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A CLINICAL STUDY OF SANDHIGATA VATA (OSTEOARTHRITIS) THROUGH NIDANA

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ABSTRACT

Sandhigata vata is one of the vata vyadhi where in vata dosha plays an important role in the manifestation of the disease especially in Vruddha avastha. A Person who indulges more Vatakara Ahara and Vihara is more prone to this disease. As it usually occurs in Vruddha avastha this disease is said to be kasta sadhya. **Aims and Objectives:** 1. A conceptual study of etiopathogenesis of sandhigata vata. This includes the etiopathogenesis of sandhigata vata, etiological classifications, pathogenic evolutions will be discussed. **Materials and Methods:**

Source of Data: The patients attending OPD and IPD of Amrapali Ayurvedic Medical College & Hospital, Unnao, Behta Mujawar, Sandila Bangermau Road, Uttar Pradesh. with the complaints of Sandhigata vikrithi will be examined and selected for the study, if the diagnosis of Sandhigata vata is established.

Study Design

- It is an observational clinical diagnostic study where minimum of 30 patients with established clinical diagnosis of sandhigata vata were selected.
- Detail history about their regular food habits and daily regimen were recorded to assess the probable incidence of Nidana, Signs and symptoms of the patients were recorded through different pareekshas and pratyakshadi pramana.

Results: In this study majority of the patients were between the age group of 50 – 60 years i.e., Vruddha avastha. In this study females were the most sufferers. Most of the patients were used to mixed diet consuming more non vegetarian food. All the patients registered gave a history of intake of maximum number of Nidana and also presented with signs and symptoms mentioned in our classics.

KEYWORDS: Sandhigatavāta Vata, osteoarthritis, etiopathogenesis.

INTRODUCTION

A person can be said healthy when he is physically, spiritually and mentally alert when the doshas are in normal state. If the doshas are not in equilibrium and affects the above then it causes diseases.

Among the tridoshas, vata plays an important role and is responsible for all the chestas. In Vruddha avastha, there will be Kshaya of all the dhatus where in vata prakopa is seen leading to vataja disorders.

The disease like sandhigata vata disturbs physical and mental health in such a way that, it finally makes the person feel useless. This is particular so in case of Janugata vikrithi.

Sandhi is a marma and also a Madhyama roga marga vikara. This also includes all the structures like Snayu, Sira, Asthi, Peshi, Kandara etc.

Sandhigata vata is usually a disease of elderly. The reason behind it could be that they are **"Jeernadhatu prayah"** and vata prakopa predominance.

Sandhigata vata seems to have a similar features, signs and symptoms as that of Osteoarthritis. Sandhigata vata is one of the vata vyadhi characterized by sandhi Shoola, sandhi Shotha, stabdhata and sandhi sphutana.

"Osteo" means bones, "Arth" means joint and "itis" means inflammation. Osteoarthritis is most common type of arthritis. Its high prevalence especially in elderly and high rate of disability related to disease make it a leading cause of disability in elderly.Because of aging of western population and obesity, major risk factors areincreasing in prevalence. Since knee joint is a weight bearing joint, it is more susceptible to wear and tear. Other common risk factors are heavy journey, agriculture, sedentary lifestyle etc.

Need of Study

The prevalence of osteoarthritis is 40% in individuals aged over 75 years. It is common in women than in men. There is a strong relationship with obesity. The medial compartment is most commonly affected and leads to a varus (bow legged) deformity.[1]

It may also occur in joints that have suffered previous injury, been subjected to prolonged heavy use or damaged by prior infection of inflammatory arthritis. The reported prevalence of

osteoarthritis from a study in rural India is 5.78%.[2] Due to high prevalence rate of Sandhigatavāta, that's why I choose this research study.

PREVIOUS RESEARCH WORKS DONE

Several research works have been carried out on *sandhigatavata* with different viewPoint throughout the country in different Ayurvedic Institutes.

- **Karunaratna H .W. (1963):** *Vatavyādhi* W.S.R to *Sandhigatavata*, Dept. of *Kayachikitsa.*
- **Vanjakshamma (Ms) T. S. (1966):** *Sandhigatavikara*., Dept. of *Kayachikitsa.*
- **Sharma M.B. (1967):** *Shotha* and *Shula Chikitsa* In *Sandhigataroga*, Dept.of *Kayachikitsa.*
- **Ashara K.G. (1976):** *Sandhigata Rogon* mein *Shuddha Guggulu* Ka *Prayoga,* Dept.of *Kayachikitsa*.
- **Pragnesh Pandya (1990):** Role of *Agnikarma* in the management of *Sandhigatavata*, Dept. of *Shalya Tantra*.
- **Chandasana D.D. (1991):** Further Studies on *Agnikarma*in *Sandhigatavata*, Dept.of *Shalya Tantra*.
- **Gaur J. (1993):** A Comparative Study on *Mallasindura* prepared by two differentmethods in relation to its effect on *Sandhivata*, Dept. of *Rasashastra.*
- **Ruparelia H.B. (1995):** A Clinical study on role of *Shallaki* (*Kunduru*) in the management of *Sandhivata* (Osteoarthritis), dept. of *Kayachikitsa*.
- **Khunt C.U. (1996):** Role of *Medohara* and *Rasayana* drugs in the managementof *Sandhivata* (Osteoarthritis), Dept. of *Kayachikitsa.*
- **Kalpana Shinde (2000):** A Clinical study on the role of *Panchatikta Ghruta MatraBasti* and *Panchatikta Kshirapaka* with *Suddha Ghruta* in the managementof *Sandhigatavata*, Dept. of *Kayachikitsa*.
- **Alpesh Joshi (2004):** A Clinical study on the role of *Matra Basti* and *Shamana Yoga* in the management of *Sandhivata* (Osteoarthritis), Dept. of *Kayachikitsa*.
- **Mahant J. Vyasdev (2005):** A clinical management on *Sandhigatavata* w.s.r. to cervicalspondylosis by *Agnikarma Chikitsa,* Dept. of *Shalya*.
- **Mayuri Shah (2006):** A comparative study of *Matra Basti* and some indigenous compound drug in the management of *Sandhigatavata* (Osteoarthritis).

AIM AND OBJECTIVE

To study the etiological factors in weight bearing joint by age, Ahar, vihara, stress and work.

REVIEW OF LITERATURE

HISTORICAL REVIEW

History of Indian medicine is usually studied under the headings of Prevedic period, Vedic period, Samhita Kala, Sangraha Kala, Nighantu Kala and Adhunika Kala. History of medicine also reveals some aspects of the disease.

There is no reference regarding Sandhi Vata in Prevedic period. During Vedic period in Atharvaveda the references regarding the occurrence of Sandhi Vikara (Ath. 2/33/7, 6/14/1), the importance given for Vata (Ath.8/2/3, 2/10/3) and disorders of Vata (Ath. 9/8/21) are available.

In Samhita period we find systemic description of the disease according to NidanaPanchaka.

Charaka Samhita, one of the famous triads of Ayurveda explained Sandhi-Gata- Vata in Chikitsa sthana 28th chapter.[3]

Sushruta Samhita narrates Lakshana in Nidana sthana 1st chapter[4] and Chikitsa in Chikitsa sthana 4th chapter.[5]

In Ashtanga Sangraha Nidana sthana 15thchapter Lakshana[6] and in Chikitsa sthana 23rd chapter Chikitsa of Sandhi-Gata-Vata are summarized.[7]

Ashtanga Hridaya has described Lakshana in Nidana sthana 15th Chapter[8] and line of treatment in Chikitsa sthana 21st chapter.[9]

In Madhava Nidana Lakshana of Sandhi-Gata-Vata are given in the wordings of Sushruta.[10]

Bhavaprakasha explains the Lakshana and treatment of Sandhi-Gata-Vata in Madhyama Khanda Vatavyadhyadhikara 24th chapter.[11]

Yogaratnakara also not left behind in explaining about Lakshana and treatment of Sandhi-Gata-Vata in Vatavyadhyadhikara of Purvardha.[12]

In Bhaishajya Ratnavali, Vatavyadhi Prakarana deals with treatment aspects of Sandhi Vata.[13]

The commentators of Samhita and Sangraha especially Cakrapani and Dalhanacontributed a lot for better understanding of the disease.

Table 1: References of Sandhi-Gata-Vata.

LITERATURES	REFERENCES
CARAKA SAMHITA	CIKITSASTHANA 28
SUSHRUTA SAMHITA	NIDANASTHANA 1; CIKITSASTHANA 4
ASHTANGA SANGRAHA	NIDANASTHANA 15; CIKITSASTHANA 23
ASHTANGA HRIDAYA	NIDANASTHANA 15; CIKITSASTHANA 21
YOGARATNAKARA	PURVARDHA, VATAVYADHYADHIKARA
BHAVAPRAKASHA	MADHYAMAKHANDA VATAVYADHYADHIKARA24
MADHAVA NIDANA	PURVARDHA, VATAVYADHYADHIKARA 22
BHAISHAJYARATNAVALI	VATAVYADHI PRAKARANA 23

NIRUKTI AND PARIBHASHA

The word 'Sandhi-Vata' is comprised of 2 words i.e., Sandhi and Vata.

Etymology, definition and specific interpretation of the terms are explained as follows.

Sandhi

- Vutpatti - Sam + Dha + Kihi[14]
- Nirukti - 'Asthi Samyogasthane'[15]

Means junction, connection, combination, and union with containing a conjugation, transition from one to another.[16]

- Paribhasha - Sandhi Pullinga, Sandhanamiti, Yuga Sandhini Yugashabde Deha Sandhini Marmashabde Cha Drishtavyaha.[17]

In general, Sandhi means the junction between two things. In Ayurveda, Shareera Sandhi is a technical word indicating that it is the place where two or more bones meet together and the joint may be fixed type or with less or more movement.

Acharya Sushruta explains about the innumerable junctions between Peshi, Snayu, Sira, and Asthi. But the description about Sandhi is concerned Asthi Sandhi.

Vata

Vyutpatti- Va - Gati SevanayohoVa + Kta[18]

The term 'Vata' is derived by the application of 'Kta' or Krt Pratyaya to the verb root 'Va' which means 'Gati and Gandhana'.

Nirukti- Va - Gati Gandhanayoho[19]

The term 'Gati' is having meanings like Prapti, Jnana, Gamana, Moksha and the meaning of 'Gandhana' is like Utsaha, Prakashana, Soocana, (Shabdasthoma) Gandhana, Prerana.

Considering the different meanings of Gati and Gandhana it is understood that theterm 'Vata' act as a receptor as well as stimulator. Hence it can be said that Vata is the biological force, which recognize and stimulate all the activities in the body.

Sandhi -Vata

After going through the different references, it can be stated as – the vitiated Vata when get lodged at one or more than one Sandhi and producing the features like pain in the joint, swelling on palpation, crepitus and stiffness in the joint termed as Sandhigata Vata.

JANU SANDHI RACHANA AND KRIYATMAKA ADHYAYANA

Before going through the disease aspects, the Shareera Rachana and Kriya of Sandhi are to be understood properly. Here an attempt is made to study the Rachana and Kriya consideration of Sandhi in general and Janu-sandhi in particular.

In Ayurveda, Sandhi is mainly classified into two types.

1) Sthira Sandhi
2) Chala Sandhi[20]

Again, they are sub classified into eight types.

1) Kora 2) Ulookala 3) Samudga 4) Pratara
5) Tunnasevani 6) Vayasa tunda 7) Mandala
8) Shankhavarta Acharya Sushruta considered Janu-Sandhi under Chala Sandhi and sub classified under Kora Sandhi.[21]

Other factors that are to be highlighted in understanding the Sandhi are.

Shleshaka Kapha - Shleshaka Kapha is one among five variety of Kapha, which residein joints. It helps in lubrication of joints.[22]

Shleshmadhara Kala-It is the fourth Kala, which is situated in all joints. As wheel moveson well by lubricating the axis, joints also function properly if supported with Kapha. This helps in formation of synovial fluid and to control friction of bones.[23]

Vyana Vata - Vyana Vata is one among the five varieties of Vata, which resides at Hridaya and controls most of the motor functions. The Gati or physical movement is also one of its functions, which helps in Prasarana and Akunchan of sandhi. Gayadasa commenting on

Sushruta hasquoted that the Vyana Vata is functioning all over the body hence it also resides in the Sandhi.[24]

Acarya Vagbhata states that Vata is located in the Asthi with relation to 'Ashrayashrayi Sambandha', where in increase of Vata, AsthiKshayaoccurs.[25]

Sushruta in Sharira sthana explains different structures of the human body.

Among them, structures coming under Janu-Sandhi are listed below.

Snayu - Among nine hundred Snayus, ten Snayus are present in Janu-Sandhi. As a boat consisting of planks becomes capable of carrying load of passengers in river after it istied properly with bundle of ropes, all joints in the body are tied with many ligaments by which persons are capable of bearing load.[26]

Peshi - Among the five hundred Peshi, five are present in Janu Sandhi. They are strong structures that help to maintain alignment of the joint.[27]

Sanghata- Assemblages of bones are known as Sanghata. Out of total fourteen, one is situated in Janu-Sandhi.[28]

Janu Marma – Between the Jhangha and Uru in the Sandhi sthala, Janu Marma can be seen. Any injury to that may lead to Khanjata.[29]

Knee Joint

The knee joint is the largest and most complex joint of the body. The complexity is due to the result of fusion of three joints in one. It is formed by fusion of the lateral femoro-tibial, medial femoro-tibial and femoro-patellar joints.

It is a compound synovial joint, incorporating two condylar joints between the condoyle of the femur and tibia, one saddle joint between the femur and the patella.

In synovial joints the osseous surfaces concerned are not in continuity although the bones involved are linked. The synovial joints evolve from fibrous and cartilaginous joints by subsequent developments. These synovial joints are made up of unique structureslike fibrous capsule, articular surfaces, synovial membrane, synovial fluid, ligaments, muscles etc.

Articular surfaces - The knee joint is formed by (1) the condyles of the femur, (2) the condyles of the tibia and (3) the patella. The femoral condyles articulate with the tibial condyles below and behind with the patella in front.

Fibrous capsule - The fibrous capsule has parallel but interlacing bundles of white collagen fibers. It is complex, partly deficient and partly augmented by expansions from adjacent tendons. It forms a cuff with its ends attached continuously round the articular ends of the Tibia and Femur.

Synovial membrane - Derived from embryonic mesenchyme and lines fibrous capsule, covers exposed osseous surfaces, intra-capsular ligaments and tendons. It is absent from intra-articular discs or menisci and ceases at the margins of articular cartilages.

Synovial Intima- Also called as lamina propria synovialis or synovial lining layer. It consists of pleomorphic synoviocytes embedded in a granular, amorphous, fiber free inter cellular matrix. It helps in removal of debris and synthesis of components of Synovial fluid.

Synovial fluid- It occupies synovial joints, bursae and tendon sheaths. It is clear, pale yellow, viscous, and slightly alkaline. A protein probably lubricin rather than hyaluronic acid is the lubricating factor but it amplifies its secondary lubricating activity. It provides liquid environment with small range of pH, nourishes articular cartilage, discs, menisci. It renders lubrication and reduces erosion.

Menisci- It is a fibro cartilaginous disc which is crescent shaped. It deepens the articular surfaces of the condyles of the tibia. It partially divides the joint cavity into upper and lower compartments. It has two ends, two borders and two surfaces. It helps to make the articular surfaces more congruent; act as shock absorbers, lubricates the joint cavity and gives rise to proprioceptive impulse.

Other Structures- Ligaments- The capsules and ligaments of Synovial joints unit the bones, help to direct bone movement and prevent excessive and undesirable motion. Thus, more the ligaments, stronger are the joints. In knee joint tibial collateral ligament, fibular collateral ligament, oblique popliteal ligament, arcuate popliteal ligament, ligamentum patellae, cruciate ligament which helps to maintain stability.

Muscle tendon - Muscle tendons that cross the joints are the most important stabilizing

factors, due to tonicity of the respective muscles. In knee, muscle tendon is extremely important in reinforcing joints. For this the thigh muscles are helpful.

Bursae- Apertures in fibrous capsule through which synovial membranes protrude are called as Bursae. They are numerous; as many as 13 bursae have been described around the knee, four anterior, four laterals & five medial.

Blood Supply - 1. Five genicular branches of the popliteal artery. **2.** The descending genicular branch of the femoral artery. **3**. The descending branch of the lateral circumflex femoral artery. **4**. Two recurrent branches of the anterior tibial artery. **5**. The circumflex fibular branch of the post-tibial artery.

Nerve Supply - 1. Femoral nerve – Through its branches to the vastus medialis.**2.** Sciatic nerve-Through the genicular branches of the tibial and common peroneal nerves. **3.** Obturator nerve – Through its posterior division.

Figure

ANATOMICAL STRUCTURES OF KNEE JOINTANTERIOR VIEW

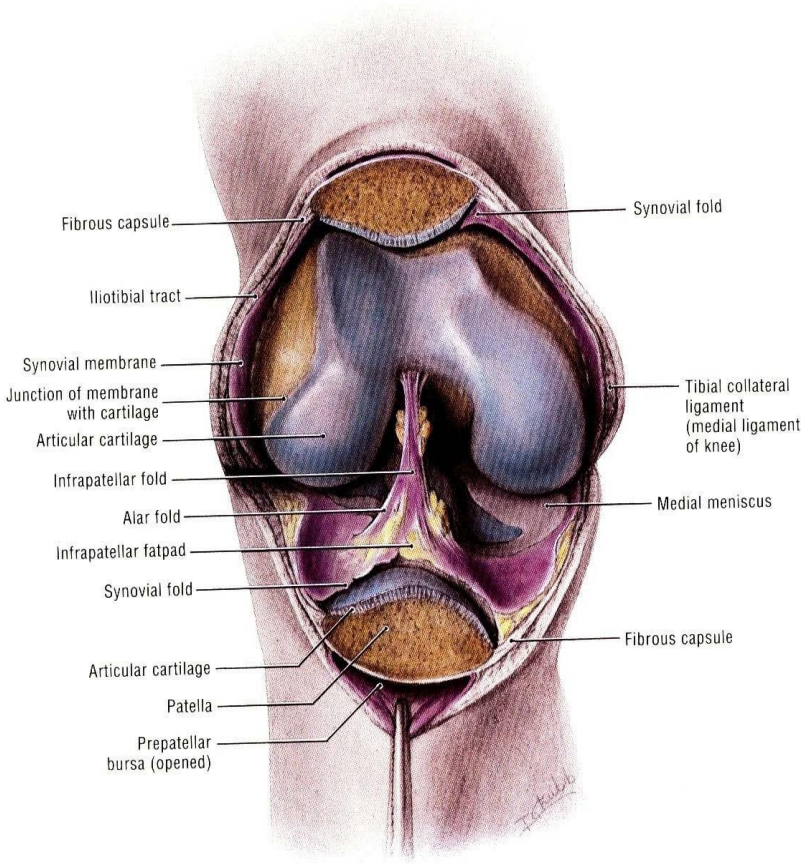
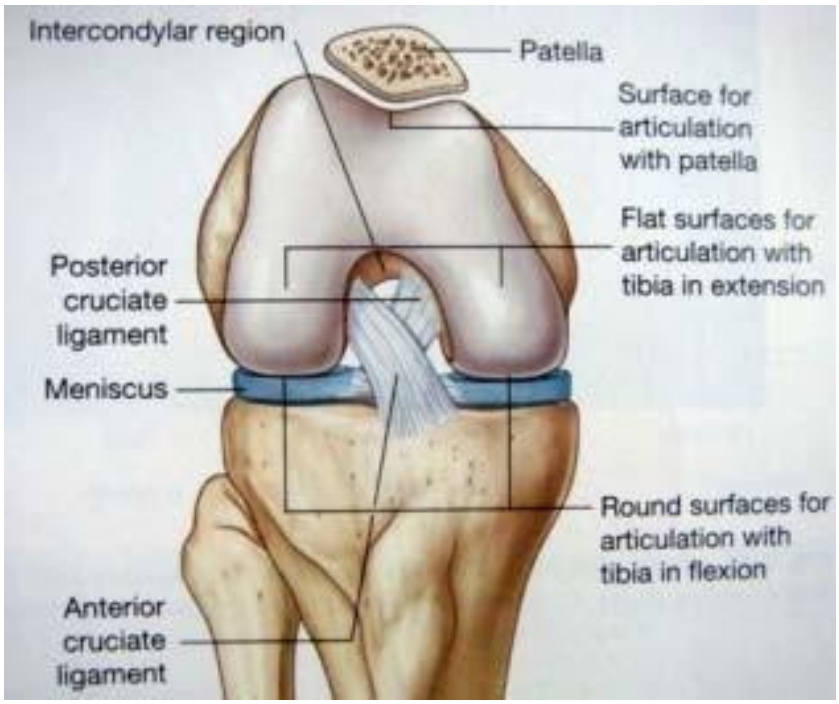


Figure.

STRUCTURES OF KNEE JOINT



NIDANA

In Bruhatrayees and Laghutrayees we find the description of Sandhi Vata in Vata Vyadhi, hence Sandhi Vata is considered as a part of Vata Vyadhi.

Acharyas have not mentioned particular Nidana for Sandhi Vata, so we can take common Nidana given for Vata Vyadhi[30] along with Asthi and Majjavahasroto Dushti Karana.[31]

Nidana is broadly classified into two i.e.

- Bahya hetu
- Abhyantara hetu.[32]

Bahya hetu

Particular nidanas have not been mentioned regarding Sandhigata vata, so the causative factors mentioned for vata vyadhis can be taken.

These nidanas are further again classified into 5 types.

- Sannikrista
- Viprakrusta
- Vyabhichari
- Pradhanika
- Utpadaka.

Sannikrista hetu[33]

In case of Sandhigata vata, vata and kapha dosha are considered as sannikrista nidanas Here in the ratri, dina, rutu and aahara kala are the factors which are responsible for thevitiation of vata and kapha dosha.

Abhighata, Marmaabhighata, Ativyayama, Ati Sankshoba etc are included.[34]

Viprakrusta hetu[35]

Here mainly the predominance of Vatakara aahara is considered as viprakrusta hetu likeKatu, Tikta, Kashaya rasa yukta ahara, Ruksha and laghu anna.[36]

Ati Adhwa gamana, Bharavahana, vata Prakruti people are considered as viprakrustahetu in Sandhigata vata.

Vyabhichari hetu[37]

There is no vyabhichari hetu which causes Sandhigata vata.

Pradhanika hetu[38]

There is no pradhanika hetu which causes sandhigata vata.

Utpadaka hetu[39]

Utpadaka hetu can be classified clearly under 3 varieties.

- Dosha bala pravrutta.
- Adi bala pravrutta.
- Janma bala pravrutta.

Dosha bala Pravrutta[40]

The diseases which are formed due to the vitiation of Shareerika doshas vata, pitta and kapha, Manasika doshas raja and tama doshas are termed as dosha bala pravrutta vyadhis.

If there is a vitiation of these doshas due to any karana may lead to Sandhigata vata.

Adi bala pravrutta[41]

In case of vata pradhana prakruti determined by Shukra shows the prakruti of parents, itwill precipitate the occurrence of Sandhigata vata which is also considered as Prakruti hetu.

Janma bala pravrutta[42]

If the child, during intra-uterine life suffers with injury to the Janu pradesha or fromany other illness like Pangu, the chances of Sandhigata vata in the later period oflife is more common.

Acharya Carak[43] and Bhavaprakasha[44] have mentioned particularly about thenidana of vata vyadhi, where in Acharya Sushruta and Vagbhata have just mentioned about the vitiation of vata dosha.[45]

On these basis nidanas can be classified into various types like.

- Aharaja
- Viharaja
- Agantuja
- Manasika
- Kalaja
- Anya

Aharaja Nidana

Ahara is the most common contributing factor for the producing of a disease. Intake of Ahara having Kashaya, Katu, Tikta Rasa, Sheeta, Ruksha, Laghu Guna and indulgence in Alpashana, Vishmashana, Adhyashana, Pramitashana lead to aggravation of Vata. Dravyas like Shushkashaka, Vallura, Varaka, Nivara, Koradusha, Kalaya, Tumba, Kalinga, Chirbhota etc causes Vata vitiation.[46]

Rasa Vishesha Aharaja Nidana

Nidana	Ca.Sa.	Su.Sa.	A.Hr.	Ma.Ni.	Yo.Ra.	Bh.Pr.	A.Sa.
Kashaya	-	+	+	-	-	+	+
Katu	-	+	+	-	-	+	+
Tikta	-	+	+	-	-	+	+

Guna Vishesha Aharaja Nidana

Nidana	Ca.Sa	Su.Sa	A.Hr	Ma.Ni	Yo.Ra	Bh.Pr	A.Sa.
Rooksha	+	+	+	-	-	+	+
Laghu	+	+	+	-	-	+	+
Sheet	+	+	+	-	-	+	+
Vishtmbhi	-	-	-	-	-	-	+
Abhishyndi	+	-	-	-	-	-	-
Heen	-	-	-	-	-	-	+
Shushka	-	-	-	-	-	-	+

Veerya Vishesha Aharaja Nidana

Nidana	Ca.Sa	Su.Sa	A.Hr	Ma.Ni	Yo.Ra	Bh.Pr	A.Sa.
Sheeta	-	+	+	-	-	+	+

Dravya Vishesha Aharaja Nidana

Nidana	Ca.Sa	Su.Sa	A.Hr	Ma.Ni	Yo.Ra	Bh.Pr	A.SA
Vallura	-	+	-	-	-	-	-
Varaka	-	+	-	-	-	-	-
Shuskha Shaka	-	+	-	-	-	-	-
Uddalaka	-	+	-	-	-	-	-
Neevara	-	+	-	-	-	-	-
Mudga	-	+	-	-	-	-	-
Masura	-	+	-	-	-	-	-
Kalaya	-	+	-	-	-	-	+
Harenu	-	+	-	-	-	-	-
Nishpava	-	+	-	-	-	-	-
Koradusha	-	+	-	-	-	-	-
Shyamaka	-	+	-	-	-	-	-
Adhaki	-	+	-	-	-	-	-
Tumba	-	-	-	-	-	-	+
Kalinga	-	-	-	-	-	-	+
Chirbhita	-	-	-	-	-	-	+
Bisa	-	-	-	-	-	-	+
Shaluka	-	-	-	-	-	-	+
Jambav	-	-	-	-	-	-	+
Tinduka	-	-	-	-	-	-	+
Karira	-	-	-	-	-	-	+
Chanak	-	-	-	-	-	-	+
Virudhaka	-	-	-	-	-	-	+
Trunadhany	-	-	-	-	-	-	+

Aharakrama Nidana

Nidana	Ca.Sa	Su.Sa	A.Hr	Ma.Ni	Yo.Ra	Bh.Pr	A.SA
Pramitashana	+	-	+	-	-	+	+
Anashana	-	+	-	+	+	+	-
Vishamashana	-	+	-	-	-	-	-
Adhyashana	-	+	-	-	-	-	-
Trusheetashana	-	-	-	-	-	-	+
kshudhitambupana	-	-	-	-	-	-	+
Viruddhanna	+	-	-	-	-	-	-

Viharaja Nidana

a) Langhana, Ati Plavana and Prapatana

The person who does frequently fasting may lead to vata prakopa.

Excessive indulgence in activities like swimming, jumping and walking in impropergait may lead to vata prakopa.[47]

Ativyayama, Ati Vichestana, Ati Vyavaya

Excessive indulgence of physical exercise to the body, walking, sexual intercourse and improper activities may lead to vata prakopa.[48]

b) Pradhavana Prapeedana

Excessive running, falling may lead to vata prakopa.[49]

Viharaja Nidana

Nidana	Ca.Sa	Su.Sa	A.Hr	Ma.Ni	Yo.Ra	Bh.Pr	A.Sa.
Ati Vyayama	+	+	+	+	+	-	-
Langhana	+	+	-	+	+	-	+
Plavana	+	+	-	+	+	-	-
Atyadhwa	+	-	-	+	+	-	+
Pradhavana	-	+	-	-	-	-	+
Tarana	-	+	-	-	-	-	+
Prapatana	-	+	-	-	-	-	+
Atyuchabhashana	-	-	+	-	-	-	-
Balavadvigraha	-	+	-	-	-	-	+
Abhighata	+	+	-	+	+	+	+
Prapeedana	+	+	-	-	-	-	-
Bharaharana	-	+	-	-	-	-	-
Dukhashayya	+	-	-	+	+	-	-
Dukhasana	+	-	-	+	+	-	-
Gaja,Ushtra, adi Sheegrhayana	+	+	-	+	+	-	-
Ati kharchapkarshna	-	-	-	-	-	-	+
Govajigajnigraha shmadi sahasa	-	-	-	-	-	-	+
Atiadhyayana	-	+	-	-	-	-	+
Ati vyavaya	+	+	+	+	+	+	+
Jagarana	+	+	+	+	+	+	+
Vegadharana	+	+	+	+	+	+	+
Vega-udirana	-	-	+	-	-	-	+
Shrama	-	-	-	-	-	+	-
Vicheshta	+	-	-	+	+	-	-
Purhapavana	-	-	-	-	-	+	-
Divasvapna	+	-	-	+	+	-	-
Himadana	-	-	-	-	-	+	-

Agantuja Nidana

1) Abhighata

It may mainly be resulted by a fall or a forceful hit on the knee joint. Abhighata to knee joint may affect the Asthi, Snayu and the Majja of the knee joint which may vitiate the vata

dosha.[50]

Now a days, fall from vehicle may lead to vitiation of vata dosha.

2) Marmaabhighata

Janu sandhi is one of the Vaikalyakara Sandhi Marma[51], which is Soumya and Sheetala yukta so it is not Pranahara. Janu Sandhi is a vital point, which is formed by Asthi, Snayu, Sira and Mamsa.[52]

Pain in the joints is not necessarily be only associated with bony changes, but involvement of other joint structures may also give rise to symptoms pertaining to the joint.

Between the Jhanga and Uru in Sandhi Sthala Janu marma is seen. Any injury to that may lead to khanjata.[53]

3) Bhara vahana

Carrying excessive load causes excessive pressure and stretching effect over the structures of the joint.

As knee is a weight bearing joint, carrying excessive load will have direct effect on the joint. The constant compression will lead to wear and tear effect loading to degenerative changes in the joint.

4) Atisankshobha

It is the nidana for Asthivahasroto Dushti. Since there is involvement of Asthivaha srotas in Sandhigata vata, this can be considered as nidana for the same.[54]

Manasika Nidana

Nidana	Ca.Sa	Su.Sa	A.Hr	Ma.Ni	Yo.Ra	Bh.Pr	A.Sa.
Chinta	+	-	+	+	+	+	-
Shoka	+	-	+	+	+	+	+
Krodha	+	-	-	+	+	+	-
Bhaya	+	-	+	+	+	+	+
Utkantha	-	-	-	-	-	-	+

Kalaja Nidana

Nidana	Ca.Sa	Su.Sa	A.H r	Ma.N i	Yo.R a	Bh.P r	A.Sa.
Varsha	-	-	-	-	-	+	+
Greeshma	-	-	+	-	-	-	+
Shishira	-	-	-	-	-	+	-
Jeernanna	-	-	+	-	-	+	+
Ahoratrinta	-	-	+	-	-	+	+

Anya Nidana

Nidana	Ca.Sa	Su.Sa	A.Hr	Ma.Ni	Yo.Ra	Bh.Pr	A.Sa.
Atiraktasravana	+	-	-	+	+	+	-
Atidoshasravana	+	-	-	+	+	-	-
Dhatukshaya	+	-	-	+	+	+	+
Rogatikarshana	+	-	-	+	+	-	-
Ama	+	-	-	+	+	+	-
Marmaghata	+	-	-	+	+	-	-
Kriyatiyoga	-	-	+	-	-	-	-
Vishmopachara	+	-	-	+	+	+	+
Pravata	+	-	-	-	-	-	+
Sangkshobha	+	-	-	-	-	-	-
Asthnamativighatana	+	-	-	-	-	-	-
Utpeshadatya	+	-	-	-	-	-	-

Analogue Study of Sandhigata vata and Osteoarthritis

Sandhivata	Osteoarthritis
• More common in Vruddhabecause of jeernavastha	• Occurs in elderly due to degenerative changes.
• More common in Vataprakruthipersons	• Genetic cause.
• Ati Adhwa gamana,Bharavahana, Ati prapeedana	• Repetitive stress
• Abhighata to sandhi marmamay cause sandhivata	• Trauma
• There is no reference regarding Sex	• Occurs in females more.
• In Sthula persons	• Obese persons
• Ati Chinta, Ati Krodha, AtiBhaya,Ati Shoka	• Psychological stress

POORVAROOPA

Because of the Sthana Samshraya of the Doshas in the Sandhi Sthana Poorvaroopa starts to manifest. However, it is difficult to observe them in sandhigata vata, instead it may be noted to vata vyadhi poorvaroopa.[55]

Sandhi shoola, Dourbalya, Gamana Kruchrata may be considered as poorvaroopa since the patient present with above features are very frequent.

ROOPA

The symptom which specifies a manifested diseases are included under Roopa. A clear understanding of Roopa is inevitable for accurate diagnosis. It occurs in the Vyakta Avastha of Shatkriya kala after Sthanasamraya.

Table No 12: Roopa.

Symptoms	C a.Sa	Su.Sa	A. Hr	A. Sa	M. Ni	Bh.Pr	Yo.Ra
SandhiShoola	+	+	+	+	+	+	+
SandhiShotha	+	+	+	+		+	+
Sandhi Stabdhata		+			+		
Atopa					+		
Prasarana Akunchanyovedana	+	+	+	+	+	+	+

Sandhi Shoola

Shoola is the chief symptom of Prakupita Vata. It is stated that without Vata Shula does not occur. It is obvious to experience Shula in the diseases which are dominated by Vata.

Sandhi Shotha

In Sandhigatavata, Prakupita Vata gets enlodged in Sandhi where Srotoriktata already exists. So there is wide scope of Vata to get accumulated there resulting in Sotha. Acharya Caraka has quoted that vatapurna druti sparsha type of shotha is seen in Sandhigata vata.

Stabdhata

Sushruta explains this symptom followed by Madhavakar while commenting on this word, Dalhana and Gayadas explain it as inability to flexion and extension. However, this symptom may not to be seen in early stages. When the disease aggravates the vitiated Vata may produce inability of movements.

Atopa

This symptom is explained in Madhava Nidana.[56] While commenting on the word Atopa in another context, Madhukoshakara quotes the opinion of Gayadasa and Kartika i.e., 'Atopaha Chalachalanamiti Gayadasaha, Gudaguda Shabdamiti Kartikah'. Also, Bhavamishra says 'Atopo – Gudagudashabdaha'. Thus, we can say that Atopa in this context is the sound produced by the movement of joints i.e., crepitus.

Akunchan Prasaranayoh Vedana

Acharya Caraka has shown this symptom. Sandhis are made to perform the function of Akunchana and Prasarana. When Prakupita Vata gets located in Sandhi, it hampers the normal function of Sandhi which results in vedana during Akunchana and Prasarana.[57]

SAMPRAPTI

The Samanya Samprapti of Vata Vyadhi, which is explained in classics, can be considered as the Samprapti of Sandhigata Vata.

Acarya Caraka explained due to the intake of Vatakara Ahara Vihara Vata vitiationtake place. This vitiated Vata lodges in Rikta Srotas i.e. Srotas in where Shunyata of Snehadi Guna is present. Vata after settling in Rikta Srotas produce disease related to thatSrotas.[58]

Acharya Vagbhata mentions the Samprapti of Vata Vyadhi like Dhatukshayaaggravates Vata, which travels throughout the body and settles in the Rikta Srotas and further vitiates the Srotas leading to the manifestation of Vata Vyadhi.[59]

For the purpose of understanding the Samprapti of Sandhi Vata can be studied under three heading. They are 1. Dhatukshayajanya 2. Avaranajanya 3. Abhighatajanya.

1. Dhatukshaya Janya

In Vruddha avastha Vata Dosha is predominant in the body which leads to Kapha Abhava, where in Jataragni and Dhatvagni is impaired by which the Dhatus are not formedproperly.

As the Shleshma Bhava decreases in the body Shleshaka Kapha in the joints also decreases in quality and quantity where in sandhi Shithilata is seen. Ashrayashrayi Sambandha also leads Asthidhatu Kshaya leading to Khavaigunya in the joints.[60]

In this condition if Nidana Sevana done leads Vata Prakopa. If Vata Prakopa is not corrected by appropriate means and simultaneously if the person indulges in Asthivaha and Majjavaha Sroto Dushtikara Nidana, the Prakupita Vata spreads all over the body through these Srotas. In the meantime, Sthanasamshraya of Prakupita Vata takes place in the Khavaigunyayukta Sandhi. Due to the predominance of Ruksha, Laghu, Kharadi Gunait affects the properties of Shleshaka Kapha producing disease Sandhigata Vata.

2. Avarana Janya

Usually in Sthula persons Sandhi Vata occurs in weight bearing joints. In them Medodhatu will be produced in excess due to the Atisnehamsha of Amarasa. The excessive Medas will produce obstruction for the flow of nutritive materials to the Dhatusthat is Asthi, Majja and Shukra which leads to their Kshaya.

The excessive fat deposited all over the body will produce Margavarana of Vata. Prakupita Vata due to Margavarana starts to circulate in the body which travels andsettles in the Khavaigunyayukta joint. After Sthanasamshraya it produces the disease Sandhi Vata.[61]

3. Abhighatajanya Sandhigata vata

Trauma is considered as secondary cause of Osteoarthritis. By the Abhighata the integrity of the joint is disturbed. Due to Abhighata to the Asthi involved in Sandhi leads to provocation of Sthanika Vata that is. Vyana Vata (Ashrayashrayi Sambandha). Ruksha Guna of Vata and Ushanata produced by Abhighata will does the Shoshana of Shleshmaka Kapha in the joint. This produces the degenerative change in joint cartilage (lack of nutrition). In another way Vata is vitiated in the joint by the Siramarga Avarana of Vata due to Abhighata.[62] This vitiated Sthanika Vata will produce series of changes in the joint after Dosha Dooshya Sammurchana and produces Sandhi Vata Lakshana.

To understand the disease properly, Samprapti plays an important role. Acharya Charaka has explained Samprapti in detail by classifying it into six types.

1. **Sankhya Samprapti[63]:** Sandhigata vata is only one in number mentioned in ourclassics.
2. **Vikalpa Samprapti[64]:** As sandhigata vata is a vata Vyadhi, predominance of vatagunais there like Ruksha, laghu, khara. Due to the intake of ruksha, sheeta, laghu Ahara, vatagets aggrevated and causes riktata of srotas and takes Sthanasamshraya in sandhi, wherein it affects the Majja, Asthi and MamsaDhatus leading to sandhigata vata.
3. Person who indulges guru, Snigdha, madhura Ahara leads to kapha prakopacausing the Dushti of Mamsa and meda dhatu. Due to this amarupi Dhatus, there will be no proper formation of subsequent Dhatus like asthi, majja and shukra, it also causes Avarana of vata which takes Sthanasamshraya in sandhi leading to sandhigata vata.
4. If there is a Abhighata to sandhi, Asthi is affected which causes prakopa of Vyanavata which in turn leads to the shoshana of sthanika kapha leading to sandhigata vata.
5. **Pradhanya Samprapti[65]:** In sandhigata vata, vata dosha is predominant from all the doshas. Especially Vyana vata plays an important role in the manifestation of sandhigata vata.
6. **Vidhi Samprapti[66]:** Vidhi Samprapti is classified into two types,
7. **Nija –** vata dosha is predominant in the manifestation of sandhigata vata.
8. **Agantuja –** due to Abhighata.
9. **Kala Samprapti[67]:** According to vaya – in Vruddha avastha vata predominant is seen.
10. **According to kala –** In Varsha kala, vata prakopa is seen.
11. **Bala Samprapti[68]:** As sandhigata vata occurs in Vruddha avastha, it is kastasadhya. In sandhigata vata pain increases on movement after prolonged rest and usually decreases after movement is continued.

Samprapti Ghataka

Dosha – Vata – Vyana – Vriddhi.

Kapha – Shleshaka – Kshaya.

Dooshya – Peshi, Snayu, Asthi, Majja, Sandhi.

Srotas – Majjavaha, Asthivaha, Medovaha, Mamsavaha.

Agni – Jataragni, Asthi-Dhatvagni.

Ama – Jataragni Mandya Janya.

Roga Marga – Madhyama.

Udbhavasthana – Pakvashaya.

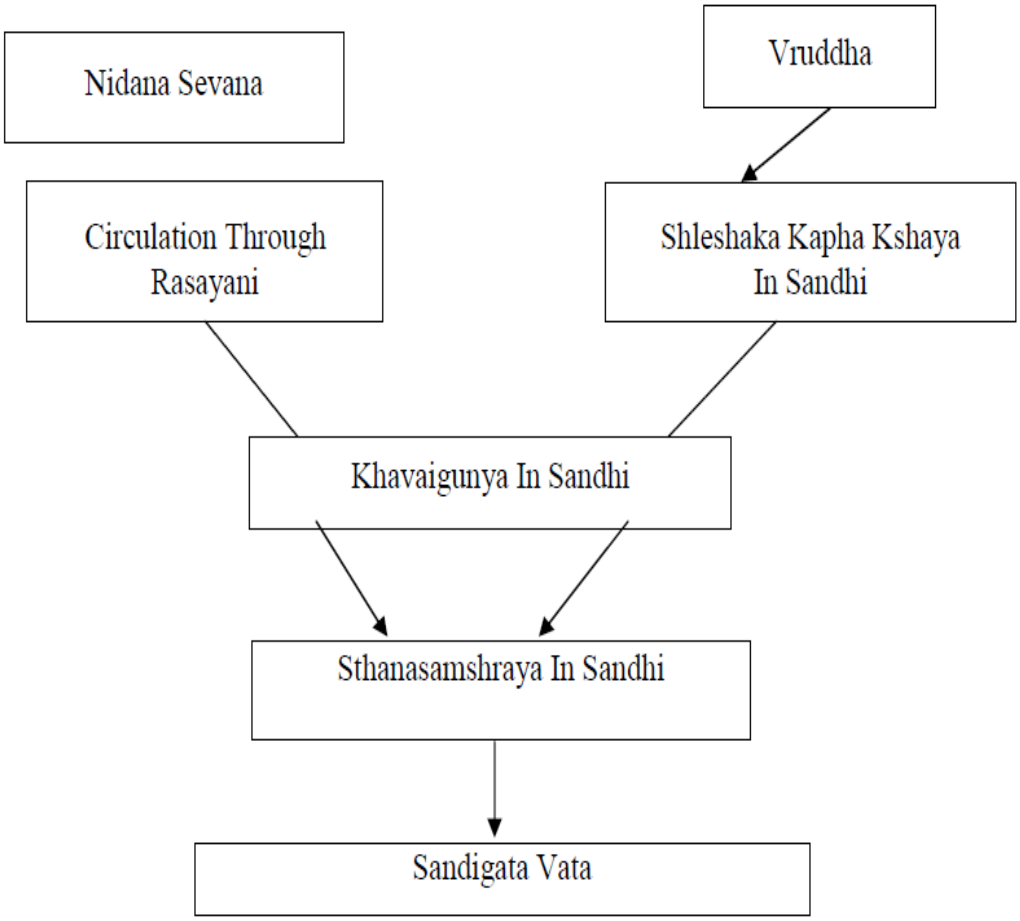
Sancharasthana - Sarvasharira.

Adhishtana – Sandhi.

Vyaktasthana - Janu Sandhi.

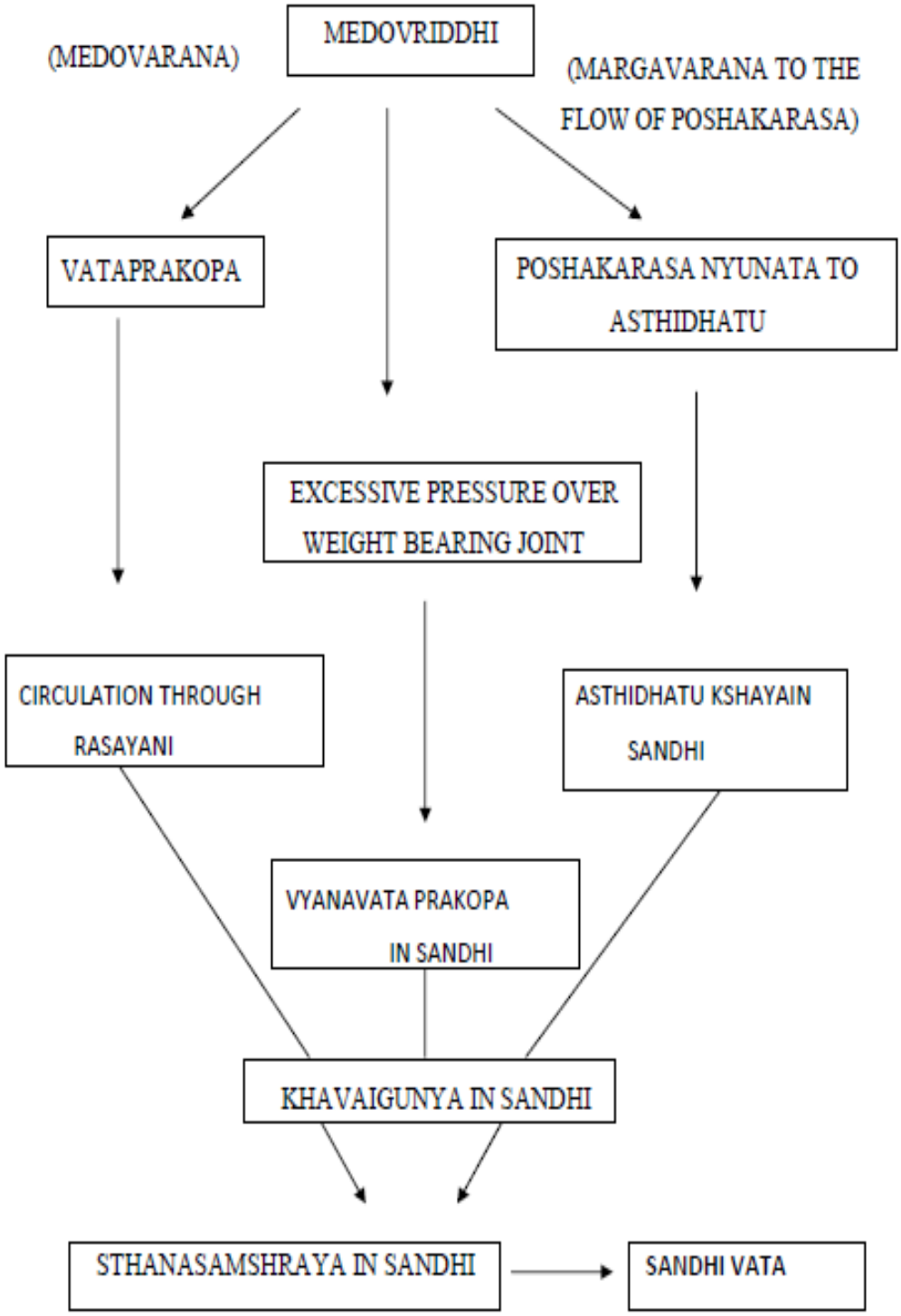
CHART

SAMPRAPTI IN DHATUKSHAYA JANYA SANDHI VATA



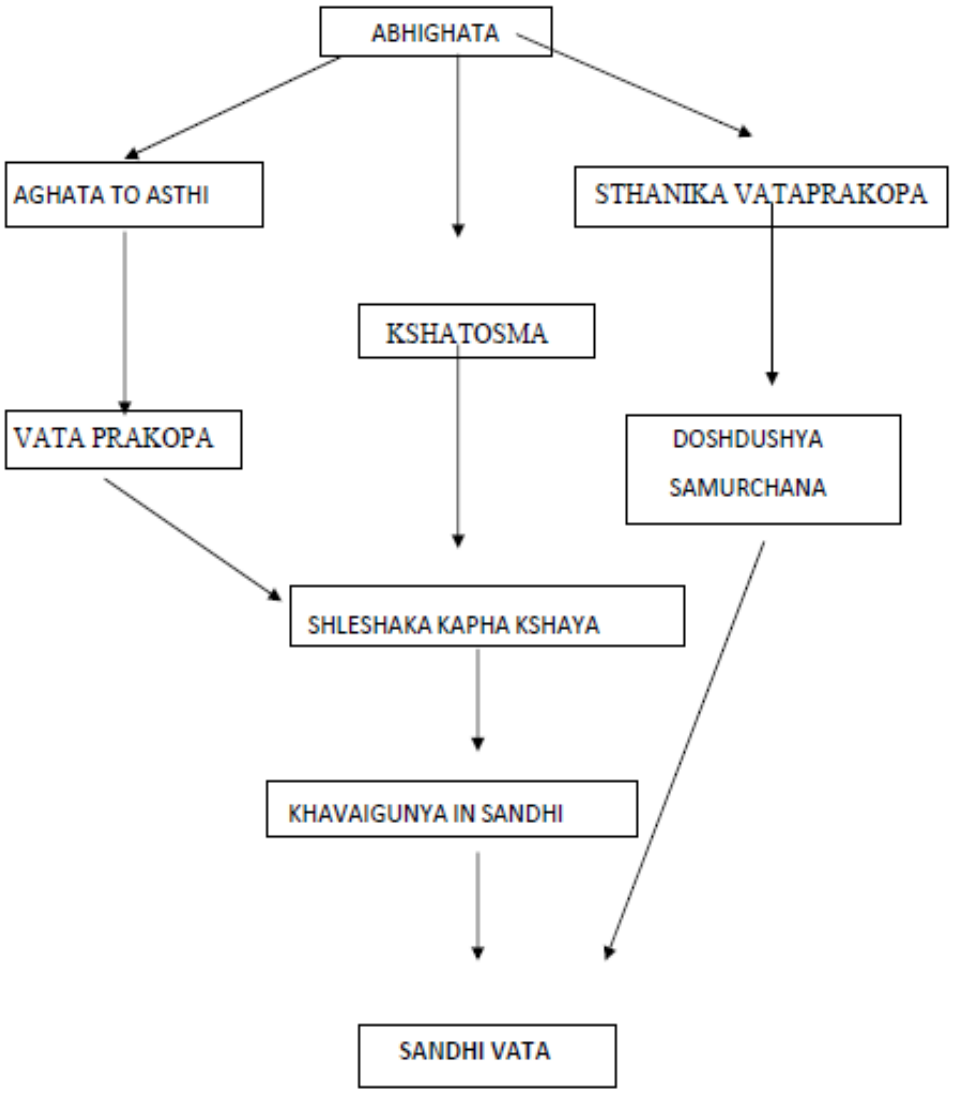
CHART

SAMPRAPTI IN AVARANA JANYA SHADHI VATA



CHART

SAMPRAPTI IN ABHIGHATA JANYA SANDHI VATA



SADHYASADHYATA

Sandhi-Vata is a variety of Vata Vyadhi, and also Madhyama Roga Margaja Vyadhi. The disease in elderly persons is Kastasadhya and Sandhi-Vata is usually afflictedin elderly aged for which Dhatu Kshaya is the cause. Diseases situated in Marmaand Madhyama Roga marga is Kastasadhya. Further vata vyadhi occurring due to vitiation ofAsthi and Majja are Yapya.

Acharya Charaka but while commenting on word "Khudavatata", Chakrapani explains the meaning of KhudaVata as Gulphavatata or Sandhivata. This Sandhivata can be considered as Kastasadhya Vata vyadhi.[69]

It may be cured by full effort when the disease is new, Upadrava rahita and in strong persons.

So Sandhigata vata being a disease of old age may not be considered as Sukhsadhya. It may be Krichrasadhya or yapya depending upon the time of onset and chronicity.[70]

SAPEKSHA NIDANA

Sapeksha Nidana or differential diagnosis plays a role in arriving at an exact decision between diseases presenting a similar clinical feature.

To get the clear idea regarding the disease Sandhigata vata, comparative studies of symptoms of similar diseases are given below.

Sapeksha Nidana

Factors	**Sandhigata vata**	**Amavata[71]**	**Vatarakat[72]**	**Koshtrukashirsha[73]**	**Asthi majja gatavata[74]**
Ama pradhanya	Absent	Present	Absent	Absent	**Absent**
Jwara	Absent	Present	Absent	Absent	**Absent**
Hridgaurava	Absent	Present	Absent	Absent	**Absent**
Prone age	Old age	Any age	-	-	-
Vedana	Prasarnaakuncha na pravrutti	Vrischik danshavata sanchari	Mushik danshavat avedana	Tivra	**Toda**
Shotha	Vatapurna driti sparsha	Sarvanga	Mandal yukta	Koshtrukashirshvat	-
Sandhi	**Weight bearing joint**	**Big sandhi**	**Small Sandhi**	**Only Janu**	**Big andSmall Sandhi**

There are some conditions (Dosha Vriddhi Kshaya Lakshana, Panchakarma Vyapat) where in symptoms related to Sandhi are seen. They are listed below.

1) Kapha Vruddhi[75]
2) Kapha Kshaya[76]
3) Mamsa Kshaya[77]
4) Medo Kshaya[78]
5) Asthi Kshaya[79]
6) Majja Kshaya[80]
7) Ojo Visramsa[81]

So, while diagnosing Sandhi-Vata, factors like Vriddhi or Kshaya of Dosha and Dhatu should be differentiated apart from above-mentioned disorders. This will help in successful treatment.

ETYMOLOGY

Osteo - The world Osteo comes from the Greek word 'Osteon'.The word osteo means bone.

Arthritis - The prefix 'Arth' means joint. The suffix 'itis' is defined as inflammation.Hence, Arthritis means inflammation of joint.

So, Osteoarthritis can be defined as inflammation of the bony part of the joint.

Osteoarthritis is a chronic degenerative disorder of multifactorial etiology, characterized by loss of articular cartilage and periarticular bone remodeling. It involves the entire joint including the nearby muscles, underlying bone, ligaments, synovium and capsule. It causes the joint pain typically worse with weight bearing and activity and stiffness after inactivity. Previously if was believed that Osteoarthritis is simply a disease of 'wear and tear' that occurred in joints as people got older. Arthritic changes are due to mechanical, biochemical or genetic effects.[82]

Nearly 70 percent of people over the age of 70 have X-ray evidence of the disease, but only half of these people ever develop symptoms. It may also occur in joints that have suffered previous injury, been subjected to prolonged heavy use or damaged by prior infection of inflammatory arthritis.

SYNONYMS

- Osteoarthritis
- Arthrosis
- Degenerative Joint Disease
- Wear and Tear Arthritis
- Hypertrophic Osteoarthritis

EPIDEMIOLOGY OF O.A.

- Osteoarthritis is the commonest type of arthritis.
- Almost everyone over the age of 75 is affected in at least one joint and haveradiological evidence.
- 25% females and 16% males have symptomatic O.A, where in women have generally affected at a younger age than men.
- 30% of people at the age of 45 – 65 years suffer from Osteoarthritis.

Racial differences exist in both the prevalence of O.A and the pattern of joint involvement. It usually occurs worldwide, although O.A of hip is less common in black Africans and in Chinese people than in whites. Whether these differences are genetic or due to differences in

joint usage related to life style or occupation is unknown.[83]

CLASSIFICATION OF OSTEOARTHRITIS

1. Idiopathic (Primary) O.A. - is the most common form of the disease, no predisposing factor is apparent.
2. Secondary O.A. - is pathologically indistinguishable from idiopathic O.A. but is attributable to an underlying cause.

1) Idiopathic O. A.

1) localized O.A
2) generalized O.A

2) Secondary O. A.

a) Trauma.

1) Acute
2) Chronic

b) Congenital or Developmental
c) Metabolic
d) Endocrine.

1) Acromegaly
2) Diabetes mellitus

3) Obesity

e) Calcium deposition diseases.

Risk factors for Osteoarthritis[84]

- Age – It is one of the powerful risk factors in old age people.
- Sex – Both Males and females are affected, O.A of knee is common in women.

45 years old – 2%

45 – 65 years – 30%

Older than 65 years – 68% will suffer.

- Race - The Chinese in Hong Kong have a lower incidence of hip O.A thanWhites. O.A is

more frequent in native Americans than in whites.

- Genetic – Point mutation in the cDNA coding for articular cartilage collagen havebeen identified in families with chondrodysplasia and polyarticular osteoarthritis
- Trauma – Direct or indirect injuries to the articular cartilage led to its degeneration.
- Fractures of different bones, especially of weight bearing with or without involving the joint can also cause alteration of ligaments and in articular surface of joint.
- Repetitive stress – Abnormal posture, abnormal gait, and unequal length of leg will exert stress and strain over the joint.
- Endocrine disorders – Acromegaly, Hyperparathyroidism, Diabetes mellitus, Obesity, etc. also may lead to osteoarthritis.
- Congenital - congenital or developmental defects may cause abnormal joint structure or weak joint tissue which is responsible for the development of secondary O.A.
- Metabolic - in metabolic disorders abnormal metabolites are produced which may get accumulated in the joint and weaken the joint tissue.
- Psychological stress - The role of mental factors in production as well as aggravation of the disease O.A. Noxious emotions, especially fear, anxiety and grief of unusual severity and duration are important in the genesis and persistence of activity of systemic Osteoarthritis.

PATHOLOGY OF O.A.[85]

The changes mainly occur in cartilages, adjacent bones and synovium.

Articular cartilage

The regressive changes are most marked in the weight-bearing regions of articular cartilages. Initially, there is loss of cartilaginous matrix (proteoglycans) resulting in progressive loss of normal metachromasia. This is followed by focal loss of chondrocytes forming clusters. Further progression of the process causes loosening, flaking and fissuring of the articular cartilage resulting in breaking off of pieces of cartilage exposing subchondral bone. Radiologically, this progressive loss of cartilage is apparent as narrowedjoint space.

Bone

The denuded subchondral bone appears like polished ivory. There is death of superficial osteocytes and increased osteoclastic activity causing rarefaction, microcyst formation and occasionally microfractures of the subjacent bone. These changes result in remodeling of

bone and changes in the shape of the joint surface leading to flattening and mushroom-like appearance of the articular end of the bone. The margins of the joints respond to cartilage damage by osteophyte or spur formation. These are cartilaginous outgrowths at the joint margins which later get ossified. Osteophytes give the appearance of lipping of the affected joint. Loosened and fragmented osteophytes may form free ‘jointmice ‘or loose bodies.

Synovium

Initially, there are no pathologic changes in the synovium but in advanced cases there is low-grade chronic synovitis and villous hypertrophy. There may be some amount of synovial effusion associated with chronic synovitis.

PATHOGENESIS[86]

Although the cardinal pathologic features of osteoarthritis are progressive loss of articular cartilage, osteoarthritis is not a disease of any single tissue but a disease of an organ, the synovial joint. The most striking morphologic changes in osteoarthritis are usually seen in load bearing areas of the articular cartilage.

Osteoarthritis develops in either of two settings.

1. The biomaterial properties of the articular cartilage and sub-chondral bone are normal, but excessive loading on the joint causes the tissue fail, or.
2. The applied load is reasonable, but the material properties of the cartilage or bone are inferior.

In the early stages the cartilage is thicker than normal. With the progression of osteoarthritis, joint surface thins then the cartilage softens. The integrity of the surface is breached and vertical clefts develop. They are called as fibrillation. This is followed by deep cartilage ulcers, extending to bone. All the cartilage is metabolically active and the chondrocytes replicate, forming clusters (clones). Later cartilage becomes hypo cellular. There will be appositional bone growth in the bony sub-chondral region, leading to the bony sclerosis. Growth of cartilage and bone at the joint margins leads to osteophytes, which alter the contour of the joint and may resist movement.

The biochemical changes which occur in cartilage in osteoarthritis are increase in water content, decreased collagen, proteoglycan, monomer size, hyaluronate, keratin sulphate, and chondroitin sulphate, increase in proteoglycan synthesis, collagenase, and proteoglycanase.

CLINICAL FEATURES

Symptoms[87]

- **Joint Pain-** It is often described as a deep ache and is localized to the involved joint. Typically, the pain of osteoarthritis is aggravated by joint use and relieved byrest, but as the disease progresses, it may become persistent.
- **Stiffness-** Progressive stiffness of the involved joint upon arising in the morning orafter a period of inactivity may be prominent but usually lasts less than 20 min. It is due to spasm of muscles. There is no relation between the severity ofdegenerationand morning stiffness.

Signs

- **Swelling-** Physical examination of the osteoarthritis joint reveals localized soft tissue swelling of mild degree. It is due to the changes in articular ends themselves, particularly peri-articular lipping.
- **Crepitus-** The sensation of bone rubbing against bone evoked by jointmovement is called as crepitus. It is one of the characteristic signs of osteoarthritis joint.
- **Local Warmthless-** On palpation of the joint local rise in temperature is an indicative of sign of inflammation.
- **Muscle Atrophy-** Peri-articular muscle atrophy may be due to disuse or due to reflex inhibition of muscle contraction.

Laboratory and Radiological Findings

The diagnosis of osteoarthritis is usually based on clinical and radiographic features. In the early stages, the radiograph may be normal, but joint space narrowing becomes evident, as articular cartilage is lost. Other characteristic radiographicfindings include subchondral bone sclerosis, subchondral cysts, and osteophytosis. A change inthe contour of the joint, due to bony remodeling, and subluxation may beseen.

No laboratory studies are diagnostic for osteoarthritis, but specific laboratorytesting may help in identifying one of the underlying causes of secondary osteoarthritis. Analysis of synovial fluid reveals mild leukocytosis with apredominance of mononuclearcells.

METHODOLOGY

Sandhigata Vata is a major social problem as large percentage of populationsuffers from this affliction. This being a degenerative type of disease, its progress is morein geriatric age, posing difficulty in day-to-day life of the person. This is the age in which all Dhatu begin to

degenerate, ultimately leading to Vata Prakopa. When this Prakupita Vata gets lodged in Sandhi, it gives rise to the disease Sandhigata Vata.

AIMS AND OBJECTIVES

- To study the etiological factors in weight bearing joint by age, Ahar, vihara, stress and work.
- This includes the etiopathogenesis of sandhigata vata, etiological classifications, pathogenic evolutions will be discussed.

SELECTION OF PATIENTS

The patients attending OPD and IPD of Amrapali Ayurvedic Medical College & Hospital, Unnao, Behta Mujawar, Sandila Bangermau Road, Uttar Pradesh, with the complaints of Sandhigata vikruti will be examined and selected for the study, if the diagnosis of Sandhigata Vata is established.

INCLUSION CRITERIA

- Patients who give the consent for the willing participation have to patriciate inthe study.
- patients of age group of 40- 70 years.
- Patients fulfilling the diagnostic criteria as per clinical proforma.
- Patients with Pratyama lakshana of Sandhigata Vata.

EXCLUSION CRITERIA

- Patients suffering from fractures and dislocation of knee joint.
- Patients suffering with severe knee joint deformities.
- Patients having complication like severe ankylosed joints and with infected joints disorder.

INVESTIGATIONS

- Blood investigations.
- X-Ray – AP and LA view of knee joint.
- Other relevant investigations are done if necessary.

ASSESSMENT CRITERIA

- Clinical signs and symptoms of Sandhigata Vata.
- Clinical signs and symptoms of Osteoarthritis.

- Radiological findings.

DIAGNOSTIC CRITERIA

Diagnosis of patient was established on the basis of signs and symptoms mentionedclassics as follows.

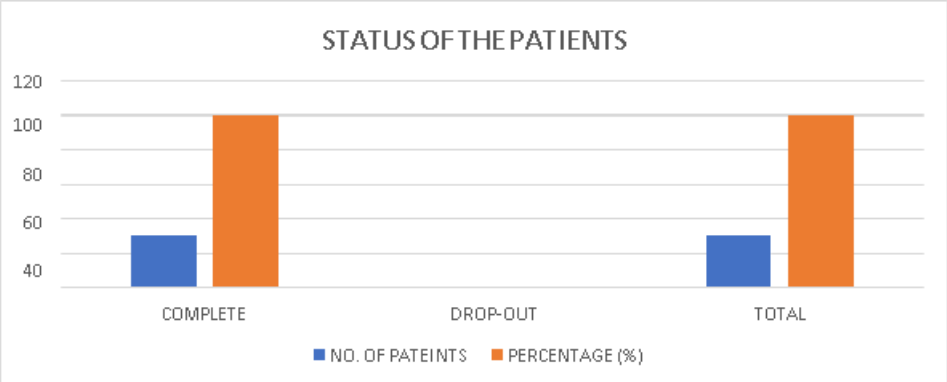
- Sandhi Shoola
- Sandhi Shotha
- Stabdhata
- Sandhi Sphutana.
- Prasarana Akunchanyo vedanah.

OBSERVATION AND RESULTS

Table– Status Of The Patients.

STATUS	NO. OF PATEINTS	PERCENTAGE (%)
COMPLETE	30	100
DROP-OUT	00	0.00
TOTAL	30	100

Total 30 patients were registered. Among them 30 patients were completed the treatment.

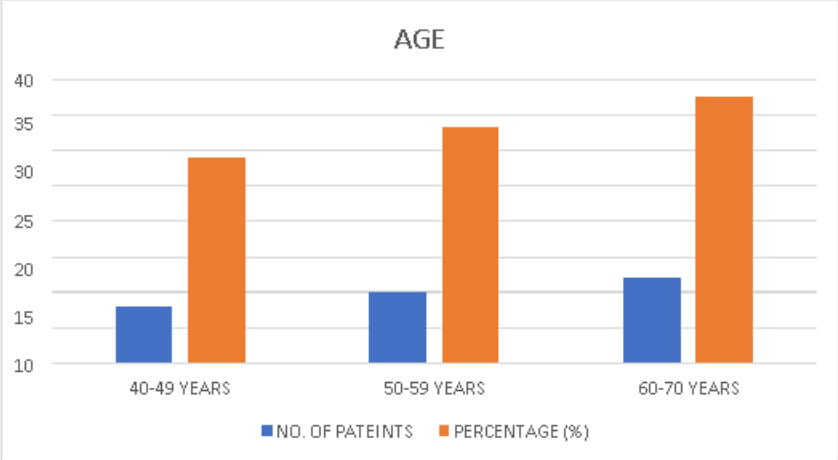


AGE

TABLE– AGE WISE DISTRIBUTION OF PATIENTS

AGE GROUP	NO. OF PATEINTS	PERCENTAGE (%)
40-49 YEARS	8	26.66
50-59 YEARS	10	33.33
60-70 YEARS	12	40.00

Patients between the age group of 40-70 years were selected for the present Clinical study. Thedata reveals that majority of the patients (40.00%) were reported in the age group of 60- 70 years, 33.33% in the age group of 50-59 years and 26.66% in the age group of 40-49 years.

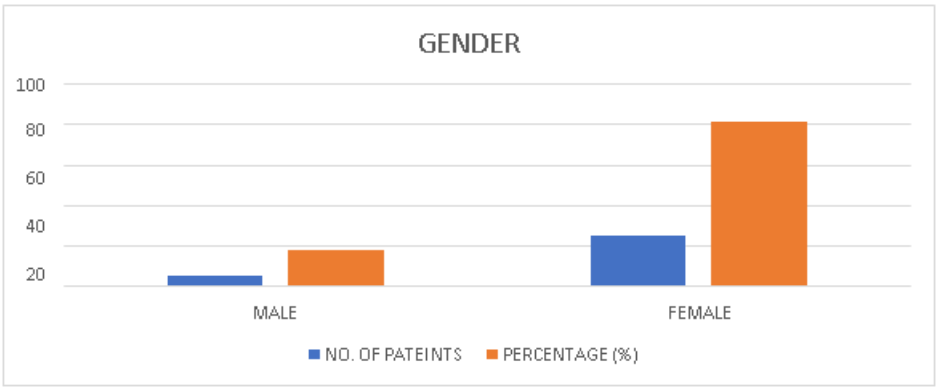


GENDER

Table– Gender Wise Distribution of Patients.

SEX	NO. OF PATEINTS	PERCENTAGE (%)
MALE	5	16.66
FEMALE	25	83.33

Maximum number of patients i.e., 83.33% were female and remaining 16.66% patients weremale.

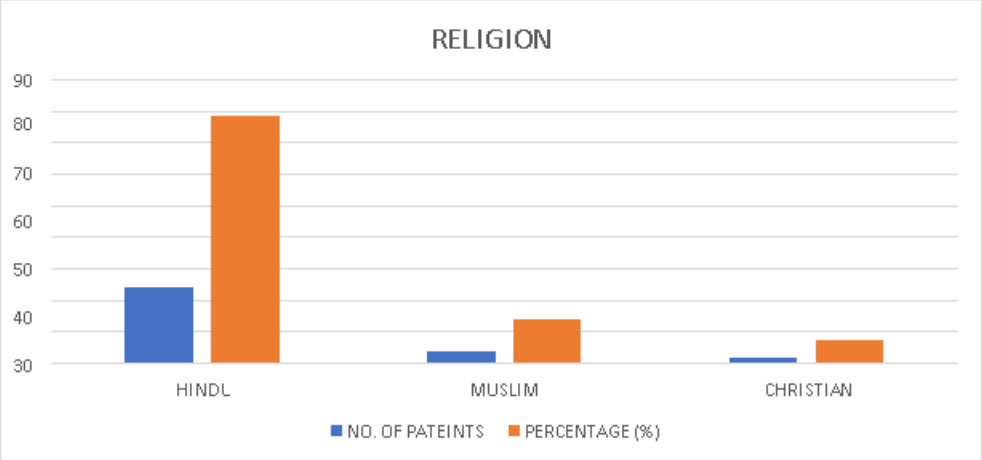


RELIGION

Table: Religion wise Distribution of Patients.

RELIGION	NO. OF PATEINTS	PERCENTAGE (%)
HINDU	24	80.00
MUSLIM	4	13.33
CHRISTIAN	2	6.66

The religion wise distribution showed that 80.00% of patients were belonging to Hindu religionwhile 13.33% of patients were Muslim and 6.66% of patients were Christian.

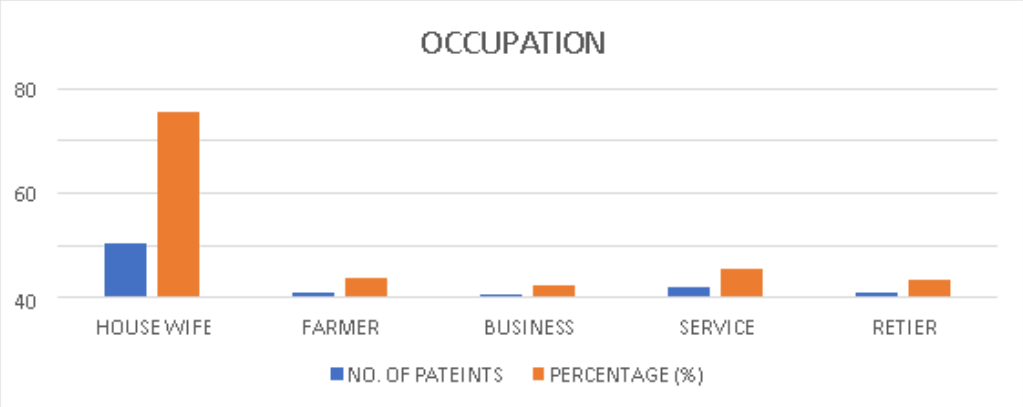


OCCUPATION

Table– Occupation wise Distribution of Patients.

OCCUPATION	NO. OF PATEINTS	PERCENTAGE (%)
HOUSE WIFE	21	70.00
FARMER	2	6.00
BUSINESS	1	3.33
SERVICE	4	13.33
RETIER	2	6.66

In this study House wife were more in number (70.00%), followed by servicemen (13.33%), Farmer and retire were 6.00%, 6.66% and businessmen 3.33%.

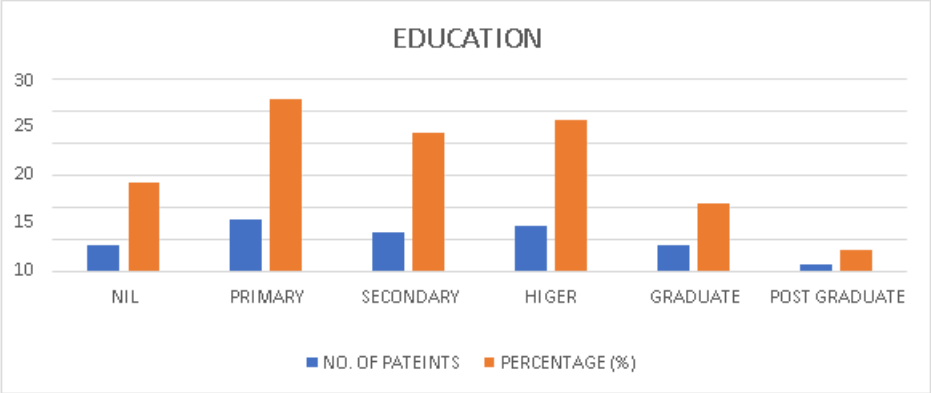


EDUCATION

Table: Education Wise Distribution of Patients.

EDUCATION	NO. OF PATEINTS	PERCENTAGE (%)
NIL	4	10.00
PRIMARY	8	26.66
SECONDARY	6	20.00
HIGER SECONDARY	7	23.33
GRADUATE	4	10.00
POST GRADUATE	1	3.33

As shown in table, maximum number of patients (26.66%) had education up to the primary level followed by 23.33% patients having education up to higher secondary. The 20.00% of patients were Secondary, 10.00% patients were uneducated, 10.00% graduate and rest 3.33% patients were having education up to post graduate level.

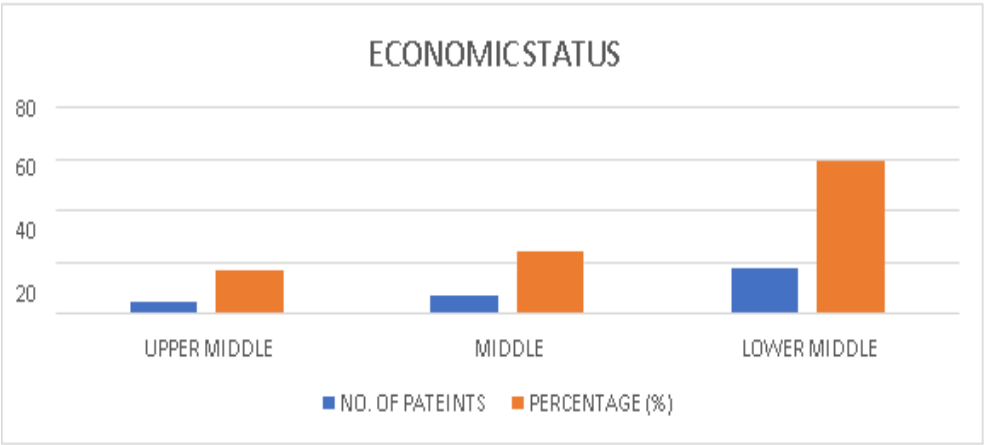


SOCIO- ECONOMIC STATUS

Table: Socio- Economic Status Wise Distribution Of Patients.

ECONOMIN STATUS	NO. OF PATEINTS	PERCENTAGE (%)
UPPER MIDDLE	5	16.66
MIDDLE	7	23.33
LOWER MIDDLE	18	60.00

The present study shows that maximum patients (60.00%) were from lower middle class, while 23.00% from middle class and 16.66% from upper middle class.

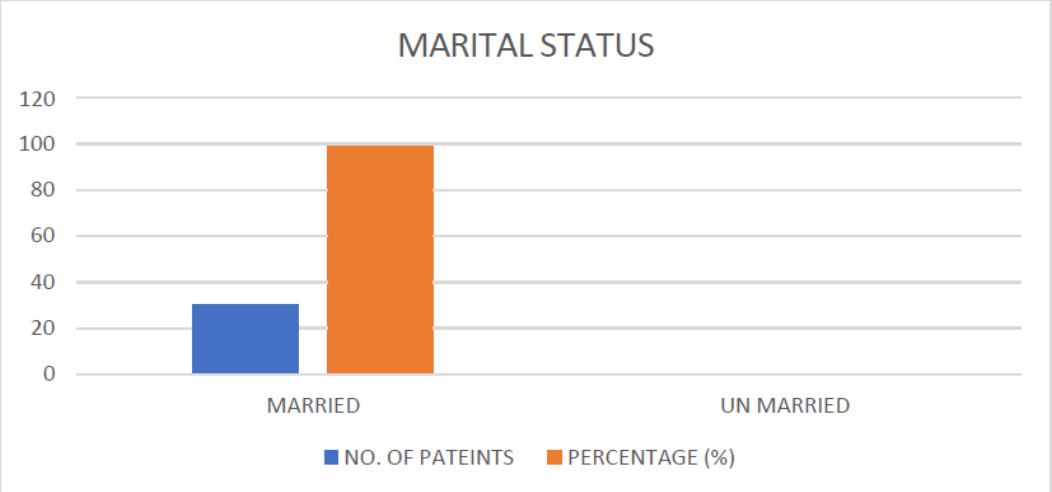


MARITAL STATUS

Table–Marital Status Wise Distribution of Patients.

MARITAL STATUS	NO. OF PATEINTS	PERCENTAGE (%)
MARRIED	30	**100**
UN MARRIED	**0**	**00**

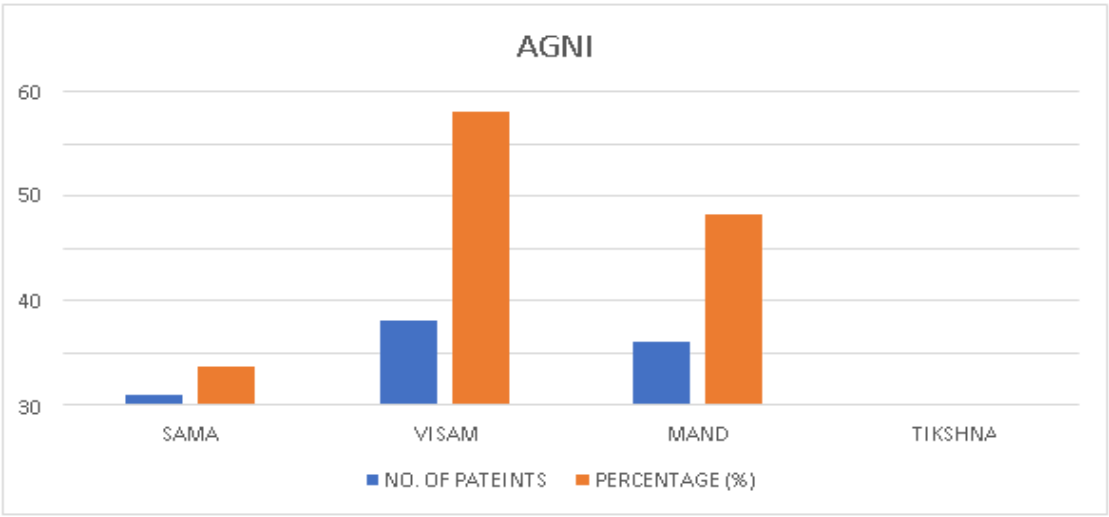
All Patients were 100% married.



Table– *Agni* Wise Distribution of Patients.

AGNI	NO. OF PATEINTS	PERCENTAGE (%)
SAMA*AGNI*	2	**6.66**
VISAM*AGNI*	16	**53.33**
MAND*AGNI*	12	**40.00**
TIKSHNA*AGNI*	**0**	**0**

In this study, maximum patients (53.33%) had Vishmagni followed by 40.00 % having mandāgni,and 6.66 % having samāgni.

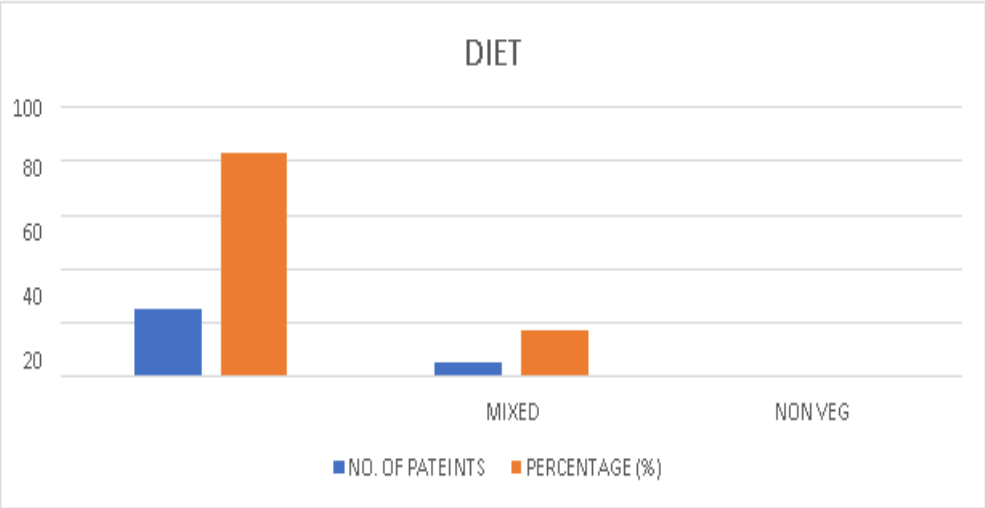


DIET

Table–Diet Wise Distribution Of Patients.

VEG	NO. OF PATEINTS25	PERCENTAGE (%)83.33
MIXED	5	16.66
NON-VEG	0	0

The present study reveals that maximum patients (83.33%) were vegetarian while 16.66% ofpatients were taking mixed diet.

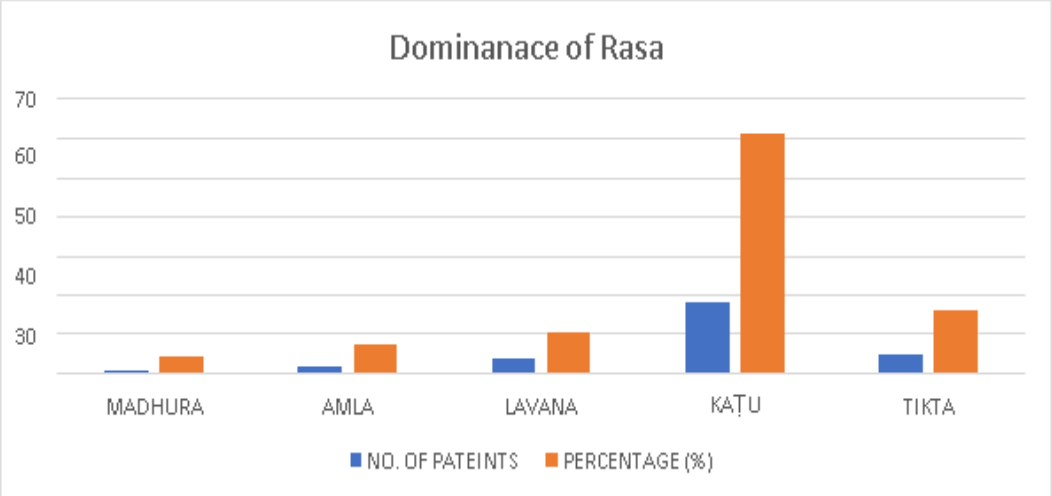


DOMINANCE OF RASA

Table–Dominance of *Rasa* In Diet Wise Distrubution Ofpatients.

Dominance of *rasa*	No. Of pateints	Percentage (%)
MADHURA	1	**3.33**
AMLA	2	**6.66**
LAVANA	4	**13.33**
KAṬU	18	**60.00**
TIKTA	**5**	**16.66**

In this study dominancy of katu rasa in diet was present in 60.00% of patients. It was followedby tikta (16.66%), lavana (13.33%), amla (6.66%) and madhura rasa (3.33%).

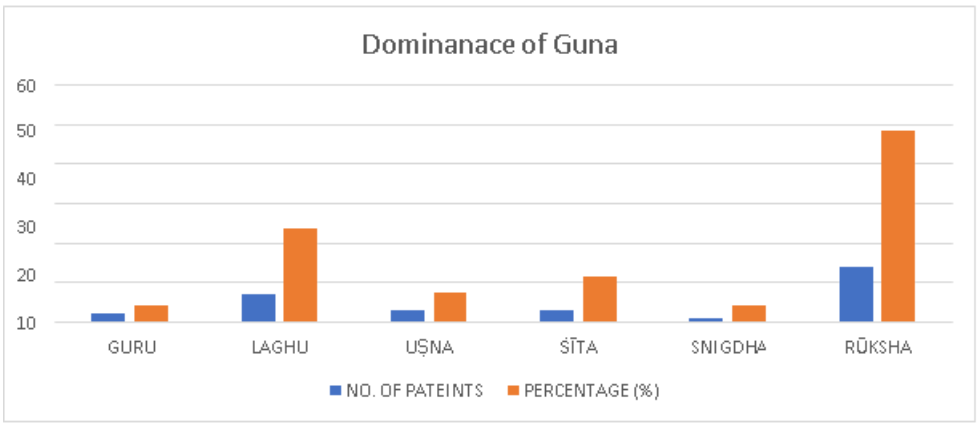


DOMINNCE OF RASA

Table–Dominance of *Guna* In Diet Wise Distrubution Ofpatients.

DOMINANCE OF *GUNA*	NO. OF PATEINTS	PERCENTAGE (%)
GURU	2	6.66
LAGHU	7	23.33
UṢNA	3	10.00
ŚĪTA	3	10.00
SNIGDHA	1	3.33
RŪKSHA	14	46.66

In this study dominancy of Rukshaguna in diet was present in 46.66% of patients. It was followedby laghu (23.33%), śīta (10.00%), Ushna (10.00%) guru (6.66%), and snigdhaguna (3.33%).

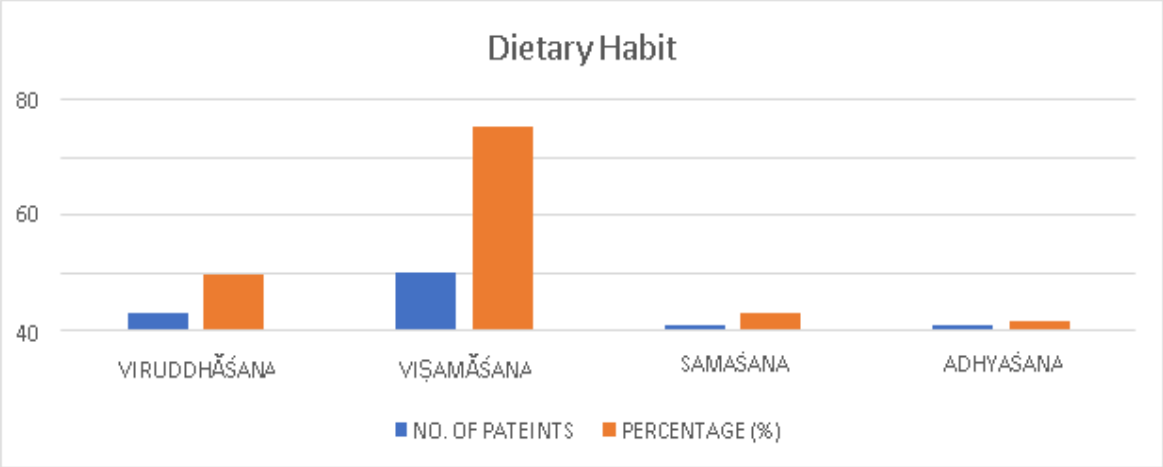


DIETRAY HABIT

Table–Dietary Habit Wise Distribution of Patients.

DIETARY HABIT	NO. OF PATEINTS	PERCENTAGE (%)
VIRUDDHĀŚANA	6	**20.00**
VIṢAMĀŚANA	20	**66.66**
SAMAŚANA	2	**6.66**
ADHYAŚANA	**2**	**6.66**

In this study, maximum patients (66.66%) had habit of viṣamāśana followed by viruddhāśana (20.00%).6.45% and 666% patients having samaśana and adhyaśana habit respectively.



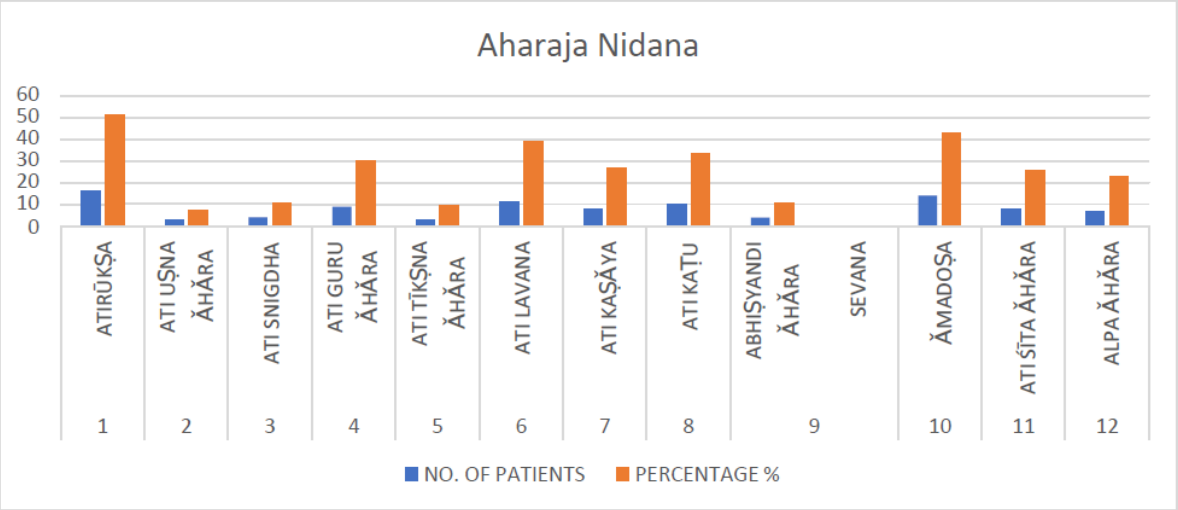
AHARAJA NIDANA

Table– ***Ăhăraja Nidăna*** **Wise Distribution Of Patients**

No.	*Nidăna*	No. Of patients	Percentage %
1.	*ATIRŪKṢA*	16	53.33
2.	*ATI UṢNA ĂHĂRA*	3	10.00
3.	*ATI SNIGDHA*	4	13.33
4.	*ATI GURU ĂHĂRA*	9	44.63
5.	*ATI TĪKṢNA ĂHĂRA*	3	10.00
6.	*ATI LAVANA*	11	36.00
7.	*ATI KAṢĂYA*	8	26.66
8.	*ATI KAṬU*	10	33.33
9.	*ABHIṢYANDI ĂHĂRA SEVANA*	4	13.33
10.	*ĂMADOṢA*	14	46.66
11.	*ATI ŚĪTA ĂHĂRA*	8	33.33
12.	*ALPA ĂHĂRA*	7	23.33

In the present study as *āhārajanidāna,* maximum patients (53.33%) had *atirūkṣa* sevana followed by *āmadoṣa 46.66%* and *ati lavaṇa (36.00%). Atikaṭu (33.33%), ati guru*

(44.63%), atiśīta (33.33%), alpāhāra (23.33%) ati tikshna 10.00%, abhiṣyandi Ahara 13.33% and *atisnigdha(13.33%)* and *ati uṣṇaā hārasevana (10.00%) were present.*

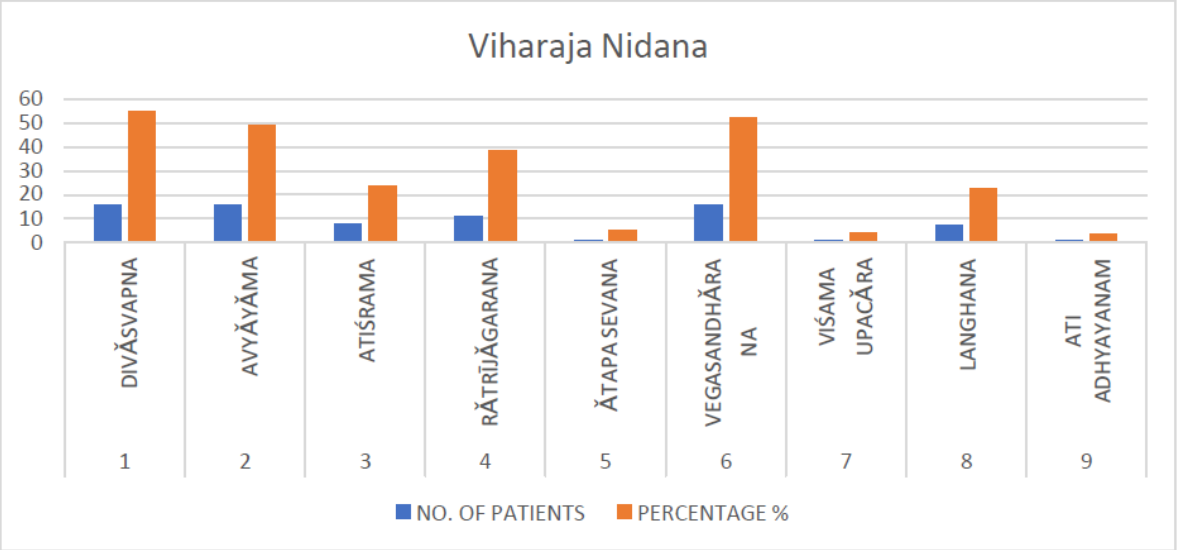


VIHARAJA NIDANA

Table – *Vihăraja Nidăna* Wise Distribution of Patients.

No.	*Nidăna*	No. Of patients	Percentag e %
1.	*Divăsvapna*	16	53.33
2.	*Avyăyăma*	16	53.33
3.	*Atiśrama*	8	26.66
4.	*Rătrījăgarana*	11	36.66
5.	*Ătapa Sevana*	1	3.33
6.	*Vegasandhărana*	16	53.33
7.	*Viśama Upacăra*	1	3.33
8.	*Langhana*	7	23.33
9.	*Ati Adhyayanam*	1	3.33

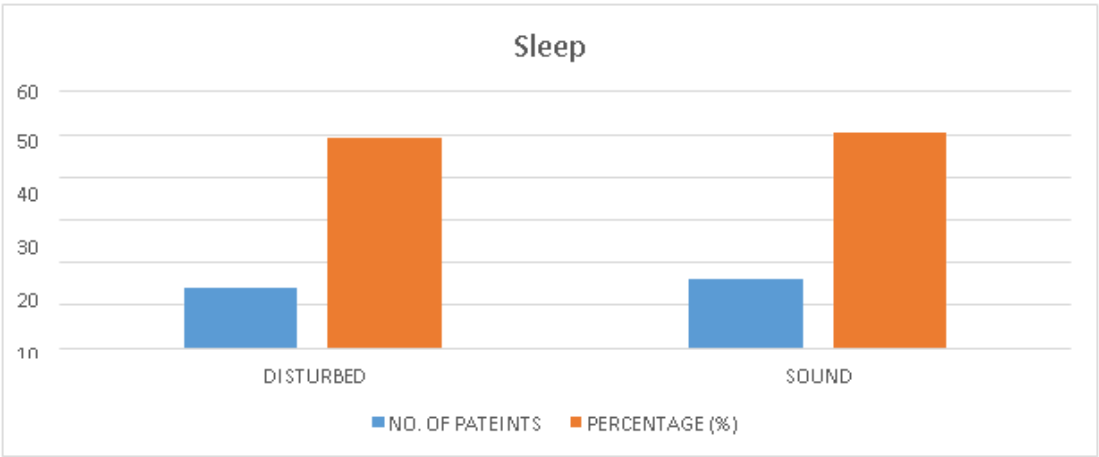
majority of patients (53.33%) were found *divāsvapna* followed by *Vegasandharana (53.33%),avyāyāma (53.33%), rātrījāgaraṇa (36.66%), atiśrama 26.66%* and *laṅghana (23.33%),*and *ātapasevana 3.33%, viśamaupacāra 3.33%* and *atiadhyayanam are(3.33%) as vihārajanidāna.*



SLEEP

Table–Sleep Wise Distribution Of Patients.

SLEEP	NO. OF PATEINTS	PERCENTAGE (%)
DISTURBED	14	**46.66**
SOUND	**16**	**53.33**



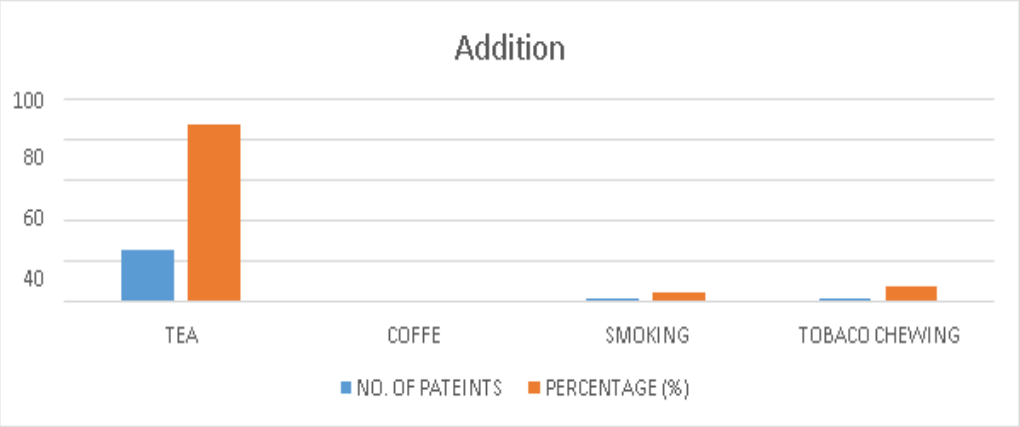
In this study, maximum number of patients (53.33%) had sound sleep followed by 46.66% ofpatients had disturbed sleep.

ADDICTION

Table–Addiction Wise Distribution Of Patients.

ADDICTION	NO. OF PATEINTS	PERCENTAGE (%)
TEA	26	**86.66**
COFFE	00	**00**
SMOKING	2	**6.66**
TOBACO CHEWING	**2**	**6.66**

In the present study, the available data depicts that maximum (86.66%) patients were having addiction of tea, followed by 6.66% of tobacco chewing and 6.66% were having addiction of smoking.

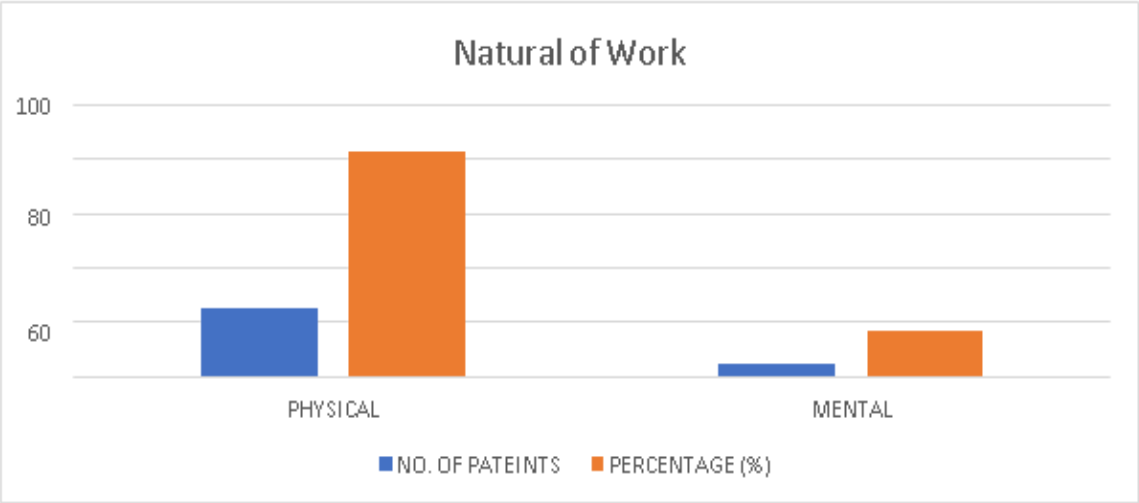


NATURE OF WORK

Table–Nature of Work Wise Distribution Of Patients.

Nature of work	No. Of pateints	Percentage (%)
PHYSICAL	25	**83.33**
MENTAL	**5**	**16.66**

In this study, maximum numbers of patients (83.33%) were having physical nature of workfollowed by 16.66% of patients with mental work.

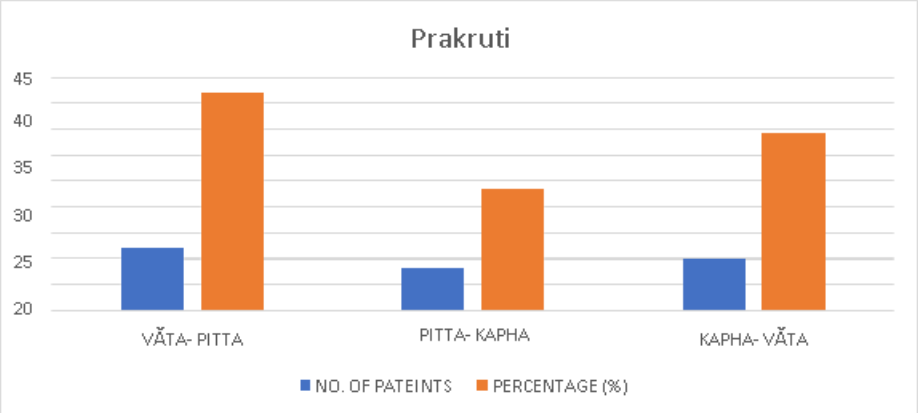


PRAKRUTI

Table–*Prakruti* Wise Distribution of Patients.

PRAKRUTI	NO. OF PATEINTS	PERCENTAGE (%)
VĂTA- PITTA	12	**40.00**
PITTA- KAPHA	8	**26.66**
KAPHA- VĂTA	**10**	**33.33**

This study shows that 40.00% patients were having *vāta-pittaprakruti* while 33.33% patients werehaving *vāta-kaphaprakruti* and 26.66% having *kapha- pitta Prakruti.*

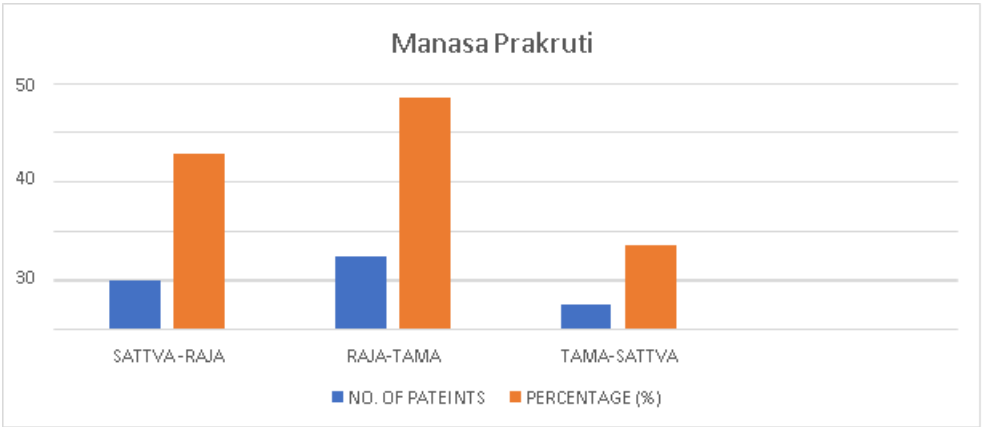


MANASIKA PRAKRUTI

Table– *Mănsika Prakṛti* Wise Distribution Of Patients

Mănsika prikrit	No. Of pateints	Percentage (%)
Sattva -raja	10	**33.33**
Raja-tama	15	**50.00**
Tama-sattva	**5**	**16.66**

The present study shows that maximum numbers of patients (50.00%) were having *rājasikamānasaprakṛti* followed by 33.33% having *sattva-raja mānasaprakṛti* and 16.66 were having *tāmsika –sāttvika mānasaprakṛti*.



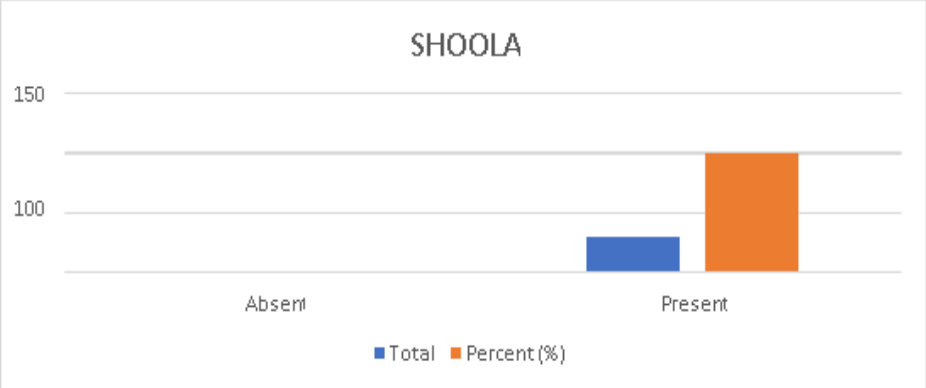
RESULTS

SHOOLA

Table – Shoola.

Shoola	Total	Percent (%)
Absent	00	00
Present	30	100

The present study shows that maximum numbers of patients (100%) were having Present *withShoola.*

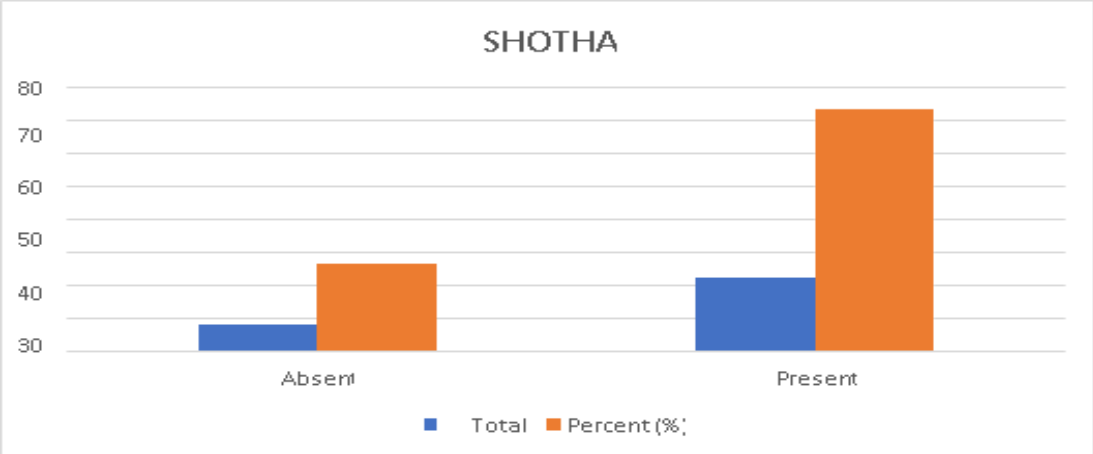


SHOTHA

Table – Shotha.

Shotha	Total	Percent (%)
Absent	08	**26.66**
Present	**22**	**73.33**

The present study shows that maximum numbers of patients (73.33%) were having Present with Shotha followed by 26.66% having absent with Shotha.

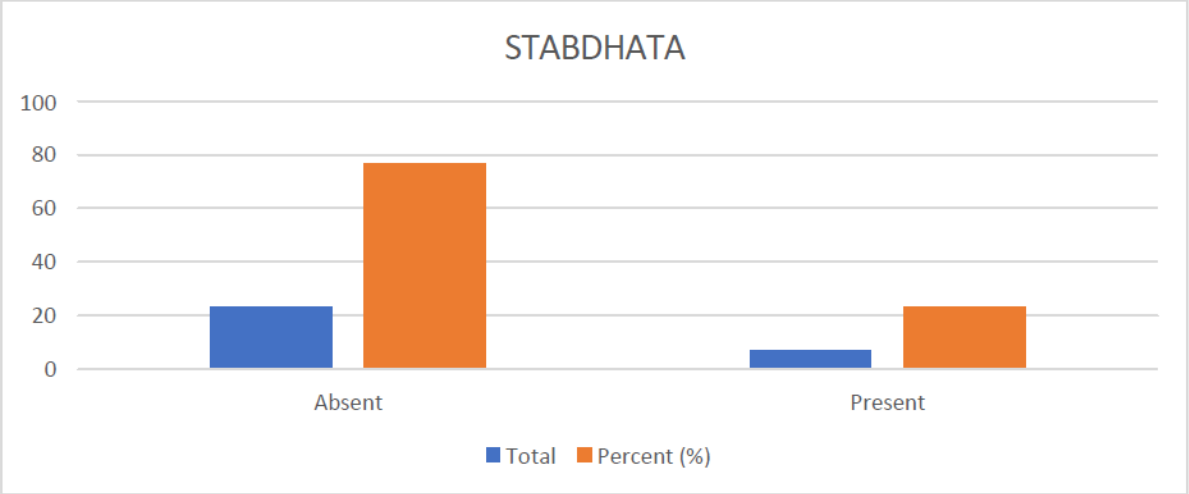


STABDHATA

Table – Stabdhata.

Stabdhata	Total	Percent (%)
Absent	23	**76.66**
Present	**07**	**23.33**

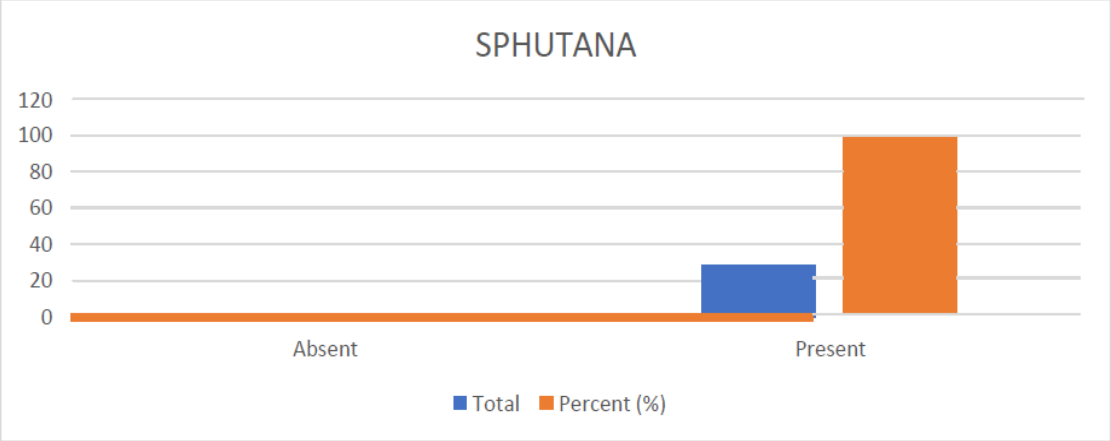
The present study shows that maximum numbers of patients (76.66%) were having Present with Stabdhata followed by 23.33% having absent with Stabdhata.



SPHUTANA

Table - Sphutana

Sphutana	Total	Percent (%)
Absent	01	3.33
Present	29	96.66



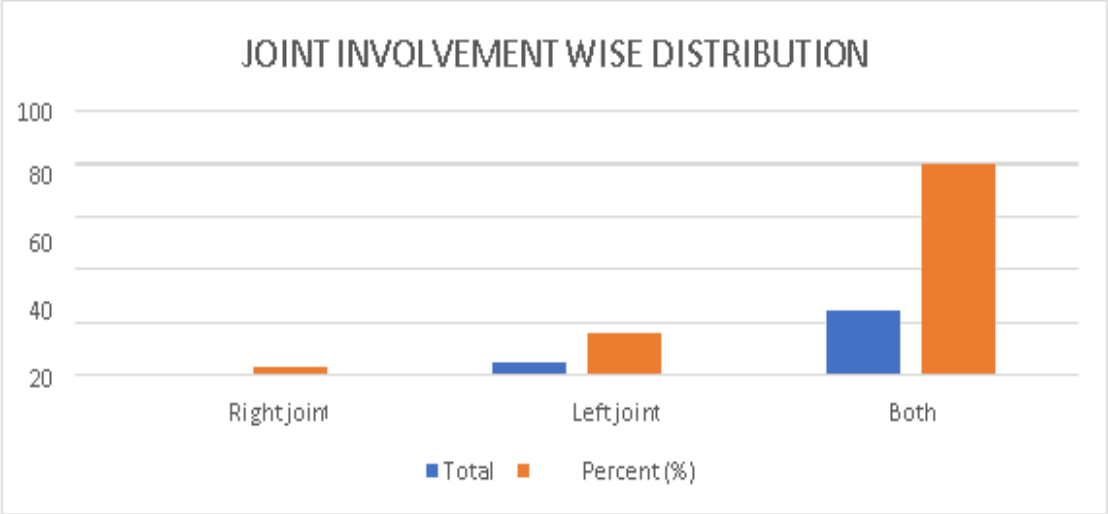
The present study shows that maximum numbers of patients (96.66%) were having Present with Sphutana followed by 3.33% having absent with Sphutana.

JOINT INVOLVEMENT

Table - Joint Involvement Wise Distribution.

Joint	Total	Percent (%)
Right joint	01	3.33
Left joint	05	16.00
Both	24	80.00

The present study shows that maximum numbers of patients (80.00%) were having Present with Both joint involvements followed by Left joint 16.00% and right joint involvement i.e., 3.33%.

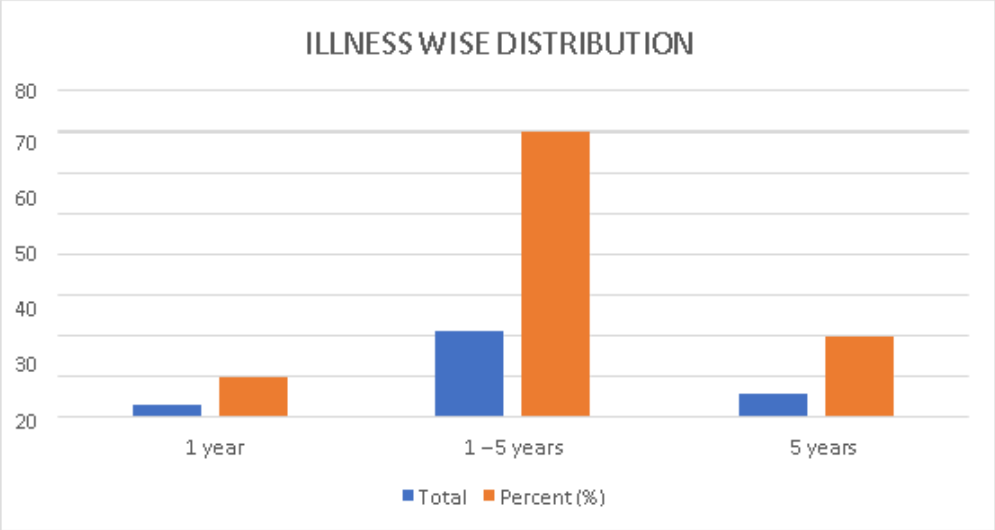


DURATION OF ILLNESS

Table - Duration of Illness wise distribution.

Duration of Illness	Total	Percent (%)
1 year	03	10.00
1 – 5 years	21	70.00
5 years	06	20.00

The present study shows that maximum numbers of patients (70.00%) were having Present with 1-5 Year duration of illness followed by 20.00% 5 years of Duration of illness and 1 yeari.e., 10.00%. duration of illness.



DISCUSSION

Whereas statistical analysis is mostly calculator or computer-based part, interpretation of the results requires critical thinking. The discussion part of the thesis is meant for that.

Discussion on disease review

Sandhigatavāta and osteoarthritis are similar diseases matching on the basis of etio-pathogenesis and symptomatology.

Osteoarthritis is most challenging problem for developing as well as developed countries. This is one of the major causes of chronic disability, affecting the quality of life. According to a survey, osteoarthritis tops all the ailments in the country.

Osteoarthritis is a disease of musculoskeletal system, affecting the joints mostly in elderly population and in weight bearing joints (particularly knee joint). It is a degenerative, low inflammatory disorder, where joint inflammation initially causes pain and later swelling. Due to pain and swelling, the mobility of joints is restricted and on movement results in excruciating pain, which becomes unbearable even on mild touch in the form of tenderness. The degenerative changes later results in manifestation of crepitus. The current standard modern medical pharmacological management of osteoarthritis includes the administration of analgesics and non- steroidal anti-inflammatory drugs (NSAIDs). However, their use neither provides adequate and significant pain relief nor deceleration in disease process. In addition, NSAIDs are associated with adverse effects. Due to which the use of alternative therapies is on the rise.

Interpretation of Observations and Results

Demographical observation

AGE

Patients between the age group of 40-70 years were selected for the present Clinical study. The data reveals that majority of the patients (40.00%) were reported in the age group of 60- 70 years, 33.33% in the age group of 50-59 years and 26.66% in the age group of 40-49 years. Demographic studies revealed that osteoarthritic changes commence between 4th- 5th decades of life. The post-menopausal hormonal variations play a role in bone demineralization. *Sandhigatavāta* is the disease due to *dhātukshaya* naturalconsequence ofold age.

GENDER

Maximum number of patients i.e., 83.33% were female and remaining 16.66% patients Were male

RELIGION

The religion wise distribution showed that 80.00% of patients were belonging to Hindu religion while 13.33% of patients were Muslim and 6.66% of patients were Christian.

OCCUPATION

In this study House wife were more in number (70.00%), followed by servicemen (13.33%), Farmer and retire were 6.00%, 6.66% and businessmen 3.33%.

EDUCATION

As shown in table, maximum number of patients (26.66%) had education up to the primary level followed by 23.33% patients having education up to higher secondary. The 20.00% of patients were Secondary, 10.00% patients were uneducated, 10.00% graduate and rest 3.33% patients were having education up to post graduate level.

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The present study shows that maximum patients (60.00%) were from lower middle class, while 23.00% from middle class and 16.66% from upper middle class.

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All Patients were 100% married.

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The present study reveals that maximum patients (83.33%) were vegetarian while 16.66%of patients were taking mixed diet.

DOMINANCE OF RASA

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In this study dominancy of Rukshaguna in diet was present in 46.66% of patients. It was followed by laghu (23.33%), śīta (10.00%), Ushna (10.00%) guru (6.66%), and snigdhaguna (3.33%).

DIETRAY HABIT

In this study, maximum patients (66.66%) had habit of viṣamāśana followed by viruddhāśana (20.00%).6.45% and 666% patients having samaśana and adhyaśana habit respectively.

AHARAJA NIDANA

In the present study as *āhārajanidāna,* maximum patients (53.33%) had *atirūkṣa* sevana followed by *āmadoṣa 46.66%* and *ati lavaṇa (36.00%). Atikaṭu (33.33%), ati guru (44.63%), atiśīta (33.33%), alpāhāra (23.33%) ati tikshna 10.00%, abhiṣyandi Ahara 13.33%* and *atisnigdha (13.33%)* and *ati uṣṇaā hārasevana (10.00%) were present.*

VIHARAJA NIDANA

majority of patients (53.33%) were found *divāsvapna* followed by *Vegasandharana (53.33%),avyāyāma (53.33%), rātrījāgaraṇa (36.66%), atiśrama 26.66%* and *laṅghana (23.33%),*and *ātapasevana 3.33%, viśamaupacāra 3.33%* and *atiadhyayanam are(3.33%) as vihārajanidāna.*

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In this study, maximum number of patients (53.33%) had sound sleep followed by 46.66%of patients had disturbed sleep.

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In the present study, the available data depicts that maximum (86.66%) patients were having addiction of tea, followed by 6.66% of tobacco chewing and 6.66% were having addiction of smoking.

NATURE OF WORK

In this study, maximum numbers of patients (83.33%) were having physical nature of work followed by 16.66% of patients with mental work.

PRAKRUTI

This study shows that 40.00% patients were having *vāta-pittaprakruti* while 33.33% patients were having *vāta-kaphaprakruti* and 26.66% having *kapha- pitta Prakruti.*

MANASIKA PRAKRUTI

The present study shows that maximum numbers of patients (50.00%) were having *rājasikamānasaprakṛti* followed by 33.33% having *sattva-raja mānasaprakṛti* and 16.66 werehaving *tāmsika –sāttvika mānasaprakṛti*.

RESULTSSHOOLA

The present study shows that maximum numbers of patients (100%) were having Present *with Shoola*

SHOTHA

The present study shows that maximum numbers of patients (73.33%) were having Present with Shotha followed by 26.66% having absent with Shotha.

STABDHATA

The present study shows that maximum numbers of patients (76.66%) were having Present with Stabdhata followed by 23.33% having absent with Stabdhata.

SPHUTANA

The present study shows that maximum numbers of patients (96.66%) were having Present with Sphutana followed by 3.33% having absent with Sphutana.

JOINT INVOLVEMENT

The present study shows that maximum numbers of patients (80.00%) were having Present

with Both joint involvements followed by Left joint 16.00% and right joint involvement i.e., 3.33%.

DURATION OF ILLNESS

The present study shows that maximum numbers of patients (70.00%) were having Present with 1-5 Year duration of illness followed by 20.00% 5 years of Duration of illness and 1 year i.e., 10.00%. duration of illness.

SUMMARY

This dissertation work entitled ***A CLINICAL STUDY OF SANDHIGATAVATA (OSTEOARTHRITIS) THROUGH NIDANA*** comprises of five parts, namely, introduction, conceptual part, clinical study, discussion and conclusion.

Introduction: is the first part, comprising a brief introduction to the Sandhigata Vata in Ayurvedic and osteoarthritis in modern parlance.

Need for study: Sandhigata Vata encompasses many diseases in which the Sandhi Shotha, Sandhi Shoola, that increases on rest or movement. Hence an attempt will be made to study the features of sandhigata Vata in relation to osteoarthritis.

Conceptual part: Conceptual part comprises three separate chapters. In first chapter, where the etymological derivation of the word Sandhigata Vata and also brief historical review of disease Sandhigata Vata starting from Vedic period to this age is dealt. The second chapter elaborates the comprehensive narration of the disease Sandhigata Vata. A detailed description regarding the possible nidana is analyzed. An attempt is madeto build the probable samprapti in accordance with the nidana. The Poorvaroopa of disease Sandhigata vata are explained. Lakshanas are explained in detail, other topics i.e., Sapeeksha nidana, Sadhyasadhyata are explained in detail.

Clinical Study: The material and methods of the present work with complete description of the observational study are given here. In this study 30 patients having pratyatma lakshanas of sandhigata vata were enrolled for the study. Diagnosis was made on the basis of clinical presentations. The observations of the study include the epidemiological and etiological factors of the disease. The observations and results are presented in the form of tables and graphs.

DISCUSSION

This part deals with discussion regarding the clinical study, starting from the incidence of the disease to the clinical observations. Here an attempt is made to establish the probable cause f o r the observational finding.

CONCLUSION

- Sandhigata Vata is more common in elderly, due to the jeernavastha. In this present study, 40% of patients were aged between 60 -70 years were affected.
- Dosha bala, janma bala, adi bala and Sanghata bala pravrutta vikaras plays an important role, hence it can be considered as utpadaka hetu.
- In this present study 40% of patients were vatapittaja prakruti. 33.33% of vatakaphaja Prakruti persons had sandhigata vata.
- Sandhi is a marma and also a Madhyama roga marga vikara which occurs in Vruddha avastha, so it is considered to be kasta sadhya.
- Symptoms like sandhi Shotha, stabdhata, sandhi sphutana, Prasarana and Akunchan vedanah which were present in most of the patients.
- In this study, 83.33% of patients were females. Even the modern science of medicine mentions the prevalence of osteoarthritis in females than in males. However, the reason behind it is elusive.
- However, the present Research study is very small and further study may be required to ascertain the pathogenesis.

CONCLUSION

- Sandhigata Vata is more common in elderly, due to the jeernavastha. In this present study, 40% of patients were aged between 60 -70 years were affected.
- Dosha bala, janma bala, adi bala and Sanghata bala pravrutta vikaras plays an important role, hence it can be considered as utpadaka hetu.
- In this present study 40% of patients were vatapittaja prakruti. 33.33% of vatakaphaja Prakruti persons had sandhigata vata.
- Udbhava sthana of sandhigata vata is pakwashya, which is also the sthana of vata dosha. This is important from the point of treatment and management.
- The nidana and lakshana explained in sandhigata vata is almost similar to the etiology and classification of osteoarthritis.
- Sandhi Shoola is the main symptom seen in sandhigata vata. In this study, all the patients

showed this symptom.

- Sandhi is a marma and also a Madhyama roga marga vikara which occurs in Vruddha avastha, so it is considered to be kasta sadhya.
- Symptoms like sandhi Shotha, stabdhata, sandhi sphutana, Prasarana and Akunchan vedanah which were present in most of the patients.
- In this study, 83.33% of patients were females. Even the modern science of medicine mentions the prevalence of osteoarthritis in females than in males. However, the reason behind it is elusive.
- However, the present Research study is very small and further study may be required to ascertain the pathogenesis.

LIMITATION OF STUDY

- This study has been conducted on small number of Sample Size.
- Duration of Study is less.
- This study should be conducted on large sample size.

FURTHER SCOPE OF STUDY

- This study can be done on large number of patients with different Variables to make this study is more valuable.
- we can take a greater number of Variables and patients to assess the more accurate data from this study.

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