57.33%)
2	1	31 (41.33%)	29 (38.67%)
3	2	41 (54.67%)	03 (4%)
4	3	03(4%)	00

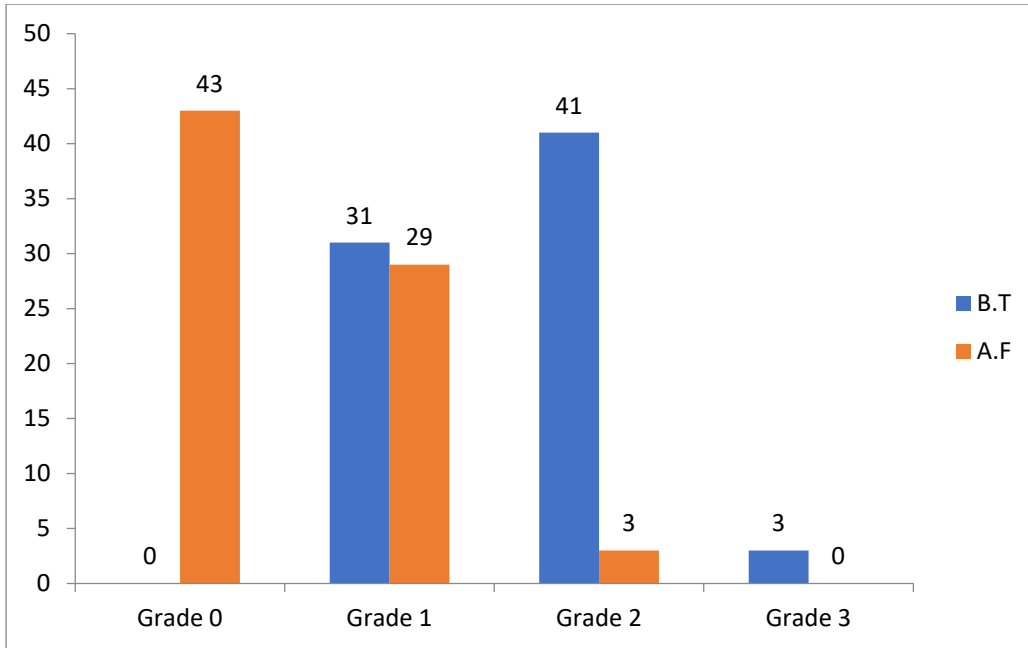


Table no: 30: Showing the gradation of sandhi shotha (swelling) after follow up in Group-A & Group-B patients

Sl.No	Swelling Grade	Group-A after follow up	Group-B after follow up
1	0	42 (56%)	43 (57.33%)
2	1	32 (42.67%)	29 (38.67%)
3	2	01 (1.33%)	03 (4%)
4	3	00	00

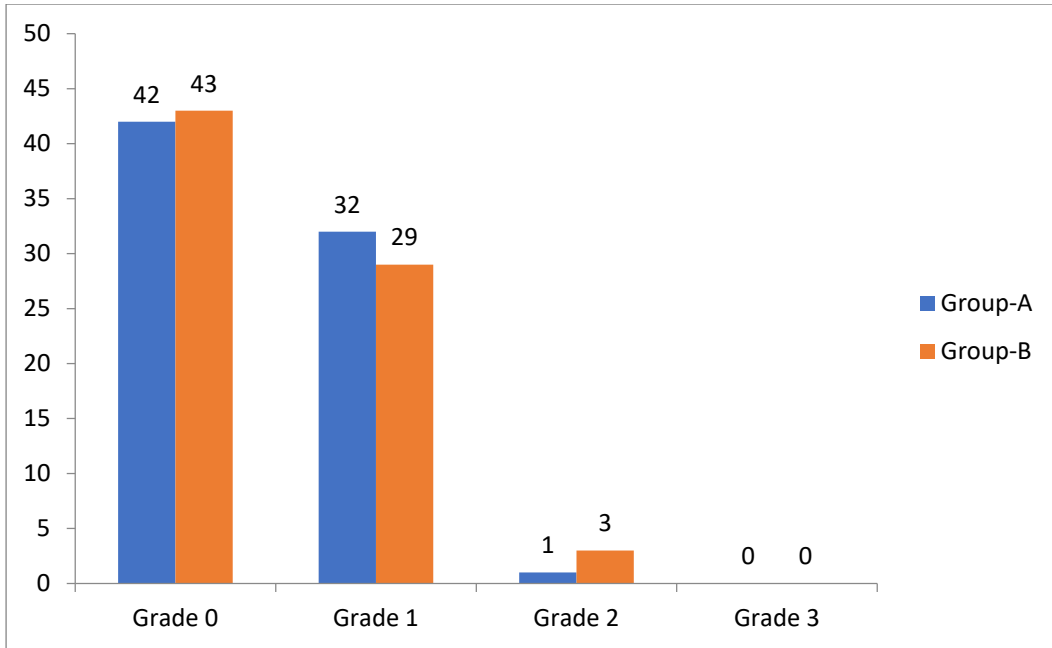


Table no: 31: Showing the gradation of sandhi atopa (crepitus) before treatment & after follow up in Group-A patients

Sl.No	Crepitus Grade	Group-A before treatment	Group-A after follow up
1	0	00	07 (9.33%)
2	1	19 (25.33%)	31(41.33%)
3	2	45 (60%)	34 (45.33%)
4	3	11 (14.67%)	03 (4%)

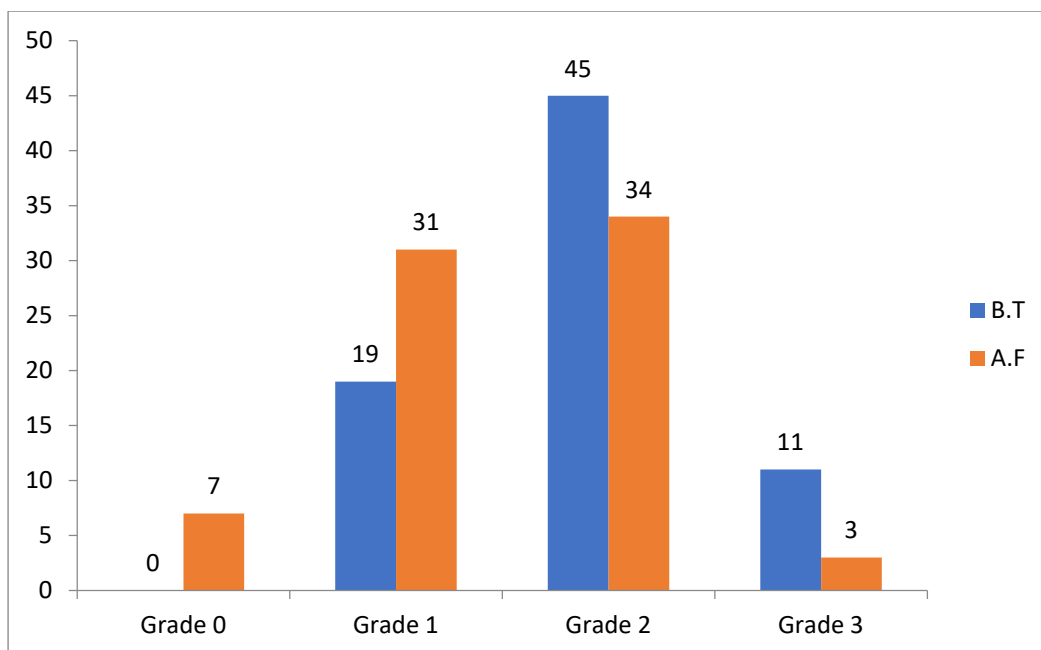


Table no: 32: Showing the gradation of sandhi atopa (crepitus) before treatment & after follow up in Group-B patients

Sl.No	Crepitus Grade	Group-B before treatment	Group-B after follow up
1	0	00	05 (6.67%)
2	1	16 (21.33%)	25(33.33%)
3	2	49 (65.33%)	39 (52%)
4	3	10 (13.33%)	06 (8%)

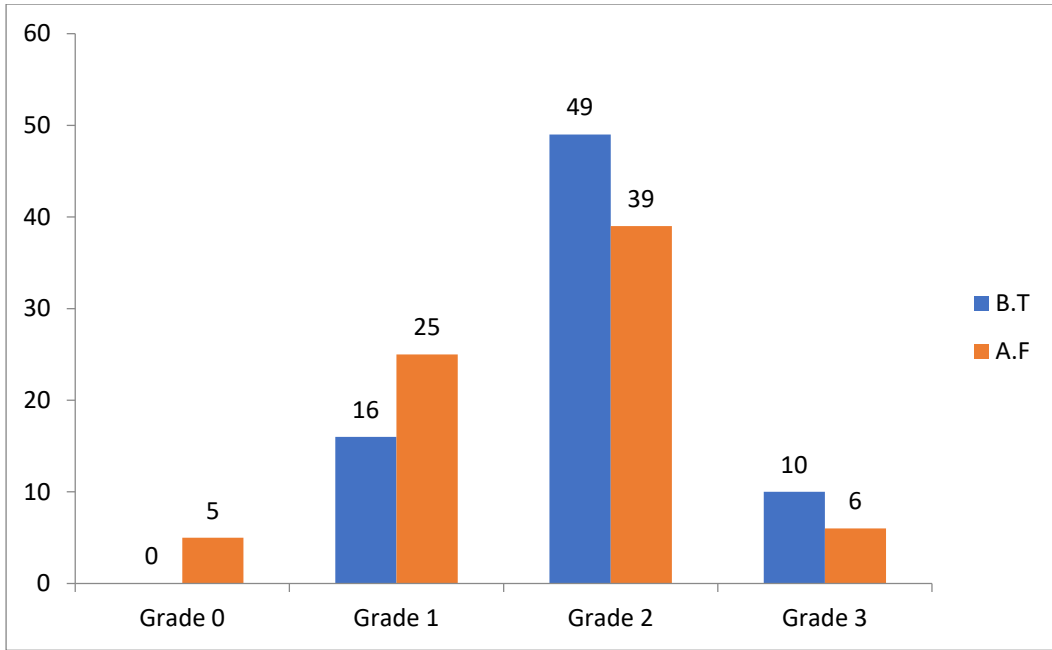


Table no: 33: Showing the gradation of sandhi atopa (crepitus) after follow up in Group-A & Group-B patients

Sl.No	Crepitus Grade	Group-A after follow up	Group-B after follow up
1	0	00	05 (6.67%)
2	1	16 (21.33%)	25(33.33%)
3	2	49 (65.33%)	39 (52%)
4	3	10 (13.33%)	06 (8%)

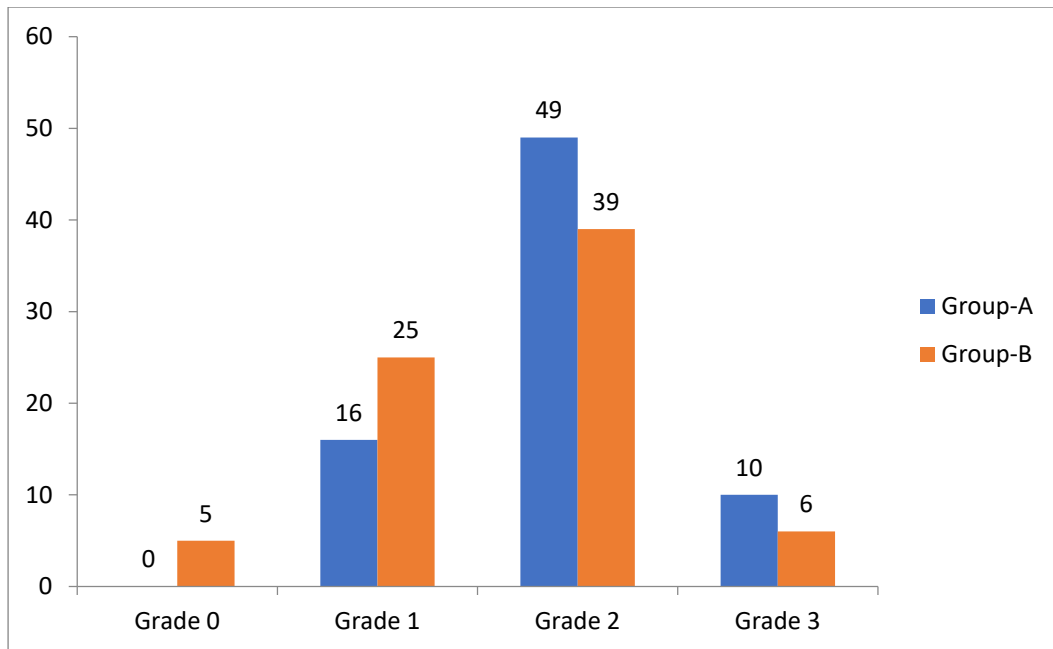


Table no: 34: Showing the gradation of walking time before treatment & after follow up in Group-A patients

Sl.No	Walking Grade	time	Group-A treatment before	Group-A after follow up
1	0		01 (1.33%)	24 (32%)
2	1		30 (40%)	40 (53.33%)
3	2		40 (53.33%)	11 (14.67%)
4	3		04 (5.33%)	00

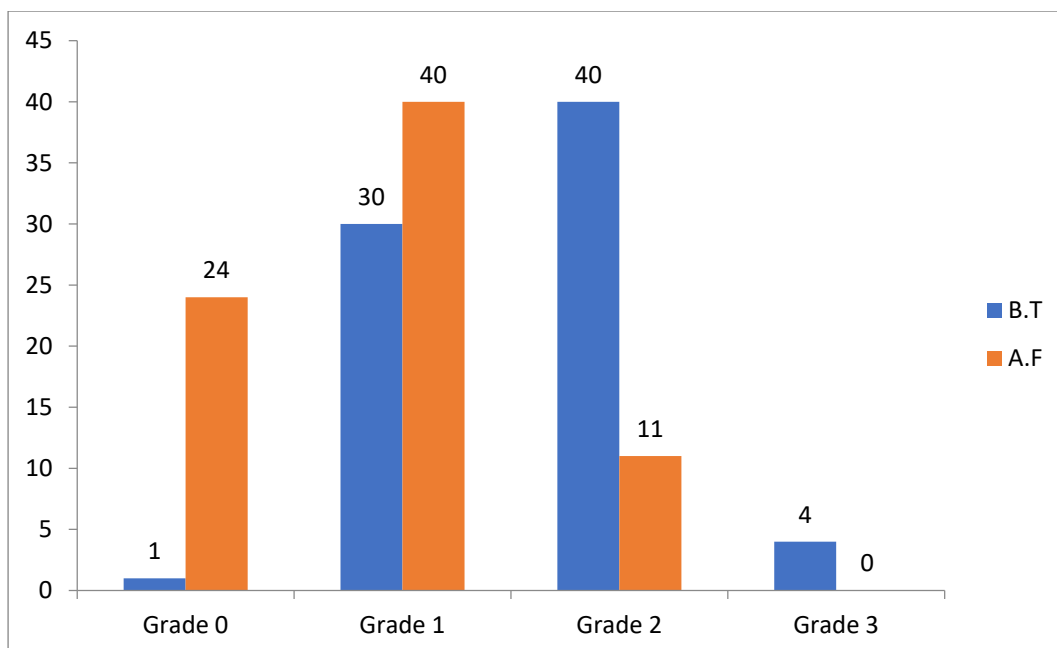


Table no: 35: Showing the gradation of walking time before treatment & after follow up in Group-B patients

Sl.No	Walking Grade	Group-B treatment before	Group-B after follow up
1	0	00	18 (24%)
2	1	26(34.67%)	41 (54.67%)
3	2	45 (60%)	16 (21.33%)
4	3	04 (5.33%)	00

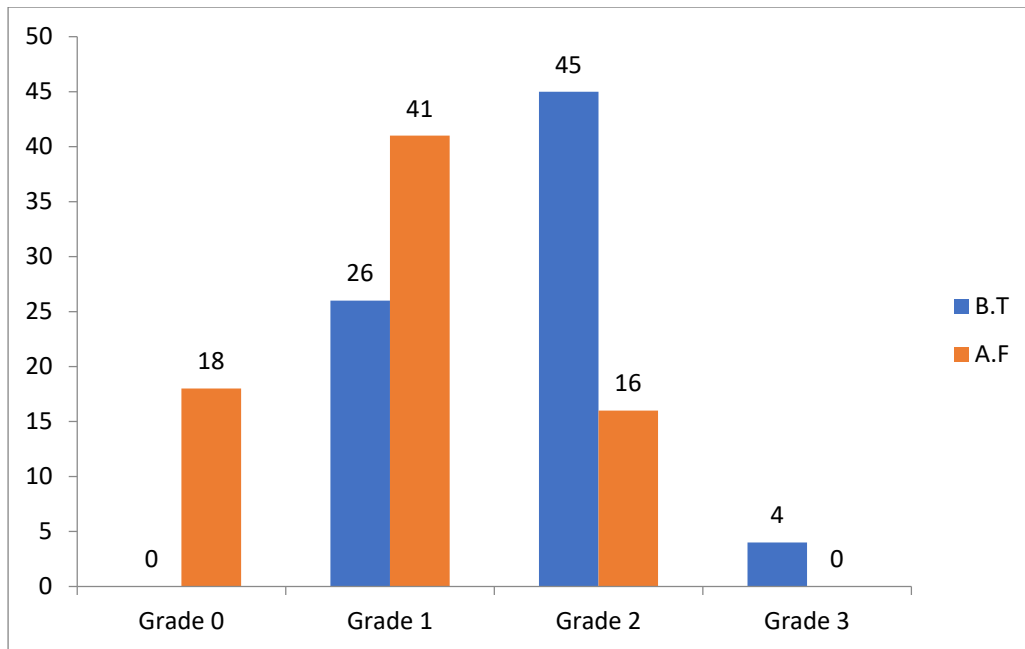


Table no: 36: Showing the gradation of walking time after follow up in Group-A & Group-B patients

Sl.No	Walking Grade	Group-A after follow up	Group-B after follow up
1	0	24 (32%)	18 (24%)
2	1	40 (53.33%)	41 (54.67%)
3	2	11 (14.67%)	16 (21.33%)
4	3	00	00

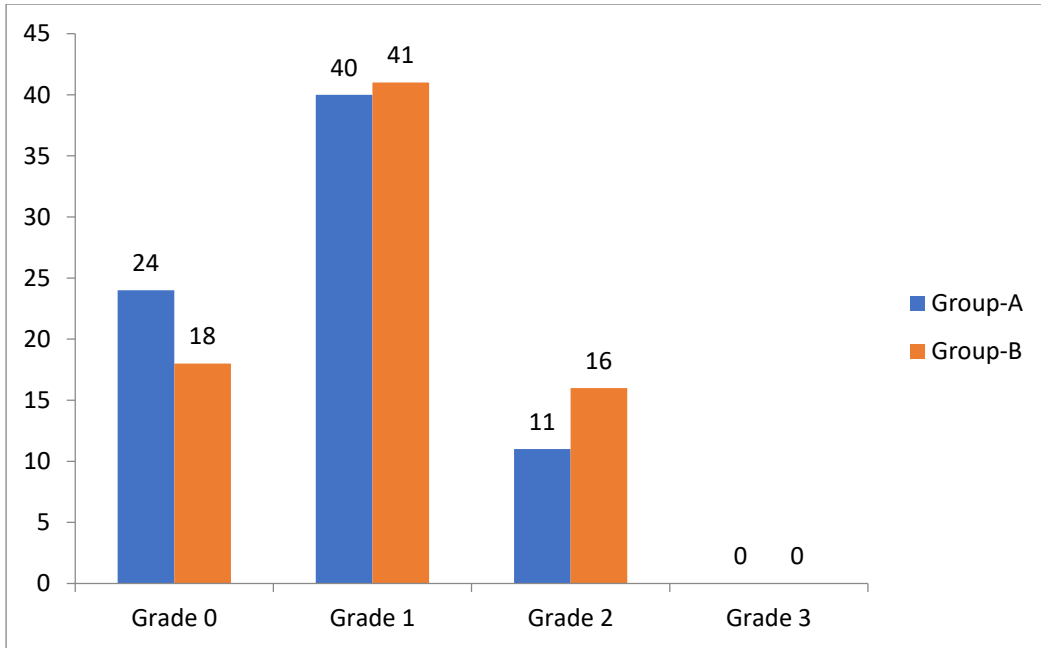


Table No: 37: Showing the overall response of the patient in Group-A

No response	Poor response	Mild response	Moderate response	Good response
00	00	19	54	02

In Group-A there are 19 patients have shown moderate response, 54 patients have shown moderate response and 02 of them shown good response to the treatment.

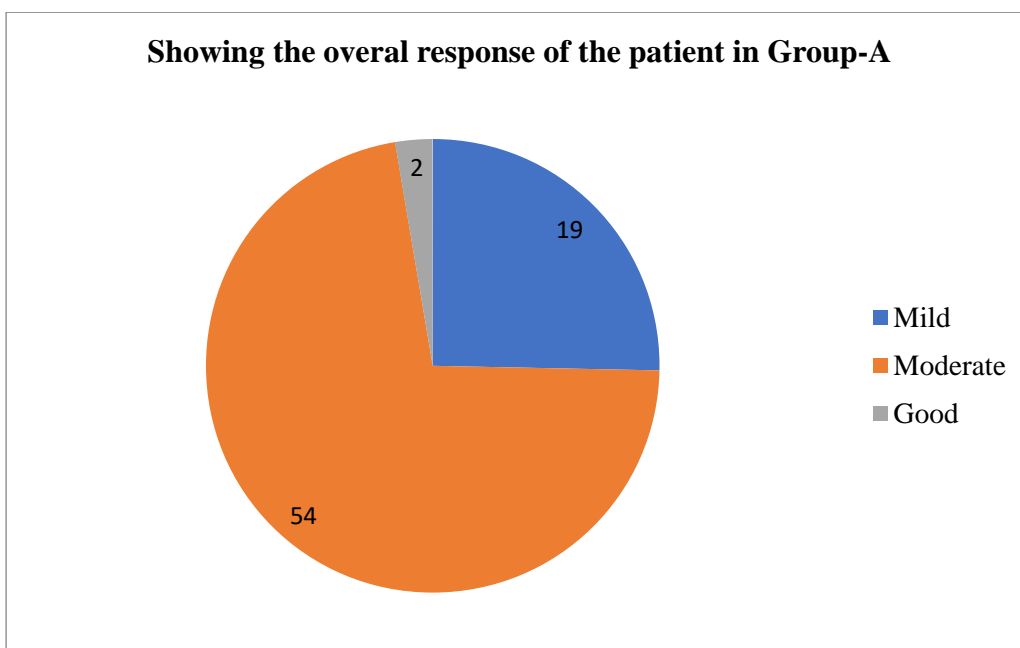
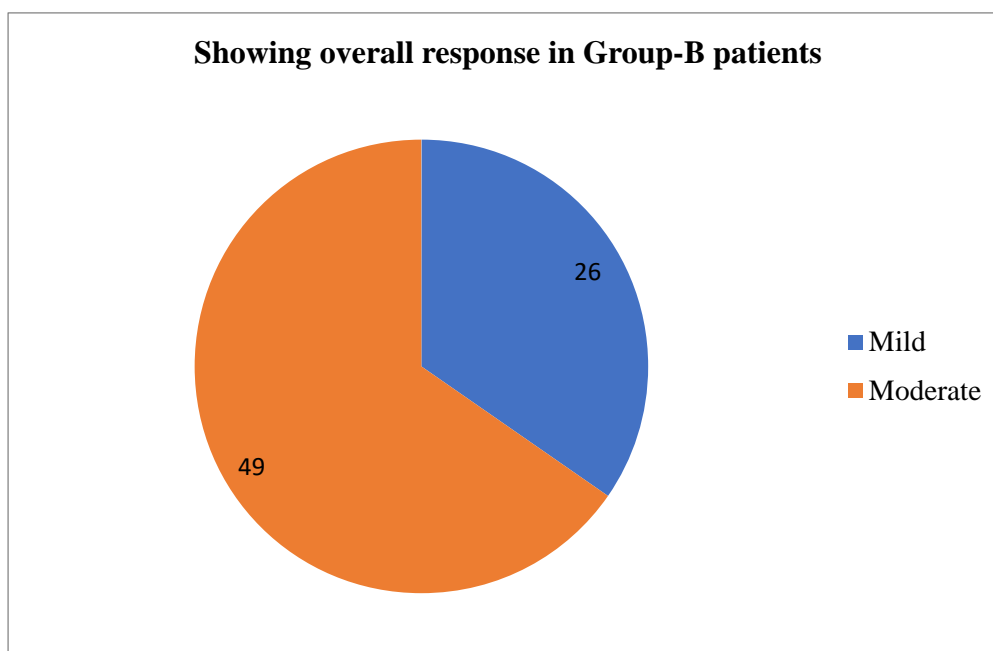


Table No: 38: Showing the Overall response of the patient in Group-B

No response	Poor response	Mild response	Moderate response	Good response
00	00	26	49	00

Among 75 patients of Group-B, 26 patients have responded mildly to the treatment and 49 of them shown moderate response to the treatment.



Abbreviations used in the below bar diagram is as follows-

NR-No response

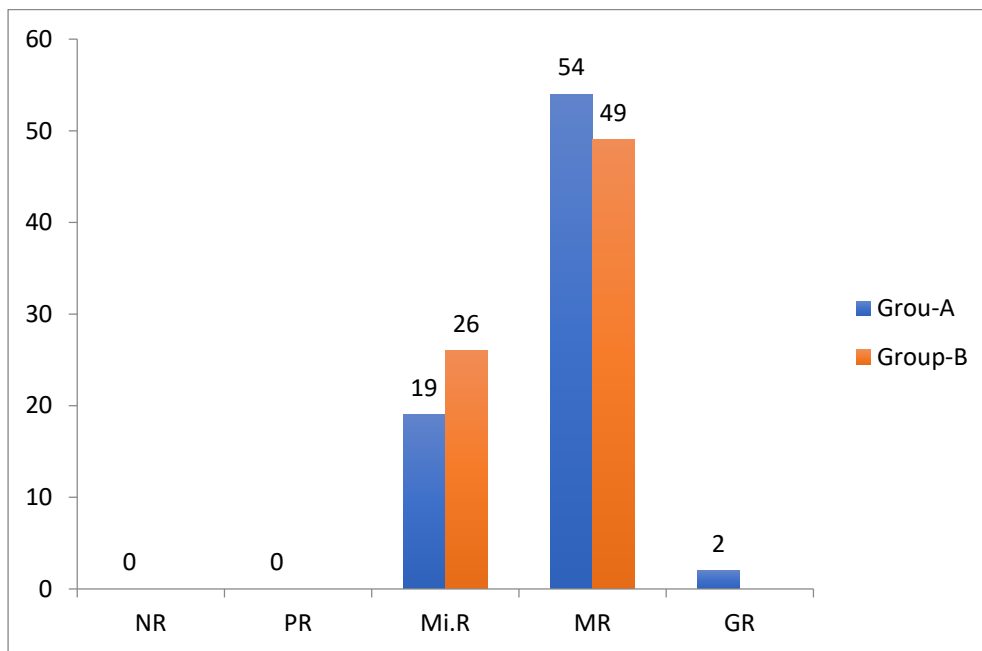
PR-Poor response

Mi.R-Mild response

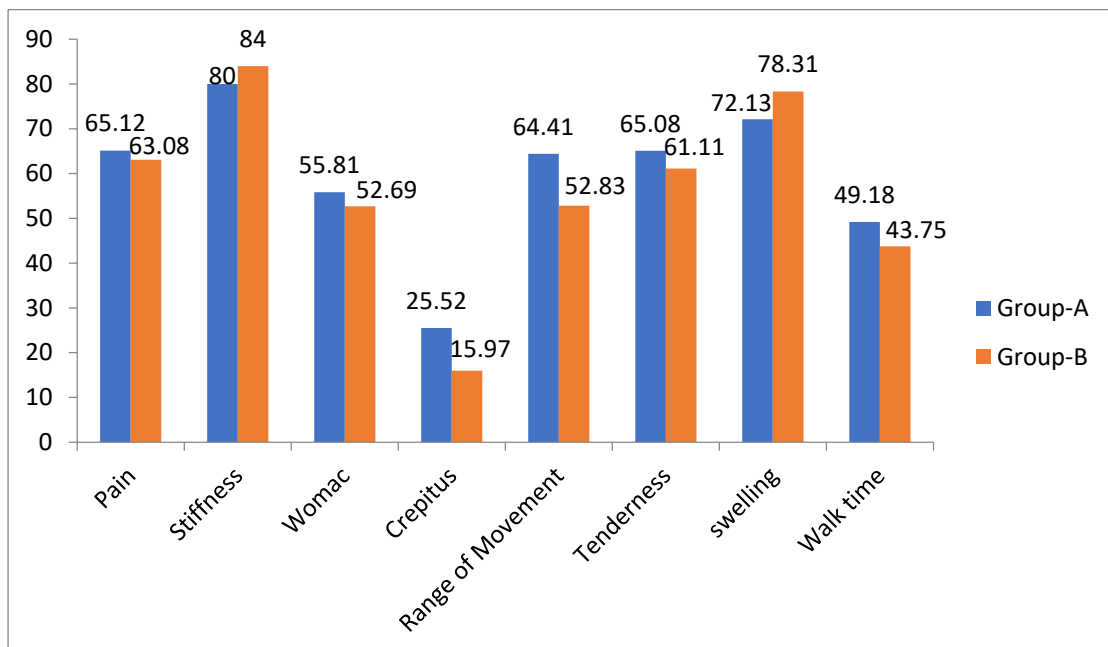
MR-Moderate response

GR-Good Response

Comparison of response in Group-A and Group-B



Comparison of percentage of improvement in subjective and objective parameters of Group-A and Group-B patients



STATISTICAL ANALYSIS

Table No: 69: Showing the percentage of improvement in subjective and objective parameters in Group-A & Group-B

Sl.No	Parameters	Group-A	Group-B	Total Improvement in Group-A & Group-B
Subjective				
1	Sandhi Shoola (Pain)	65.12%	63.08%	64.1%
2	Sthambha (Stiffness)	80%	84%	82%
Objective				
3	Sandhi Atopa (Crepitus)	25.52%	15.97%	20.75%
4	Sandhi Gati (Range of movement)	64.41%	52.83%	58.62%
5	Sparsha akshamatva (Tenderness)	65.08%	61.11%	63.06%
6	Sandhi Shotha (Swelling)	72.13%	78.31%	75.22%
7	Walking time	49.18%	43.75%	46.47%
8	Womac	55.81%	52.69%	54.36%
	Total Improvement	59.66%	56.47%	58.07%

Table No: 70: Showing the percentage of improvement in each participants of Group-A

Sl.No	OPD No	% of improvement	Remark	Sl. No	OPD No	% of improvement	Remark
1	4746/16	70.73	M.R	20	73/17	61.82	M.R
2	12688/16	59.32	M.R	21	278/17	69.23	M.R
3	12883/16	64.86	M.R	22	289/17	52	M.R
4	12898/16	70.21	M.R	23	455/17	41.38	Mild
5	12918/16	65.79	M.R	24	642/17	73.53	M.R
6	12943/16	66	M.R	25	686/17	71.43	M.R
7	13022/16	74.29	M.R	26	780/17	62.86	M.R
8	13037/16	41.51	Mild	27	895/17	63.41	M.R
9	13052/16	60	M.R	28	934/17	42.55	Mild
10	13150/16	76.92	Good	29	1410/17	50	Mild
11	13738/16	57.14	M.R	30	1536/17	65.85	M.R
12	13842/16	54.55	M.R	31	1647/17	55.78	M.R
13	14175/16	60.71	M.R	32	1687/17	50	Mild
14	14215/16	55.17	M.R	33	1799/17	59.52	M.R
15	14294/16	63.83	M.R	34	1823/17	50.98	M.R
16	14412/16	65.63	M.R	35	1911/17	55.10	M.R
17	14451/16	57.14	M.R	36	2077/17	73.68	M.R
18	25/17	54.54	M.R	37	2065/17	50	Mild
19	43/17	46.55	Mild	38	2228/17	53.49	M.R

Table No: 71: Showing the percentage of improvement in each participants of Group-A

Sl.No	OPD No	% of improvement	Remark	Sl. No	OPD No	% of improvement	Remark
39	2226/17	54.55	M.R	58	5451/17	45.28	Mild
40	2327/17	45.45	Mild	59	5482/17	43.75	Mild
41	2456/17	61.70	M.R	60	5519/17	57.78	M.R
42	2474/17	52.08	M.R	61	5669/17	56.76	M.R
43	2591/17	52.63	M.R	62	5770/17	52.38	M.R
44	2719/17	48.89	Mild	63	5783/17	62.86	M.R
45	2722/17	58.14	M.R	64	5868/17	69.70	M.R
46	2835/17	61.11	M.R	65	6176/17	73.33	M.R
47	2922/17	46.34	Mild	66	6189/17	71.05	M.R
48	2961/17	58.14	M.R	67	6299/17	45.95	Mild
49	3150/17	56.10	M.R	68	6419/17	58.54	M.R
50	3179/17	76.92	Good	69	6532/17	43.59	Mild
51	3482/17	70.37	M.R	70	6667/17	57.89	M.R
52	3722/17	47.83	Mild	71	6749/17	69.44	M.R
53	3745/17	53.84	M.R	72	6904/17	42.59	Mild
54	3989/17	40	Mild	73	7477/17	57.50	M.R
55	3976/17	51.28	M.R	74	7465/17	62.86	M.R
56	4021/17	43.18	Mild	75	7566/17	51.22	M.R
57	5452/17	38.78	Mild				

Table No: 72: Showing the percentage of improvement in each participants of Group-B

Sl.No	OPD No	% of improvement	Remark	Sl. No	OPD No	% of improvement	Remark
1	13161/16	67.65	M.R	14	14296/16	46.15	Mild
2	13260/16	68.42	M.R	15	14415/16	65.86	M.R
3	13382/16	42.86	Mild	16	14422/16	28.33	Mild
4	13353/16	59.09	M.R	17	14519/16	61.76	M.R
5	13498/16	58.33	M.R	18	21/17	55.56	M.R
6	13507/16	46.67	Mild	19	74/17	53.66	M.R
7	13528/16	38.89	Mild	20	266/17	61.76	M.R
8	13600/16	67.74	M.R	21	287/17	70.97	M.R
9	13651/16	65.62	M.R	22	457/17	52.78	M.R
10	13640/16	55.56	M.R	23	577/17	44.44	Mild
11	13743/16	40.35	Mild	24	699/17	30.36	Mild
12	13851/16	43.86	Mild	25	706/17	71.43	M.R
13	14184/16	46.67	Mild	26	783/17	36.84	Mild

Table No: 73: Showing the percentage of improvement in each participants of Group-B

Sl. No	OPD No	% of improvement	Remark	Sl. No	OPD No	% of improvement	Remark
27	918/17	54.55	M.R	52	3750/17	55	M.R
28	938/17	52.27	M.R	53	3993/17	38.89	Mild
29	1538/17	64.71	M.R	54	3994/17	45.95	Mild
30	1546/17	52.50	M.R	55	4025/17	64.71	M.R
31	1660/17	54	M.R	56	4014/17	37.5	Mild
32	1703/17	50	Mild	57	5450/17	65.52	M.R
33	1801/17	66.67	M.R	58	5471/17	62.16	M.R
34	1821/17	57.89	M.R	59	5523/17	45.71	Mild
35	1912/17	52.63	M.R	60	5671/17	58.82	M.R
36	2067/17	41.67	Mild	61	5673/17	65.52	M.R
37	2185/17	58.33	M.R	62	5781/17	48.72	Mild
38	2227/17	31.37	Mild	63	5865/17	67.65	M.R
39	2305/17	66.67	M.R	64	5896/17	50	Mild
40	2408/17	45	Mild	65	6185/17	70.27	M.R
41	2455/17	53.33	M.R	66	6298/17	67.57	M.R
42	2473/17	47.72	Mild	67	6433/17	57.58	M.R
43	2686/17	51.43	M.R	68	6533/17	56.10	M.R
44	2710/17	37.78	Mild	69	6650/17	61.90	M.R
45	2733/17	56.25	M.R	70	6747/17	62.86	M.R
46	2844/17	52.13	M.R	71	6899/17	58.62	M.R
47	2950/17	66.67	M.R	72	7344/17	72	M.R
48	2968/17	50	Mild	73	7431/17	65.63	M.R
49	3152/17	41.30	Mild	74	7550/17	50	Mild
50	3240/17	70.97	M.R	75	7572/17	71.43	M.R
51	3681/17	51.22	M.R				

Table No: 74: Showing the overall response of the patient in Group-A

No response	Poor response	Mild response	Moderate response	Good response
00	00	19(25.33%)	54(72%)	02(2.67%)

Table No: 75: Showing the overall response of the patient in Group-B

No response	Poor response	Mild response	Moderate response	Good response
00	00	26(34.67%)	49(65.33%)	00

Table No: 76: Showing the overall response of the patient in Group-A and Group-B

No response	Poor response	Mild response	Moderate response	Good response
00	00	45(30%)	103(68.67%)	02(1.33%)

Table No: 77: Showing the analysis for Sandhi Shoola (Pain):

Variable	Statistics	Group-A	Group-B	t-value	p-value ^(a)
Pain BT	Mean(SD,SE)	1.72(0.583, 0.067)	1.73(0.684, 0.079)		
Pain AT	Mean(SD,SE)	0.60(0.593, 0.068)	0.64(0.629, 0.073)	-0.40	0.6891NS
	t-value	19.71	18.06		
	p-value ^(b)	<0.0001**	<0.0001**		

Table No: 78: Showing the analysis for Sthambha (Stiffness):

Variable	Statistics	Group-A	Group-B	t-value	p-value ^(a)
Stiffness BT	Mean(SD,SE)	1	1		
Stiffness AT	Mean(SD,SE)	0.20(0.403, 0.046)	0.16(0.369, 0.043)	0.63	0.5269NS
	t-value	17.20	19.71		
	p-value ^(b)	<0.0001**	<0.0001**		

Table No: 79: Showing the analysis for Sparsha akshamatwa (Tenderness):

Variable	Statistics	Group-A	Group-B	t-value	p-value ^(a)
Tenderness BT	Mean(SD,SE)	1.68(0.573, 0.066)	1.68(0.549, 0.063)		
Tenderness AT	Mean(SD,SE)	0.587(0.548, 0.063)	0.65(0.604, 0.07)	-0.71	0.4799NS
	t-value	25.32	18.05		
	p-value ^(b)	<0.0001**	<0.0001**		

Table No: 80: Showing the analysis for Womac:

Variable	Statistics	Group-A	Group-B	t-value	p-value ^(a)
Womac BT	Mean(SD,SE)	32.07(6.263, 0.723)	29.71(7.188, 0.830)		
Womac AT	Mean(SD,SE)	14.17(4.141, 0.478)	14.05(5.41, 0.625)	0.15	0.8790NS
	t-value	45.22	47.33		
	p-value ^(b)	<0.0001**	<0.0001**		

Table No: 81: Showing the analysis for Walking Time:

Variable	Statistics	Group-A	Group-B	t-value	p-value ^(a)
Walk time BT	Mean(SD,SE)	1.63(0.610, 0.070)	1.71(0.564, 0.065)		
Walk time AT	Mean(SD,SE)	0.83(0.665, 0.077)	0.96(0.687, 0.079)	-1.21	0.2290NS
	t-value	14.05	11.81		
	p-value ^(b)	<0.0001**	<0.0001**		

Table No: 82: Showing the analysis for Sandhi Shotha (Swelling):

Variable	Statistics	Group-A	Group-B	t-value	p-value ^(a)
Swelling BT	Mean(SD,SE)	1.63(0.588, 0.068)	1.63(0.564, 0.065)		
Swelling AT	Mean(SD,SE)	0.453(0.527, 0.061)	0.47(0.577, 0.067)	-0.15	0.8828NS
	t-value	19.19	20.32		
	p-value ^(b)	<0.0001**	<0.0001**		

Table No: 83: Showing the analysis for Sandhigati (Range of movement):

Variable	Statistics	Group-A	Group-B	t-value	p-value ^(a)
Range BT	Mean(SD,SE)	0.79(0.473, 0.055)	0.71(0.514, 0.059)		
Range AT	Mean(SD,SE)	0.28(0.452, 0.052)	0.33(0.502, 0.058)	-0.68	0.4953NS
	t-value	8.72	6.64		
	p-value ^(b)	<0.0001**	<0.0001**		

Table No: 84: Showing the analysis for Sandhi atopa (Crepitus):

Variable	Statistics	Group-A	Group-B	t-value	p-value ^(a)
Crepitus BT	Mean(SD,SE)	1.93(0.622, 0.072)	1.92(0.587, 0.068)		
Crepitus AT	Mean(SD,SE)	1.44(0.721, 0.083)	1.61(0.733, 0.085)	-1.46	0.1465NS
	t-value	7.39	5.72		
	p-value ^(b)	<0.0001*	<0.0001*		

Note: p-value ^(a) – unpaired t- test to compare between the groups, p-value ^(b) - paired t-test to compare within the groups. NS- Not significant, **HS- Highly Significant and *Significant.

Statistical analysis was performed using SAS 9.2 version software. Unpaired t test was used to compare the effect of treatment between the groups, whereas paired t test was done to compare the effect of treatment within the groups. P value less than 0.05 was considered as statistically significant.

RESULT

Unpaired t test was used to compare the effect of treatment between the groups, whereas paired t test was done to compare the effect of treatment within the groups. P value less than 0.05 was considered as statistically significant. All the parameters between the group have shown not significant response whereas within the group were highly significant.

In Group-A there were 75 patients, among them improvement seen in subjective parameters like sandhi shoola/pain (65.12%), sthambha/stiffness (80%), Womac (55.81%) and objective parameters like sandhi atopa/crepitus (25.52%), sandhigati /limitation or range of joint movement (64.41%), sparsha akshamatva/tenderness (65.08%), sandhi shotha/swelling (72.13%) and walking time to cover 20 meter distance (49.18%). Sthambha/morning stiffness (80%) had shown highest improvement and sandhi atopa/crepitus (25.52%) had least improvement among all parameters.

In Group-B also there were 75 patients among them improvement seen in subjective parameters like sandhi shoola/pain (63.08%), sthambha/stiffness (84%), Womac (52.69%) and objective parameters like sandhi atopa/crepitus (15.97%), sandhigati /limitation or range of joint movement (52.83%), sparsha akshamatva/tenderness (61.11%), sandhi shotha/swelling (78.31%) and walking time to cover 20 meter distance (43.75%). Sthambha/morning stiffness (84%) had shown highest improvement and sandhi atopa/crepitus (15.97%) had least improvement among all parameters.

In Group-A 19 (25.33%), 54 (72%) and 02 (2.67%) patients have shown mild, moderate and good response respectively.

In Group-B 26 (34.67%) and 49 (65.33%) patients have shown mild and moderate response respectively.

Overall in both the groups (Group-A & Group-B) 45 (30%), 103 (68.67%) and 2 (1.33%) patients have shown mild, moderate and good response respectively. Sadharana krama matravasti had shown better efficacy than arohana krama matravasti by 03.19%.

Observations had following results in the study:

1. Majority of the patients (99) were females in the present study

2. Maximum Hindu community patients (145) were registered
3. Maximum patients (120) were above 50 years
4. Majority of the patients (90) were belong to labor class
5. Maximum patients had mixed diet pattern
6. All the patients belong to jangala type of desha
7. Majority of the patients (83) had Vishamagni and kroora type of koshta
8. Maximum patients had chronic onset of the disease
9. Majority of the patient (80) had 1-2 years chronicity
10. Maximum patient (123) had alpa nidrata
11. Avara and madhyama sara, avara and madhyama satwa and above 50 years are more prone to the disease
12. Majority of the patient (83) belong to vata pradhana pitta and vata pradhana kapha prakriti
13. Majority of the patient (95) had 4 to 6 hours of retention time of matravasti dravya
14. Carrying heavy load, vegadharana, excessive use of the joint and repeated standing and bending type of work are noted among the participants of the present study
15. Maximum patient (137) had unilateral affliction of knee joint
16. Minimum of 01 hour and 05minutes to maximum of 10 hours and 05 minutes were the retention time of matravasti dravya
17. In arohana krama matravasti (Group-B), 5th day onwards retention time was decreased
18. In arohana type of matravasti (Group-B), the entire patient belongs to mridu koshta have shown lakshanas like hrillasa and klama from 6th day onwards
19. Arohana type of matravasti (Group-B) require more quantity (864ml) of the ghrita to that of sadharana type (Group-A)-648ml
20. In both the Groups (Group-A & Group-B) stambha had shown maximum improvement and sandhi atopa had minimum improvement among all the parameters
21. Sadharana krama matravasti had shown better efficacy than arohana krama matravasti by 03.19%.

DISCUSSION

Discussion is an integral part of the research. Researcher will convey the clinical observations with textual references. Proper reason will be given for each observation.

Discussion will be made on following headings.

Discussion on disease

Discussion on Treatment

Discussion on Observation

Discussion on result

Discussion on Probable mode of action of Panchatikta ghrita Matravasti

Discussion on Disease:

Janusandhigatavata is the term coined due to the pathology lies in the knee joint. There is a separate entity called sandhigatavata in all the classics of Ayurveda. We will come across janubheda in Vataja nanatmaja vikaras of Charaka samhita. Sandhigatavata is one of the ashtamahagada affecting the madhyama rogamarga. Vitiated vata will occupy the knee joint to result in Janusandhigatavata. Vata being the prime force responsible for the movement. It can be provoked by dhatukshaya. Janusandhigatavata is a gatavata type of disorder. Vata dosha being dominant in the later half of life, the disease janusandhigatavata will manifest. In vardhakya avastha (old age) naturally catabolism will take place. Hence in vardhakya dhatu kshyajanya sandhigatavata is common. Prakupita vata will dry up the sandhishthita shleshaka kapha resulting in sandhi atopa, stiffness and sandhi shaithilya. General symptoms of sandhigatavata include vata poorna driti sparsha shotha, prasarana akunchana pravritti vedana, shoola, atopa and hanti sandhi. In the present study nirupasthambha janusandhigatavata patients were included.

The modern science also highlighted Osteoarthritis as one of the degenerative joint disorder. Commonly seen in knee, this is being a weight bearing joint. Pain, stiffness, swelling, crepitus and restricted joint movement are the signs and symptoms of Osteoarthritis. Osteophytes and joint space narrowing are seen radiographically.

Discussion on Treatment:

Acharya Charaka mentioned Snehana karma is the foremost treatment in **nirupasthambha vata vikaras**. All the acharyas have mentioned bahya and abhyantara sneha in asthi-majjagata vata vikaras. Acharya Sushruta highlighted

snehana, upanaha, agnikarma, bandhana and unmardana in sandhigatavata chikitsa. Acharya Charaka and Vagbhata gave importance to tikta rasa dravya sadhita basti in asthi dhatu pradoshaja vikaras. Khara brihmana is essential for vatakshaya and asthi vridhhi. It can be achieved with panchatikta ghrita. Even gudoochi and ghrita (nityam ksheera ghritabhyaso rasayananam) acts as rasayana. In total all the drugs of panchatikta having shoolaprashamana, shothahara and rasayana property. Hence in the present study panchatikta ghrita matravasti was selected. One group of patient received increased dose of matravasti whereas the other group with constant dose. Acharya Sushruta and Vangasena mentioned that vasti will reach the majja dhatu by nine days. The present study was carried for nine days due to the above reason. Total efficacy of the vasti chikitsa can be well appreciated after the parihara kala (double the number of days of administration of vasti). Hence the follow up was fixed on 27th day.

Discussion on Observation:

Gender involved in the study:

There are totally 51 male patients, among which 28 and 23 from Group-A and Group-B respectively. Among 99 female patients, 47 and 52 were from group-A and Group-B respectively. Overall more number of female patients was registered in the study.

Note: Women are having double the chance for getting osteoarthritis than men. Post-menopausal estrogen deficiency is thought to be linked in the incidence of osteoarthritis in female. For those have body mass index at the baseline, relative risk of developing osteoarthritis of knee is 1.5 for men and 2.1 for women of 36 years. Relative risk of severe knee osteoarthritis is rise to 1.9 in men and 3.9 for women.

Age of the patient involved in the study:

Among 150 patients, 30 belong to range of 41-50 age group, 81 belong to 51-60 age group and the remaining 39 were belong to 61-70 age group. In the present study more number of patients was above 50 years.

Note: It suggests that Osteoarthritis is seen in later stage of life. Osteoarthritis is commonly seen in most individuals by the age of 60. Majority of individual over 60 years of age will show radiological evidence of Osteoarthritis in one or both the knees.

Religion of the patient involved in the study:

Majority of the patients belong to Hindu community (145), among which 73 were in Group-A and 72 were from Group-B. Remaining 5 patients 1 and 4 were belongs to Muslim and Christian community respectively.

Note: The greater incidence was observed due to dominance of Hindu community population in this location.

Occupation of the patient involved in the study:

Among 150 patients, 90, 59 and 01 belong to labor, sedentary and executive class respectively.

There are 49 and 41 patients belong to Group-A and Group-B respectively of labor class. There are 26 and 33 patients belong to Group-A and Group-B respectively of sedentary class. One patient belongs to executive class.

Note: Majority of the patient belongs to labor class in the present study. Occupational bending of knee and repetitive use of joint will result in erosion and ultimately damage to the joint. On the long run, it will result in the manifestation of osteoarthritis. In Ayurveda it is mentioned that, occupation associated with ati adhwagamana, ati vyayama, ati bharaharana etc were also considered to be the reason for janusandhigatavata. Abnormal gait, carrying heavy load and abnormal posture will lead to stress and strain to the joint ultimately result in osteoarthritis.

Economic status of the patient involved in the study:

Among 61 poor class patients, 34 and 27 were belong to group-A and Group-B respectively. Among 77 lower middle class patients 35 and 42 were belong to Group-A and Group-B respectively. 06 each patients belong to Group-A and Group-B of Upper middle class.

Diet of the patient involved in the study:

In Group-A 27 patients and in Group-B 29 patients belong to vegetarian pattern of diet whereas 48 and 46 in Group-A and Group-B respectively belong to mixed diet pattern.

Note: Irrespective of diet pattern who ever consumes vata vardhaka aharas in excess will result in causation of janusandhigatavata. In the present study katu rasa ahara and rooksha ahara in excess were observed as the nidana of janusandhigatavata. Excess intake of katu rasa and rooksha pradhana aharas will aggravate vata. This aggravated vata lodging in sandhi to develop janusandhigatavata.

Agni of the patient involved in the study: (Digestive power)

Among 49 patients 26 in Group-A and 23 in Group-B had samagni, among 83 patients 41 in Group-A and 42 in Group-B had vishamagni, 08 in Group-A and 10 in Group-B had teekshnagni where as none in Group-A and Group-B had mandagni.

Note: All the patients of vishamagni and samagni were given trikatu choorna 3gms twice daily with takra to enhance the agni and to achieve rookshata before the administration of matravasti for 03 days. Majority of the patient had vishamagni. Vishamgni is seen in vata prakriti individuals as well as Vatanubandha other two dosha prakritis. Naturally vata prakriti persons are more prone to vatic ailments.

Koshta of the patients involved in the study: (Bowel movements)

41 patients in Group-A and 42 patients in Group-B belong to Kroora pattern of Koshta (Bowel movements), 26 and 23 in Group-A and Group –B respectively belong to Madhyama type of koshta whereas 08 in Group-A and 10 in Group-B belong to mridu type of koshta.

Note: Usually Vata prakriti or vata dominant other dosha prakriti persons will be having vishamagni and kroora koshta. Hence such persons are more prone to get vata vikaras.

Desha of the patients involved in the study: (Habitat)

All the 150 patients participated in the study belong to jangala type of habitat.

Nidana of the patient involved in the study (Causative factors):

In the present study among 150 patients,139 (92.67%) patients had vegadharana, 117 (78%) patients had nisha jagarana / alpa nidra, 81 (54%) patients had excess intake of katu rasa, 44 (29.33%) patients had ativyayama, 33 (22%) patients had ati chinta, 24 (16%) patients had atyuccha bhashana, 23 (15.33%) patients had rooksha bhojana, 11(7.33%) patients had alpa bhojana and 01 (0.66%) had ati vyavaya as nidana.

Note: Majority of the patients had vega dharana as nidana which will aggravate vata. Excess uses of chilly and chilly powder as well as intake of pickle are noted among katu rasa. Ati vyayama as excess walking, carrying heavy load or doing exercise regularly also noted. Nidanans of sandhigatavata were classified as aharaja, viharaja and manasika.

Joints of the patient involved in the study:

46 and 45 patients in Group-A and Group-B respectively afflicted with right knee joint, 23 each in Group-A and Group-B afflicted with left knee joint where as 06 in Group-A and 07 in Group-B afflicted with both the knee joints.

Note: Osteoarthritis usually unilateral initially, but due to chronicity as well as lack of treatment may result in bilateral affliction of knee joint.

Radiological interpretations of the patients involved in the study:

Overall among 150 patients, 105 (70%) had reduction in joint space, 43(28.67%) had unaltered joint space, 70 (46.67%) had osteophytes and 29 (19.33%) had subchondral bony sclerosis.

Note: There is no radiological evidence in early stage where as only 50-60% will be symptomatic in radiology. Joint space narrowing is seen as earliest feature of knee arthritis. Formation of osteophytes in Osteoarthritis is the hall mark. All these are seen in advanced stage of Osteoarthritis. Diagnosis will be based on clinico-radiological. Most of the studies have stated that, no radiological changes will be seen after the therapy. Hence only to rule out fractures, other underlying pathologies and to confirm diagnosis x-ray was done before treatment.

Chronicity of the disease of the patient involved in the study:

15 patients each in Group-A and Group-B had less than one year of chronicity, 39 in Group-A and 41 in Group-B had 1-2 years of chronicity, 16 in Group-A and 12 in Group-B had 2-3 years of chronicity, 03 each in Group-A and Group-B had 3-4 years of chronicity and 02 in Group-A and 04 in Group-B had more than four years of chronicity.

Note: Osteoarthritis is asymptomatic in the initial stage. It may show its radiological evidence after the age of 60. It may begin in the fourth decade of life but more evident after 50 years. Gradual process of development of disease is seen.

Average retention time of matravasti dravya of patient involved in the study:

In Group-A among 75 patients, minimum average retention time of matravasti dravya noted was 1 hour 10 minutes and maximum of 10 hours 05 minutes. In Group-B among 75 patients minimum average retention time of matravasti dravya noted was 1 hour 05 minutes and maximum of 07 hours 55 minutes.

In Group-A among mridu koshta persons; minimum of 01 hour and 10 minutes to maximum of 02 hours and 25 minutes were retained, in madhyama koshta patients

minimum of 03 hours and 05 minutes to maximum of 06 hours and 05 minutes retained whereas among kroora koshta persons minimum of 05 hours 45 minutes to maximum of 10 hours and 05 minutes retained.

In Group-B among mridu koshta persons; minimum of 01 hour and 05 minutes to maximum of 02 hours and 30 minutes were retained, in madhyama koshta patients minimum of 03 hours and 05 minutes to maximum of 05 hours and 30 minutes retained whereas among kroora koshta persons minimum of 05 hours 05 minutes to maximum of 07 hours and 55 minutes retained.

In arohana krama matravasti (Group-B), 5th day onwards retention time was drastically decreased.

Note: Retention time depends on deeptagni, rooksha shareera, who always indulges in rooksha ahara vihara, always performing exercise, suffering from vataja vikara and kroora koshta. If the vasti dravya retains for prolonged period, then the absorption rate and efficacy will be enhanced.

Samyak matravasti lakshana observed in patients involved in the study:

Among all patients sneha mishrita mala pravritti was observed on all the days. Proper sleep was observed from 3rd and 4th day onwards. Increased strength, dhatu prasadana and indriyaprasadana were observed after the parihara kala.

Note: In arohana type of matravasti (Group-B), the entire patient belongs to mridu koshta have shown lakshanas like hrillasa and klama from 6th day onwards. As it was given in arohana krama does the utklesha of kapha and pitta as well as anuvasana atiyoga was seen.

Discussion on result:

Statistical analysis was performed using SAS 9.2 version software. Unpaired t test was used to compare the effect of treatment between the groups, whereas paired t test was done to compare the effect of treatment within the groups. P value less than 0.05 was considered as statistically significant. All the parameters between the group have shown not significant response whereas within the group were highly significant.

In Group-A there were 75 patients, among them improvements seen in subjective parameters like sandhi shoola/pain (65.12%), sthambha/stiffness (80%), Womac (55.81%) and objective parameters like sandhi atopa/crepitus (25.52%), sandhigati /limitation or range of joint movement (64.41%), sparsha akshamatva/tenderness (65.08%), sandhi shotha/swelling (72.13%) and walking time to cover 20 meter

distance (49.18%). Sthambha/morning stiffness (80%) had shown highest improvement and sandhi atopa/crepitus (25.52%) had least improvement among all parameters.

In Group-B also there were 75 patients among them improvements seen in subjective parameters like sandhi shoola/pain (63.08%), sthambha/stiffness (84%), Womac (52.69%) and objective parameters like sandhi atopa/crepitus (15.97%), sandhigati /limitation or range of joint movement (52.83%), sparsha akshamatva/tenderness (61.11%), sandhi shotha/swelling (78.31%) and walking time to cover 20 meter distance (43.75%). Sthambha/morning stiffness (84%) had shown highest improvement and sandhi atopa/crepitus (15.97%) had least improvement among all parameters.

In Group-A 19 (25.33%), 54 (72%) and 02 (2.67%) patients have shown mild, moderate and good response respectively.

In Group-B 26 (34.67%) and 49 (65.33%) patients have shown mild and moderate response respectively.

Overall in both the groups (Group-A & Group-B) 45 (30%), 103 (68.67%) and 2 (1.33%) patients have shown mild, moderate and good response respectively. All the patients were responded to the treatment. Sadharana krama matravasti had shown better efficacy than arohana krama matravasti by 03.19%.

Discussion on Probable mode of action of Panchatikta ghritha matravasti:

Sandhigatavata is a disease of aggravated vata of madhyama roga marga²²⁴. There will be depletion of shleshaka kapha residing in the joints along with asthi dhatu kshaya. Asthi dhatu is formed from the meda dhatu according to the principle of kedarakulya nyaya of dhatu parinama. Meda kshaya may lead to asthikshaya and the lakshanas pertaining to sandhi and asthi are sandhi sphutana and sandhishoonyata which also seen as lakshanas of meda kshaya. Asthivaha sroto moolas are meda and jaghana where medas is related to red bone marrow which is nothing but sarakta meda^{225, 226, 227}. Even modern science has mentioned human skeletal system develops from mesoderm and neural crest. Mesenchyme originates from mesoderm. It will become Osteoblast, fibroblast and chondroblast.

Acharya Charaka mentioned “Bastir vataharanam,” means vastikarma is the superior therapy to curb vata dosha²²⁸. Guda being the root of the body having blood vessels in

it, which we administer basti not only nourishes the limbs and organs of the body but also eliminates the morbid doshas.

Sun staying thousands of miles away from the earth will drain the essence of earth, similarly basti dravya residing in pakwashaya capable of eliminating morbid matter from head to toe as mentioned by Acharya Charaka²²⁹.

Tree is irrigated at its root attains branches with tender leaves, flower and fruits in time and become big stature; similarly injected anuvasana vasti in to the rectum performs significant response up to the toe of person²³⁰.

Importance is given in Ayurvedic classics regarding the administration of matravasti in left lateral posture²³¹. Left lateral posture with left leg kept straight, right leg flexed at the knee and placed over left knee is the preferred posture. Grahani and guda will be in normal position during left lateral posture. All three guda valis such as pravahini, visarjini and samvarani will be in submerged position²³². There will be large area for the absorption of Vasti material in this posture. Agni, Grahani and nabhi will be present in the left side according to Gangadhara. Agni is present on the left side over nabhi according to Jejjata. Guda has relation with the sthoolantra on the left side. Sthoolantra and Grahani are situated at the same level will have easy access of vasti dravya. Agni will come in contact with the basti dravya there by facilitates the efficacy of sneha.

In left lateral posture anal canal on left side turns to rectum, sigmoid colon and descending colon. Vasti dravya will flow in to the sigmoid colon easily due to the relaxation of ileocaecal junction in this posture. Rectum by virtue of its vascularity and venous plexuses having rich blood and lymph supply due to which the vasti dravya absorbed in the rectum and large intestine can cross the rectal mucosa like other lipid membranes. Unionized and lipid soluble substances are readily absorbed from rectum in trans-rectal route. Absorption will be facilitated inside the lumen of intestine compared to rectal venous plexuses due to increased concentration gradient of matravasti dravya.

Internal and external venous plexuses are the divisions of rectal venous plexus. Absorption of vasti dravya from external venous plexus takes place in three parts. In the upper part through superior rectal vein into the inferior mesenteric vein which is a tributary of portal vein. Middle rectal vein will drain from seminal vesicle, bladder and prostate into the internal iliac vein in the middle part. Inferior rectal vein will drain into internal pudendal vein in the lower part. Vasti dravya will also absorb from

the upper rectal mucosa in to the portal circulation via superior mesenteric vein and ultimately enters the liver. Part which is absorbed from the lower rectal mucosa will enter directly in to the systemic circulation through inferior and middle hemorrhoidal veins.

Acharya Vagbhata has mentioned pakwashaya is the main seat of Vata dosha²³³. Janusandhigatavata is a madhyama rogamargagata, asthi dhatu pradoshaja pakwashaya udbhavajanya vikara²³⁴. Sandhi shoola is the cardinal feature of sandhigatavata and asthigatavata. Therefore in the present study asthivaha srotogata/asthi dhatu pradoshaja as well as asthi majjagata vata chikitsa is followed²³⁵,²³⁶. Drug acting on asthi and vata was selected. Tikta rasa siddha ghrita ksheera vasti and bahya and abhyantara sneha is mentioned in asthi dhatu pradoshaja and asthi majjagata vata vikara respectively. Hence in the present study panchatikta ghrita matravasti was selected in sadharana and arohana krama.

Janusandhigatavata being asthikshaya janya vikara requires khara and bhrimhana dravya. It cannot be achieved with single drug. Drugs possessing khara guna are devoid of brimhana property. Ghrita having brihmana property processed with drugs belonging to panchatikta possessing kharatwa property. Tikta rasa dravya have affinity towards asthi and sandhi due to the dominance of vayu and akasha maha bhoota each other. Ghrita being brihmana dravya dominant with prithvi and jala mahabhoota will nullify the ill effect of vata. Ghrita not only acts as yogavahi but also as rasayana, will imbibe the property of other dravyas without giving up its own properties^{237, 238}. All the properties of ghee will counteract the properties of vata, thereby giving maximum benefit in janusandhigatavata. Vitamin-D is one of the content of the ghrita which does the utilization of phosphorous and calcium in the blood as well as builds up bone. Most of the drugs of panchatikta possess deepana-pachana property due to which increase in dhatwagni does the nourishment as well as proper formation of all dhatus. Progression of the disease can be arrested when asthi and majja dhatus become stable. Tikta rasa have impact on shoola and shotha due to its anti-inflammatory property.

Sneha dravya used in the matravasti due to its anupravaranaabhava moves up to the Grahani. Matravasti dravya will act up on the asthi and majjavaha srotas mainly. Asthidharakala plays a major role in the remodeling of bone which is nothing but pureeshadharakala, structurally it is colon²³⁹. Vasti will nourish the intestinal flora, which is the functional unit of the colon, there by maintains the health of the bone.

Level of myelopoiesis in the bone marrow can be maintained by the administration of vasti²⁴⁰. Pittadharakala and majjadharakala are one and the same, is nothing but grahani^{241, 242}. Vasti dravya when enters the grahani will come in contact with the agni, there by absorbs and nourishes the majjadharakala. Longer retention of the vasti dravya (panchatikta ghrita) will enhance the absorption rate.

We can assume the action of vasti dravya as which is absorbed through rectal mucosa in to the general circulation there by giving local and systemic effect by normalizing the vata dosha.

Discussion on the effect of Panchatikta Ghrita on each parameter:

Discussion on Shoola:

Any shoola is due to the provocation of vata. Vata getting prakopa in janu sandhi will result in shoola during prasarana akunchana pravritti. Due to degeneration of cartilage causing friction will result in pain in the knee joint. Panchatikta ghrita will reduce the vata due to snigdha property, there by reduces friction in the joint and ultimately resulting in easy joint movement. Statistically significant improvement ($p < 0.0001$) was seen in shoola symptom after the treatment.

Discussion on shotha:

Vata poorna druti sparsha shotha is due to localized vata prakopa in janu sandhi or due to gatatva of vata in sandhi. Due to chronic degenerative changes in the joint structures will result in knee effusion. Shothahara and anti-inflammatory property of Panchatikta ghrita have helped to overcome the janusandhi shotha in the present study. Statistically significant improvement ($p < 0.0001$) was seen in shotha symptom after the treatment.

Discussion on sthambha:

Due to vridhhi of khara, sheeta and rooksha guna of vata in janusandhi will result in sthmbha or stabdhata of janusandhi (restricted movement/stiffness). Reduction in synovial fluid and cartilaginous loss will result in joint stiffness. Snigdhatata and shlakshanata are essential for joint movement. Snigdha property of Panchatikta ghrita has helped to overcome the above gunas of vata, thereby reduction in sthambha or stabdhata of janu sandhi. Statistically significant improvement ($p < 0.0001$) was seen in sthambha symptom after the treatment.

Discussion on sandhi atopa:

Sandhi sthitha shleshaka kapha kshaya due to rooksha guna vridhhi of vata. Crepitus is produced due to reduction in synovial fluid and cartilage loss. Panchatikta ghrita

having snigdha guna will nourish the shleshaka kapha thereby reduction in janu sandhi atopa. Statistically significant improvement ($p < 0.0001$) was seen in sandhi atopa symptom after the treatment.

Discussion on Womac Scale:

Pain, stiffness and difficulty in movement were assessed by using Womac score. All the above scores have shown good improvement after the matravasti with Panchatikta Ghrita. Statistically significant improvement ($p < 0.0001$) was seen in Womac scale after the treatment.

Discussion on walking time to cover 20 metre distance:

This was assessed to know the walking capacity of the individual in seconds to cover 20 meter distance. Because of the matravasti with panchatikta ghrita have improved the walking capacity of the individual after the treatment. Snigdha guna of the Panchatikta ghrita have lubricated the joints, there by smooth functioning of the joints were achieved. Statistically significant improvement ($p < 0.0001$) was seen in walking time to cover 20 metre distance after the treatment.

Discussion on Sandhigati:

Here sandhigati means mobility of the joints, which was hampered due to degeneration as well as reduction in shleshaka kapha in sandhi. This was fulfilled by using matravasti with Panchatikta Ghrita, by means of which restoration of sandhigati. Statistically significant improvement ($p < 0.0001$) was seen in sandhigati symptom after the treatment.

SUMMARY

Entire research work will be summarized and presented in a nutshell. It was summarized in the below mentioned headings. Whole research work was divided in the following chapters.

- a) Abstract
- b) Introduction
- c) Aim and Objectives of the study
- d) Review literature
- e) Research methodology
- f) Observations
- g) Result and analysis
- h) Discussion
- i) Summary
- j) Conclusion
- k) Bibliography
- l) Annexure

a) Abstract:

This chapter gives the gist of the thesis. Entire outcome of the research was highlighted in the abstract in structured form.

b) Introduction:

Brief description on Janusandhigatavata, Osteoarthritis, matravasti and Panchatikta Ghrita was present in introduction chapter. Matravasti with Panchatikta Ghrita was used in the management of Janusandhigatavata in the present study.

c) Aim and Objectives of the study:

What we are going to achieve in the present research work was highlighted in this chapter. Sadharana krama matravasti was compared with arohana krama in patients of Janusandhigatavata.

d) Review literature:

Literature review is divided into four headings namely review on matravasti (Vasti karma), review on janusandhigatavata, review on Osteoarthritis, drug review as well as review on previous research works.

e) Research methodology:

This chapter deals with master plan of research. This gives entire frame work of research such as study design, selection criteria, diagnostic criteria, assessment criteria, gradations for assessment, gradations for declaring the results, standard preparations of Panchatikta Ghrita as well as standarad operating procedure of matravasti was highlighted.

f) Observations:

Observations again divided into two headings. Master chart on each observations are presented in a tabular form in the first heading. These observations are depicted in charts and graphs for easy understanding in the second heading.

g) Result and Analysis:

This chapter mainly dealt about statistical analysis as well as results of the present research work.SAS 9.2version software was used to analyze the data. Unpaired t test was used to compare the results between the groups as well as paired t test was used to compare within the group.

h) Discussion:

This chapter gave importance in finding out the exact critical reason from the textual reference for each observation. Even discussion on probable mode of action of matravasti with Panchatikta Ghrita was also highlighted.

i) Summary:

This chapter dealt on brief description of every chapter.

j) Conclusion:

Whole research work was concluded in this chapter. Final outcome of the study was sadharana krama matravasti having an edge over arohana krama matravasti.

k) Bibliography:

All the references for compilation on janusandhigatavata, Osteoarthritis, matravasti, Panchatikta Ghrita were quoted.

l) Annexure:

Main content of this chapter was images of examination of patients, method of administration of matravasti, preparation of Panchatikta Ghrita, Womac questionnaire, Drug Authentication certificate and certificate on Standardization of Panchatikta Ghrita.

CONCLUSION

Overall sadharana krama matravasti have shown 03.19% of better result to that of arohana krama matravasti. Sadharana krama require less quantity of the snehadravya to that of arohana krama. Arohana krama have shown utklesha of dosha along with atiyoga of matravasti lakshanas. Hence one can employ sadharana krama matravasti only. Matravasti will control the vata from its moolasthana, thereby reduces the symptoms of janusandhigatavata. Matravasti will definitely improve the quality of life of the janusandhigatavata patients.

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IMAGES OF DRUG



***Tinospora cordifolia -
Gudoochi***



Justicia adhatoda - Vasa



Azadirachta indica - Nimba



***Solanum xanthocarpum -
Kantakari***



Tricosanthes dioica - Patola



Panchatikta Ghritam



Guduchi



Vasa



Nimbha



Kantakari



Patola



Panchatikta kwatha
choorna



Preparation of Panchatikta kwatha



Preparation of Panchatikta Ghrita

PROCEDURE OF MATRAVASTI



Materials used for Matravasti



Sthanika Abhyanga



Sthanika Abhyanga



Sthanika Sweda



Sthanika Sweda



Matrabasti pranidana

EXAMINATION OF PATIENTS



Affected knee joint



Examination for Sandhi Atopa/Creptus of Affected knee joint



Examination for Sandhi Shotha (Swelling), Sandhi Gati (Range of movement), Stabdata (Stiffness) and Sandhi Atopa (Creptus)



Examination for walking time, ascending stairs and descending stairs



Examination for walking time, ascending stairs and descending stairs



X-ray of the affected knee joint with decreased joint space



Examination for Sandhi gati (Range of movement) and sthambha (Stiffness)

Dr. Krishnakumar G.
Professor



Department of Applied Botany
MANGALORE UNIVERSITY
(Accredited by NAAC with 'A' Grade)
Mangalagangothri – 574 199
Tel: 0824-2287272 (O), 9449330901 (M)
e-mail: kkgmane@rediffmail.com

May 12, 2016

CERTIFICATE

This is to certify that the samples given by Dr. Udaya Ganesha B., Ph.D. Scholar, T.M.V., Pune were studied morphologically and identified as:

1. *Azadirachta india* A. Juss.
2. *Justicia adhatoda* L. (= *Adhatoda vasica* Nees)
3. *Solanum virginianum* L. (= *Solanum xanthocarpum* Schrad & H. Wendl.)
4. *Trichosanthes dioica* Roxb
5. *Tinospora cordifolia* Roxb (Willd.) Miers

A handwritten signature in blue ink, appearing to read 'Krishnakumar'.

(Dr. Krishnakumar G)

Dr. Krishnakumar G., M.Phil., Ph.D
Professor
Dept. of Applied Botany
Mangalore University
Mangalagangothri - 574 199



||Om Shri Manjunathaya Namaha||
S.D.M. CENTRE FOR RESEARCH IN AYURVEDA
AND ALLIED SCIENCES
(AYUSH Centre for Excellence and Recognized SIROs by DSIR)
Laxminarayana Nagar, P.O. Kuthpady – 574 118
UDUPI [Karnataka]
Ph. 0820 – 2533971 E-mail: gravishankar2000@yahoo.com

ANALYSIS REPORT FOR 766/16051201

Part A: Particulars of sample submitted

Test requested by: Dr. Udaya Ganesha B, Dept of Panchakarma, Sri Jayendra saraswathi Ayurveda College, Nazarathpet, Chennai

Requested on: 22-05-16

Investigation to be performed: Standardization and HPTLC

Sample coded as: 16051201

Sample details: Panchatikta ghrita

Part B: Methodology

Refractive index

Placed a drop of water on the prism and adjusted the drive knob in such a way that the boundary line intersects the separatrix exactly at the centre. Reading was noted. Distilled water has a refractive index of 1.3325 at 25°C. The difference between the reading and 1.3325 gives the error of the instrument. If the reading is less than 1.3325, the error is minus (-) then the correction is plus (+) if the reading is more, the error is plus (+) and the correction is minus (-). Refractive index of oil is determined using 1 drop of the sample. The correction if any should be applied to the measured reading to get the accurate refractive index. Refractive index of the test samples were measured at 28°C.

Specific gravity

Cleaned a specific gravity bottle by shaking with acetone and then with ether. Dried the bottle and noted the weight. Sample solution was cooled to room temperature. Carefully filled the specific gravity bottle with the test liquid, inserted the stopper and

removed the surplus liquid. Weight was noted. Procedure was repeated using distilled water instead of sample solution.

Acid value

Weighed 2- 10g of ghee in a conical flask. Added 50 ml of acid free alcohol-ether mixture (25 +25ml) previously neutralised with the 0.1M potassium hydroxide solution and shaken well. Added One ml of Phenolphthalein solution and titrated against 0.1M Potassium hydroxide solution. End point is the appearance of pale pink colour. Experiment was repeated twice to get the concordant values.

Saponification value

Weighed 2g of the ghee / fat into a 250 ml RB flask fitted with a reflux condenser. 25ml of 0.5M alcoholic potash was added. Refluxed on a water bath for 30 minutes. Cooled and added 1 ml of Phenolphthalein solution and titrated immediately with 0.5 M Hydrochloric acid (a ml). Repeated the operation omitting the substance being examined (blank) (b ml). Experiment was repeated twice to get the concordant values.

Iodine value

The sample was accurately weighed in a dry iodine flask. Dissolved with 10ml of CCl_4 , 20ml of iodine monochloride solution was added. Stopper was inserted, which was previously moistened with solution of potassium iodide and flask was kept in a dark place at a temperature of about 17°C for 30 min. 15ml of potassium iodide and 100ml of water was added and shaken well. This was titrated with 0.1N Sodium thiosulphate, starch was used as indicator. The number of ml of 0.1N sodium thiosulphate required (a) was noted. The experiment was repeated with the same quantities of reagents in the same manner omitting the substance. The number of ml of 0.1N sodium thiosulphate required (b) was noted. The experiment was repeated twice to get concordant values.

Determination of Unsaponifiable matter

Weighed 5g of the substance into the flask. Added 50ml alcoholic KOH into the sample. Boiled gently but steadily under reflux condenser for one hour. The condenser was washed with 10ml of ethyl alcohol and the mixture was collected and transferred to a separating funnel. The transfer was completed by washing the sample with ethyl alcohol and cold water. Altogether, 50ml of water was added to the separating funnel followed by an addition of 50ml petroleum ether. The stopper was inserted and shaken vigorously for 1 minute and allowed it to settle until both the layers were clear. The lower layer containing the soap solution was transferred to

another separating funnel and repeated the ether extraction six times more using 50ml of petroleum ether for each extraction. All the extracts were collected in a separating funnel. The combined extracts were washed in the funnel 3 times with 25ml of aqueous alcohol and shake vigorously. Drawing off the alcohol-water layer after each washing. The ether layer was again washed repeatedly with 25ml of water until the water no longer turns pink on addition of a few drops of Phenolphthalein indicator solution. The ether layer was transferred to a tarred flask containing few pieces of pumice stone and evaporated to dryness on a water bath. Flask was placed in an air oven at 85°C for about 1 hour to remove the last traces of ether. A few ml of acetone was added and evaporated to dryness on a water bath. Cooled in a desiccator to remove last traces of moisture and then weighed.

HPTLC

Sample obtained in the procedure for the determination of unsaponifiable matter is dissolved in 10 ml of chloroform and was used for HPTLC.

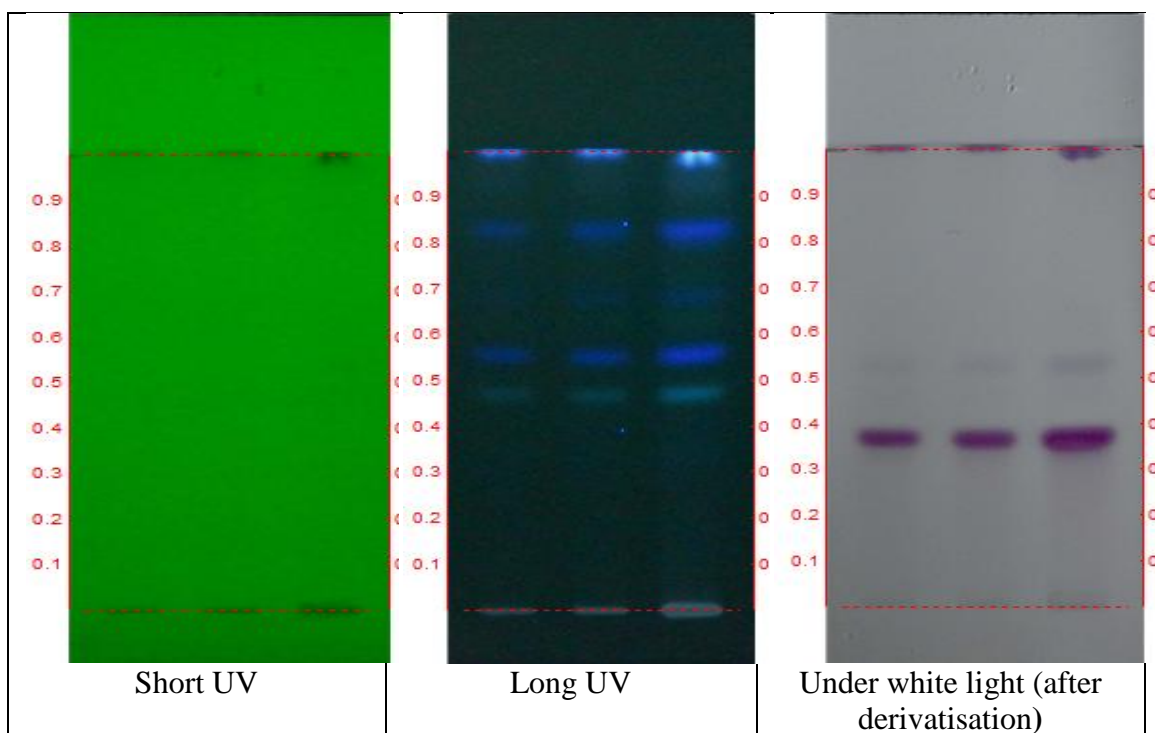
3, 6 and 9µl of the above sample were applied on a pre coated silica gel F254 on aluminum plates to a band width of 8 mm using Linomat 5 TLC applicator. The plate was developed in Toluene – Ethyl acetate (9:1) and the developed plates were visualized under UV 254 and 366 nm, and after derivatisation in vanillin-sulphuric acid spray reagent and scanned under UV 254nm, 366 nm and 620nm following derivatisation with spraying reagent. R_f, colour of the spots and densitometric scan were recorded.

Part C: Results

Table 1. Results of standardization parameters

Parameter	Results n = 3 %w/w
	<i>Panchatikta ghrita</i>
Refractive index	1.45856
Specific gravity	0.9372
Acid value	0.55
Saponification value	183.23
Iodine value	36.73
Unsaponifiable matter (%)	1.60

Figure 1. HPTLC photo documentation of Chloroform extract of Panchatikta ghrita



TRACK 1-Panchatikta ghrita– 3µl; TRACK 2– Panchatikta ghrita – 6µl; TRACK 3-
Panchatikta ghrita – 9µl

Solvent system: Toluene: Ethyl Acetate (9.0:1.0)

Table 2: R_f values of Panchatikta ghrita

At 254 nm	At 366 nm	Post derivatisation
-	-	0.13 (D. purple)
-	-	0.37 (L. purple)
-	0.46 (FL. green)	0.46 (L. purple)
-	-	0.54 (L. purple)
-	0.56 (F. blue)	-
-	0.64 (FL. green)	-
-	0.69 (FL. blue)	-
-	0.84 (FD. blue)	-

***F – fluorescent; D – dark; L – light**

Figure 2. Densitometric scan of Panchatikta ghrita

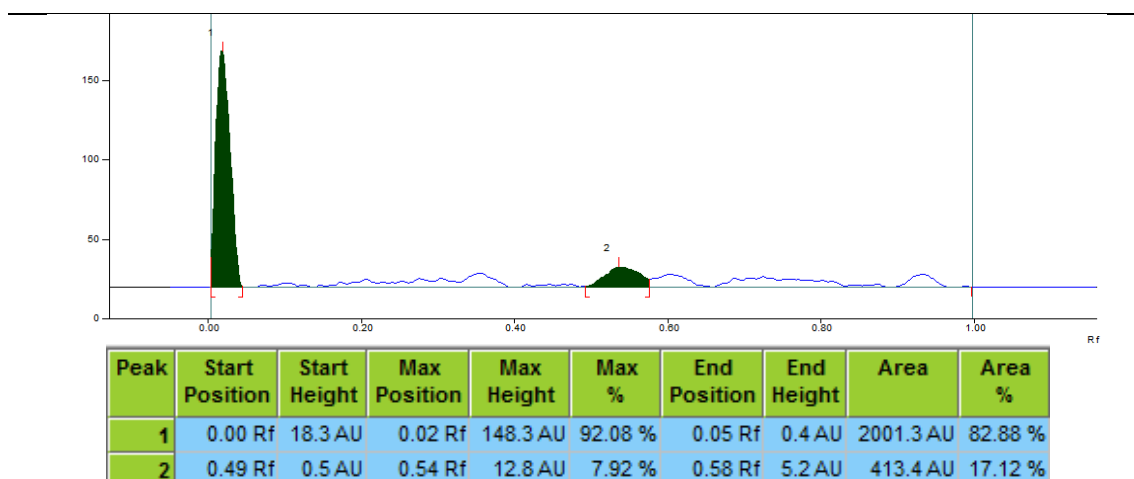


Fig 2a. At 254nm

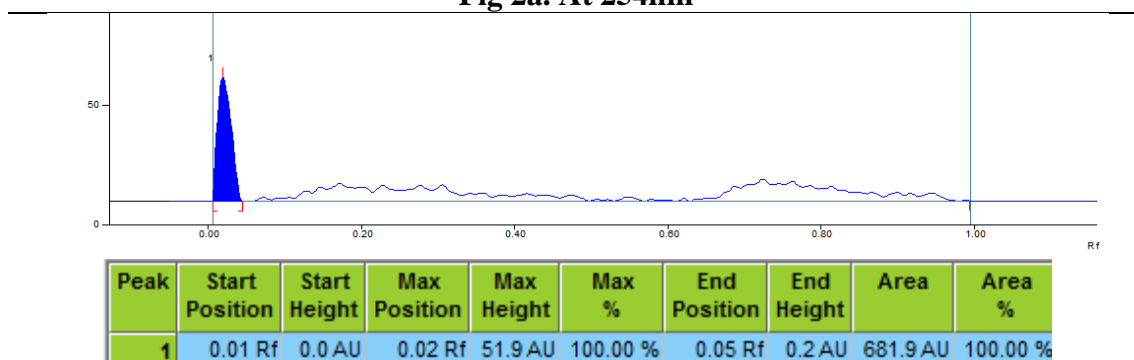


Fig 2b. At 366nm

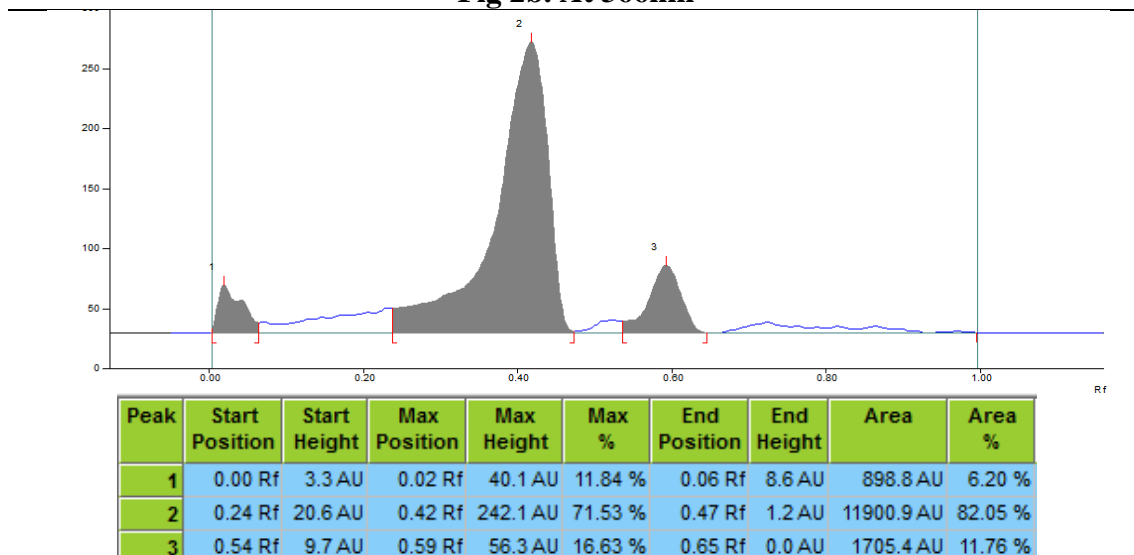



Fig 2c. After derivatisation at 620nm

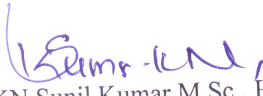
Part D: Remarks

The given sample of *Panchathiktha ghritha* has been standardized as per standard testing protocol. The results of standardization parameters and HPTLC photodocumentation, R_f values and Densitometric scan are given in respective tables and figures.

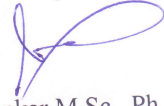
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Director

DIRECTOR
SDM Centre for Research in Ayurveda
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Kuthady, Udupi - 574 118.

	NONE	MILD	MODERATE	SEVERE	EXTREME	SCORE
16) On rising from bed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17) While lying on bed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18) While sitting on chair	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19) Going on /off <input type="checkbox"/> Indian <input type="checkbox"/> Western	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20) Doing heavy domestic duties (moving heavy boxes, scrubbing floor, lifting shopping bags)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21) Doing light domestic duties (cleaning room / table cooking / dusting)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22) While sitting cross legged floor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23) Rising from cross legged position	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24) While squatting on floor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OPTIONAL						
25) While kneeling on floor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26) Rising from kneeling position	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27) Sit on the floor with legs folded sideways /stretched	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TOTAL:						
REMARKS:						

For scoring and other details contact us

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