STUDY OF *OJA* IN SUSHRUT SAMHITA -DALHAN COMMENTARY WITH SPECIAL EMPHASIS ON OBSERVATION OF *OJAKSHAYA* IN TYPE 2 DM

A THESIS

SUBMITTED TO THE

TILAK MAHARATSHTRA VIDYAPEETH PUNE

FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

IN AYURVEDA SAMHITA

UNDER THE BOARD OF AYURVED STUDIES



28.01.2020.

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28/01/20

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CERTIFICATE OF THE SUPERVISOR

It is certified that work entitled 'Study of oja in Sushrut Samhita-Dalhan commentary with special emphasis on observation of *ojakshaya* in type 2 DM' is an original research work done by Vd.Govind Yadaorao Khati under my supervision for the degree of Doctor of Philosophy in Samhita Siddhant to be awarded by Tilak Maharashtra Vidyapeeth,Pune.To best of my knowledge this thesis

- Embodies the work of candidate.
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- Fulfils the requirement of the ordinance related to Ph.D. degree of the TMV.
- Upto the standard in the respect to both content and language for being referred to the examiner.

Signature of the Supervisor

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Undertaking

I Vd.Govind Yadaorao Khati is the Ph.D Scholar of the Tilak Maharashtra Vidyapeeth in Ayurved Samhita Subject.Thesis entitled Study of oja in Sushrut Samhita Dalhan commentary with emphasis on observation of ojakshaya in type 2 DM under the supervision of Dr.S.P.Sardeshmukh,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work.I have not copied it from any source.I have gone through extensive review of literature of the related published/unpublished research works and the use of such references made has been acknowleged in my thesis.The title and the content of research is original.I understand that ,in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plagiarism,regarding my Ph.D. thesis(or part of it) is found duplicate at any point of time,my research degree will be withdrawn and in such circumstances,I will be solely responsible and liable for any consequences arises thereby,I will not hold the TMV,Pune responsible and liable in any case.

I have signed the above undertaking after reading carefully and knowing all the aspects therein.

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ACKNOWLEDGEMENT

The inspiration for my this PhD Thesis lies in the speech "Ashtabindu Oja" by my Guru Dr.S.R.Joshi in 1990 from Mittal Ayurveda Mahavidyalaya.While studying the concept of Oja through various Ayurveda classics I found that in Sushruta Samhita the concept of Oja,its characteristics,symptoms of Prakruta Oja,causes and symptoms of Vikruta Oja and types of Oja kshaya have been elaborated clearly.

From many years of clinical practice I found the symptoms of Oja kshaya i.e. vistramsa,vyapada,kshaya in kapha pradhan and chronic diseases.And the thought to verify this in diabetic patients began.The same was found in reality.Based on actual facts and classical references for the sake of research anaylsis I decided to take this topic.

In this work I got valuable guidance and inspiration from my Guide Vaidya Sardeshmukh Sir.I am sincerely grateful for his worthy guidance.The co-operation,inspiration and guidance of Dr.S.R.Joshi,Ex Principal Vasantdada Ayurveda Mahavidyalay proved fruitful.I express my sincere gratitude towards him.In this period I got blessings of my mother.For all my work I got co-operation from my following colleagues.Vaidya Krishna Rathod for statistical work,Vaidya Deepa Rananavare for proof reading and Vaidya Siddhi Nachankar for the final editions.I got valuable cooperation from Vaidya Aditi Kulkarni,Assisstant Professor(Rasshastra).Also the assistance from the colleagues of my Samhita department,Vaidya Sabu,Vaidya Nimbalkar,Vaidya Madhuri Pachghare and Vaidya Talmale,Dravyaguna department is also unforgettable.

Lastly during 2010 to 2018 due to critical health issues,3 angioplaties, daily dialysis and rebirth through kidney transplantation finally this thesis has been presented.

I am indebted to Vaidya Abhijeet Joshi, Registrar Tilak Maharashtra Vidyapeetha.

In this rebirth it will be very unkind to not mention the name of my wife Mrs.Varsha. My both sons Mr. Unmesh and Mr. Kausthubh gave their valuable support which is unforgettable.Mr.Unmesh,an IITian with the experience of completing his PhD helped me with my Ayurveda PhD thesis and suggested corrections in it.Lastly I owe alot to my family.

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LIST OF ABBREVIATIONS

Texts

च.सं.	Ch.Sa.	Charak Samhita(चरक संहिता)
सु.सं.	Su.Sa.	Sushrut Samhita(सुश्रुत संहिता)
अ.ह्र.	A.H.	Ashtang Hridaya(अष्टांग संहिता)
अ.सं.	A.S.	Ashtang Sangraha(अष्टांग संग्रह)
शा.सं.	Sh.S.	Sharangdhar Samhita(शारंगधर संहिता)
मा.नि.	Ma.Ni	Madhav Nidan (माधव निदान)

Topics

सू.स्था.	Su.	Sutrasthan (सूत्र स्थान)
नि.स्था.	Ni.	Nidansthan(निदान स्थान)
शा.स्था.	Sha.	Sharirsthan(शारीर स्थान)
वि.स्था.	Vi.	Vimansthan(विमान स्थान)
उ.स्था.	U.	Uttarsthan (उत्तर स्थान)
चि.स्था.	Chi.	Chikitsasthan(चि.स्थान)

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Introduction

Ayurveda is oldest prevalent medical science that has stood the test of time with its holistic preventive and curative treatment principles[1].Historically it is about 5000 years old and has no parallels in history. Even today, Ayurveda is recognized only as a traditional system of medicine, without acknowledging that it is based on bio-physical scientific system of medicine. The modern medicine is based on the human bio-chemistry, whereas Ayurveda is based on the human bio-physics. In ancient times (i.e. before advances in bio-chemistry post discovery of benzene ring structure by Kekule in 1865), bio-chemistry and bacteriology were not particularly well developed. Preliminary bio-chemistry developed during this duration involved a deeper understanding of basic bio-chemicals such as alcohols (*asavas*) and acids (*shukta*). Due to very basic understanding of bio-chemistry, more importance was given to an in depth understanding of the bio-physical aspects of human body. The fundamental concept of Ayurved as scientific system of medicine is based on the great discovery of ***Charaka*** who postulated that the human body is a microcosm of the universe i.e. *purusoyam loka sammhita*[2]. In a basic bio-physical concept, the human body is composed of five elemental states they are *Prithvi Apa ,Tej, Vayu* & *Akasha*[3].

The word *Ayu* means the life energy or the life force & the lifespan also and the word *veda* stands for a comprehensive knowledge of health, illness and treatment[4]. The entire science and practice of Ayurveda is based on some basic principles of life and human body and they are known as '*Siddhant*'[5]*in* the Ayurvedic literature.

Among these principles they are:

- *Panchamahabhoota Siddhant*[6]
- *Dosha-Dhatu-Mala Siddhant*[7]
- *Rasa-Veerya-Vipak Siddhant*[8]
- *Aatma and-mana- Siddhant*[9]
- *Dig-and-Kaal Siddhant*[10]
- *Agni Siddhant*[11]

Various authors like Ranjit Rai Desai, Vinayak Thaker, Govind Hari Thathe, V M Gogate, Rajkumar Jain, S C Dhaini have carried out work on the above principles. However, in two of the principles, *Dosha-Dhatu-Mala* and *Agni Siddhant*, the term of *Oja* is encountered. This term has

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led to much confusion among the research community. Its exact meaning and importance is not understood completely. The *Oja* has various meanings and connotations in different references. It forms an important link to all the metabolic activities throughout the human life. This forms the motivation to study and understand the concept of *Oja* and analyze its relationship with chronic human diseases.

Concept of Oja

In Ayurvedic literature the term *Oja* is recognized as one of the most important, vital and radiant element of the human body but it's exact nature is not understood by the Ayurvedic research community. The entire metabolic activities occurring in the human body throughout the lifetime are primarily dependent on *Oja*. The term *Oja* is occasionally ascribed to the vital body elements viz. *Dosha, Dhatu, Mala* according to its peculiar patterns of manifestation and in addition to this tri-phasic behavior. *Oja* also manifests itself in the form of radiant energy alone in the human body.

The term *Oja* can be studied in the following manner-

- *Oja* in the form of *Shleshma*[12]
- *Oja* in the form of *Dhatus- Rasa* and *Rakta*[13]
- *Oja* in the form of *Dhatu-sara*[14]
- *Oja* in the form of *Dhatu-mala*[15]
- *Oja* in the form of *Ushma*[16]
- *Oja* in the form of *Pranayatan*, *Dhari*, *Chaitanya*.[17]
- *Oja* in the form of *Strava*[18]
- *Oja* in the form of *Bala*[19]
- *Oja* in the form of *Upa-Dhatu*[20]

Concept of *madhumeha*

Madhumeha word is derived from two words *madhu* & *meha*. *Madhu* means honey and *Meha* means excretion of excessive urine.[21] There are 20 types of *prameha*.

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Among these 20 types of *Prameha* 10 are of *Kapha* 6 are of *pitta* and 4 are *Vata Prameha*, *Madumeha* is one of the type of *Vataja Prameha*. Rest of these 19 types of *Prameha* if not properly treated leads to *Madumeha*. *Vata* gets vitiated due to *margavrodh* or *dhatukshaya* in *Madumeha*. This Vitiated *Vata* drags out *Oja* from the body. This *Oja* is excreted through urine in *Madumeha*.[22]

Madhumeha is correlated with Type II Diabetes mellites. Hence this thesis deals with *Oja kshaya* in type 2 DM and chronology of *Oja dushti.*

Motivation

Oja has been extensively studied in Ayurveda and yet it has not been completely possible to accurately decipher its exact meaning and establish its correlation with any specific entity/element of the human body. There are very few documentations, dissertations and thesis available on *Oja*.

The present topic was selected for PhD study for the following reasons:

Madhumeha (Diabetes Mellitus) is one of the most prevalent metabolic diseases in India.

Madumeha has been described in Ayurvedic texts as a disease that is foremost in causing complications and morbidity that can be controlled with effective treatment but cannot be cured completely.

There are textual references stating that in cases of *Madumeha Oja* is excreted through urine and gradually *Oja Kshaya* occurs in *Madumeha*.

During my Post Graduate study in the subject of Ayurveda Samhita my research topic was *Madumeha* and the concepts of *Oja Kshaya* occurring in *Madumeha* as stated by *Charak Samhita, Sushrut Samhita, Ashtanga Sangraha* and *Ashtanga Hridaya* which were further clarified.

After thorough study of all textual references related to *Madumeha* & *Ojakshaya* and with my past 30 years of clinical experience, it has been noted that in *Madumeha*, *Oja Kshaya* occurs in a chronological manner as *Oja Vistramsa, OjaVyapad* and *Oja Kshaya* respectively which is described in detail in *Sushrut Samhita* and elucidated in its commentary by *Dalhana*. Also in the *Nibhandhasangraha* commentary of *Dalhan* on *Sushrut Samhita Oja Kshaya* has been divided

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into *Vistramsa ,Vyapad* and *Kshaya* i.e. *trayo dosha*. So in this present study the term *Oja Kshaya* in the title has been broadly used for the *vistramsa, vyapad & kshaya.*

Innovation

Present thesis is aimed to analyze the relation between *oja vistramsa, vyapad* and *kshaya* and chronicity of type 2 DM .

Sushrut Samhita and *Charak Samhita* also uses the term *Bala* to denote Oja.

In Ayurvedic texts the term *Bala* is used to denote physical strength (-), tissue strength and vitality (*Dhatu-Teja* or *Sara*) and immunity (*Vyadhikshamatva*). *Oja* or *Bala* is inherently present in all the *Dhatus* from *Rasa Dhatu* to *Shukra Dhatu*. It is also stated in the texts that if *Madhumeha* is not treated timely and properly then gradually and eventually there is depletion of all the *Dhatus* and concurrently *Bala Vistramsa,Bala Vyapad* and *Bala Kshaya* synonymous with *Oja Vistramsa,Ojo Vyapad* and *Oja Kshaya* occurs.

The present Research topic has been selected to determine the nature of correlation between the progressive stages of *Madhumeha* vis-à-vis type II Diabetes Mellietus and the signs and symptoms of *Oja/BalaVisramsa, Vyapad* and *Kshaya* described in *Sushrut Samhita* and elucidated in its *Dalhan commentary* along with Blood Sugar level as a marker.

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Aim and Objectives

AIM

The aim of the research work is to understand the *Oja* in the Commentary by Dalhan on Sushrut Samhita and to establish a relationship between *Oja kshaya* and Type II DM.

OBJECTIVES

This aim would be achieved through the following sub-objectives

1. To interpret the term *Oja* and its different aspects.
2. To observe the importance of *Oja* during health and disease state.
3. To observe symptoms of *Ojavistramsa, Ojavyapad* & *oja kshaya* in type 2DM.

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LITERATURE REVIEW

Importance of *Oja* in life:-

"औजसा वर्तयन्ति प्रीणिता: सर्वदेहिन: ।"[22] .

Every living thing and its vaiability is dependent on *Oja*. The metabolic functions depend upon *Oja*.Thus *Oja* stands as the vital force which protects the life and appears as powerhouse which provides continous energy for all the activities.

Oja- Definition, Origin, Site, Types, Properties, Functions.

(1) The word Oja *Nirukti* (derivation) has been given as

ओज बले अद् चुरा उभ अक सेट् ओजस तिने

ओजस् नं उड् असुन बलोपे गुण: ।

दीप्तो, अवष्टम्भे, प्राणबले,प्रकाशे,सामर्थ्ये । शब्दस्तोममहानिधी

ओजो दीप्तौ बलं,उब्जति अनेन वा ।

उब्ज आर्जवे उब्जर्जले बलोपश्च । उ.4/192 इक्ष्यसुन् [23]

(2) *OJA* Definition:--

Oja is the most vital component of all the tissues or the *Utkrushta Amsha* or the *Sara* of all the *Sapta Dhatus* i.e. from *Rasa* to *Shukra* & it is also known as *Bala*[24].

Oja is of prime importance and essential thing for living. The *Oja* is said to be namely of two varieties namely *Para oja* and *Apara Oja*.[25]

Para Oja

All living organisms reproduce. In human being fertilization of ova occurs in present of a vital force. This vital force can be termed as *Oja*. *Oja* is in *shukra(*sperms*)* and *shonit* (ova)without which fertilization does not occur[26]. The fertile ova develops in to foetus because of *Oja* only. When fertilization occurs in presence of *Atma* and *Oja*; the fertile ova goes through many

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developmental stages, morula, blastula etc. and for this *Oja* is essential. In second trimester the heart of the foetus starts developing

.The *Oja* resides in heart and from there it governs all developmental process. The *oja* which is present in the heart is known as *Para Oja*[27].

Mana and its properties, *Atma* and its properties,*Dashendriya* and its perception, all are in the heart hence *Para Oja* govern all the activities of *atma*, *mana and indiriya*.[28]

Para Oja is reddish, yellowish, whitish substance[29].But in the foetal stage it is of ghee colour, taste like honey, smell like puffed rice[30].

Quantity wise it is supposed to be eight drops of honey[31].

Synonyms of *Para oja* are *Chaitanya*[32],*Dhari*[32],*Pranayatan*[34]etc.

Apara Oja

Apara oja is circulated all over the body through arteries which are known as *ojovahadhamani*[35].*Apara oja* is also developed during foetal stage. The *oja* which is stable in the heart is known as *para oja* and which is circulated all over the body which not stable is known as *Apara oja.* It is supposed that in eighth month of pregnancy this *Apara oja* moves from foetus to mother and mother to foetus[36]. The *apara oja* which is circulated all over the body is supposed to be *Ardhanjali* in quantity.

The synonyms of *Apara oja* are *Rasauja*[37],*shleshmikoja*[38], *Jivshonit oja*[39],*Osmaoja*[40],*Garbharasasaraoja*[41] , *shukra sar oja* [42], *sukra mal oja*[43], *updhatu of Shukra*[44] , *sara of all the dhatus*[45]*Sarvadhatudiptamshaoja*[46],*bala*[47],*Soma*[48]. All the qualities of *Dhatu* are present in the *Oja* & it is known as *Bala*.That means powers, strength, might, vigor. Disturbance of this *apara oja* leads to gradual degeneration of body. In *Rajakshama*, *shatakshin* there is *kshaya* of *RasaOja*[49]. In *pandu*, there is *kshaya* of *Raktauoja*[50]. In alcoholic patients there is *kshaya* of qualities of *oja*[51]. In *madhumeha* there is *kshaya* of *apara oja* qualitatively and quantitatively[52].

Bala is synonym of *Oja*[53].The nourishment of *bala* is done by *sara* of all *dhatus*[54]. The food which we eat is digested by *Agni*. *Agni* converts the food into *Ahara rasa* and hence all the seven *dhatus* formed. The *teja* of seven *dhatu* or *sara* of seven *dhatus* is *Oja* and it is known as *Bala*. So *Bala* directly depends upon quality and quantity of food and *Agni*[55].

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Bala is of three types:-*Sahaja, Kalaj &Yuktikrit*[56].The resistance towards the disease is dependent upon *Bala*. *Bala* enhances all the activities of the body. If *Bala* decreases there is weakness. It leads to vitiation of doshas. Because of this disease process activates. Intake of *madhur rasa*, milk, milk product, properly cooked delicious food, *Udid dala, satu, yava*, non-vegetarian & eating food after proper digestion of previous meal also increases bala.balvan i.e. a healthy strong person is always good in strature , full of zest, active and can work for long time without any break. [57] Those who possesses kapha prakruti, and all the ten sensory organs i.e. Dash dyannedriya unaffected is known as a natural healthy *Balvan* person.[58].

Properties of *Oja*

The substance which is possessing qualities and action and reflects according to their qualities and function are known as *Dravya.Oja* has properties and have functions therefor it is a *Dravya*[C.S.1/51pp13].

Table 1. *Gunas* of *Oja* according to Charak, Sushrut, Samhitas and Vagbhat as below.

Charak[59]	Sushrut[60]	Vagbhat[61]
Guru	-	-
Sheet	*Sheet*	-
Mrudu	*Mrudu*	-
Snigdha	*Snigdha*	*Snigdha*
	Sara	
	Mrutsna	
	Vivikta	
	Pranaytana	

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	Somatmak	
		Sukla
		Isha lohit pitkam
Slakshna	-	
Bala	-	-
Madhur	-	-
Sthir	*Sthir*	-
Prasanna	-	-
Picchil	-	-

Table 2. Causes of *Ojakshaya* according to *Sushrut & Charak*

Reason of *oja kshaya*	**Meaning**
***Sushrut*[62]**	
Abhighatat	Accidental injury
Ksayat	Quantitative deficiency
Kopat	Anger
Shokat	Mourning
Dhyanat	Sever stress
Shramat	Exhaustion
Kshudhat	Sever hunger

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Charak[63]	
Shokat	Mourning
Ruksha.Alpa,Rukshapan, Pramitashan	
Prajagrana	
Kapha,shonit,Sukra or Mala Atipravartananam.	
Vyayamat	Exercise
Anshanan	
Atapsevan	
Chinta	Worry
Vatasevan	
Atapsevan	

The above-mentioned reasons produce *Stroto dushti*, therefore the *Dhatus* that flow via these *Strotamsi* are unable to withhold or utilize the vital lipid fraction of the *Oja* and thus the *Oja* flows out of these *Strotasas* which produces *Oja Kshaya*[64].

The causes of *Oja kshaya* according to Charak are exhaustive exercises, very low caloric diet, consumption of very small amount of food and food having only one type of taste or no food at all(fasting) And the Psychosomatic causes are excessive mental strain, fear and mourning stress, excessive exposure to Sun and Wind and ,sleepless nights, excessive excretion of waste products and substantial loss of blood, *kapha dosha* and semen. Ageing process and other Para-Psychic causes are important causes of *Oja kshaya* mentioned by *Charak.*

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Various interpretation of '*Oja* in Ayurveda'

There are types of *Oja* in Ayurveda and known are *para oja* and *apara oja*[65].

Classically they are also been mentioned as *shtira oja* and *shara oja* . These *sthira oja* stationary and is known as *asthabindu Oja*. *Bindu* means a drop and *asthabindu* means eight drops of honey. A drop structure described half round and broad base tapering apex. And area in the right atrium which is known as pace maker in modern science.

Exactly matches these description of *Oja*. The same area is known as *chetnya sangraha* and *jivan jyoti*[66].

In modern science these is the origin of cardiac cycles electrical impulses in life energy.

These *Sar oja* and *apara oja* circulate throughout human body via the ten big arteries originating from the heart are the known as '*Ojovahadhamnaya*'[67].

There are about 10 different reference of *oja* in Ayurveda of which few are explained as below.

1)Schleshima Oja

Schleshma is composed of *Amba + prithivi*[49]and the same *schelshma* in active form in *oja* and *Bala* also but when it becomes in active or gets distorted it produces diseases[69]. Of all the *saptadhatu* present in the human body the most important site of *schleshma* is *Rasa-Dhatu*.The *Rasa-Dhatu* is also a site of one more type of *Oja* which is responsible for producing human body movements[70].Thus the *Rasa Dhatu* contains two types of *Oja*.

a) In matter form (Liquids + solids)

b) In energy form (Kinetic energy) (Body movements)

When the matter component *schleshmic oja* gets deformed or distorted it produces diseases this means that when *schlesmic oja* is in active form it prevents diseases[70] which is regarded as the disease preventive power of *Oja* also known *Bala* form of *Oja*. In modern science this preventive component of *Rasa Dhatu* in known as are immunoglobulins and there are Opsonin, Agglutinins antitoxins and components.

Thus the *schleshmic oja* (liquid + Solid) in the matter form present in *rasa dhatu* is the natural immunoglobulin also known as the *vyadhi kshamatwa*.[Ch.Su.28/7C pp-178]

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And another form of *oja* present in *rasa dhatu* is responsible for producing body movements is known as (kinetic energy).

Thus, the word *bala* means

- **Diseases preventing power**
- **The body movement power**

Sushruta has also regarded and explained *Oja* as *Bala* which is consistent with above mentioned *Oja – Bala* by Charaka.

2)Jeeva Shonit Oja

The most important function of *Shonit* (Blood) is *jeevanum*[71] which means the supply of *Prana vayu* occurs to all the tissues and organs of the human body[72].In this form the most important function of *Oja* is to utilize the *Saptadhutu* and *Awayawa*.Proper utilization means the absorption of *prana vayu* and nutritive elements and excretion of waste products by the *dhatu* and *awayava*.This type of exchange takes place in the human body at microscopic level known as capillary circulation and it depends upon the permeability of capillary and thus *Shonit Oja* means the *oja* that maintains this capillary circulation in active states.

3)Ooshma Oja

Maintenance of body temperature[73] is the most important function of *Ooshma Oja* also known as *Agni* in Ayurveda. This *agni bala* is known as our life.Storage of caloric energy and liberation of caloric energy depends upon metabolic activities of the human body. The *saptadhatu* in human body have their own *agni,*the metabolic energy.Thus, *dhatwagni* is in the form *Ooshama Oja*.In the modern science, this caloric metabolism means AMP to ATP and ATP to AMP (adenosine monophosphate and triphosphate).

4)*Gharbha rasa Sara Oja*

This type of *oja* is present in the *shukra beeja* in form of *shukrapran* (motility of sperm) and also present in *shonit beej* (Ovam) which allows its union to form the *gharbha* (Zygot).[74]During *Gharbhavakranti* at the time of *kalala* or formation blastula stage this *oja* enters *Hrudaya Mamsa*

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Peshi and forms *ashtabindu oja*. The pace maker in modern science.This *oja* in the form of growth factor also helps in the formation of tissue and organs human body[74].

5)Shukra sara Oja[75]

Formation of actively motile sperms and ovulation in females is the most important function of the *Shukra Sara Oja*. In males the *shukra dhara kala[77]* is present in vrushana which produces the motile sperms but *shukra* is set to be present in whole human body on tissue and organs and this body *shukra* responsible for vigor, strength and dashing spirit[78].

in modern medicine this whole body *oja* can compared with hormones testosterone and gonodotrophic hormones. (this is *Shukra Sara Oja*).

After ageing process known as menopause in females and andropause in males the Gonoclotrophin are excreted in urine and this is the *shukra mala oja*.

6)Sapta Dhatu Tej roop oja

The *Tej Roop oja* is responsible for maintining the *Varna Prasad*[79].*Varna Prasad* is known in Ayurveda as '*Prabha* and *Kranti'*. The food that we eat is rich in green substance known as chlorophyll. The plants utilize light energy (photons) from the sun to synthesis the chlorophyll. Naturally this energy absorbed and ultilised to from chlorophyll enters human body in the form of food. In our body this energy is first converted into carolic energy (heat) and it reaches the peripheral tissues like skin and subcutaneous layers it is converted back into infra red light (photons) and emited out of our body through this skin. This can be proved by infra red photography. And these emitted infra red photons are responsible for maintaining the luster,fairness and complexion of our skin which is known as prabha and kanti in Ayurveda.Thus tej roop oja is infra red photon energy.

स्त्रोतेभ्यो: निस्रुत् निर्गत ओज: श्रावरुप ओजुस्

Oja vistramsa, vyapad and *kshaya*

- *Vistramsa* = deformed= *balasya Prakrit karmahani=karmebhyoh bahish karoti=Sthanchuti*
- *Vyapda* = distrorted=*Doshdushtve gunhinatvam*
- *Kshaya*= deficiency =*Swamantvam Alpata=Swapramanat*

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DIABETES MELLITUS

India accounts for almost 70 million people with diabetes and the number is expected to increase to 90million by the year 2030.

Over the last few decades, the mean age of onset of diabetes has been on the decline, the disorder thereby affecting relatively younger segment of the population.Diabetes Mellitus is one of the oldest diseases recognized since antiquity by medical historians and it is a major challenging health problem of the 21st century.It refers to a heterogeneous chronic metabolic disorder that shares the phenotype of hyperglycemia. DM is caused by a complex interaction of genetic, behavioral and environmental factors. It results due to impaired Insulin secretion or insulin resistance, decreased glucose utilization, and increased glucose production.The metabolic deregulation associated with DM, causes secondary pathophysiologic changes in multiple organ systems.It imposes a tremendous burden on diabetics and on the health care system. The world today is witnessing an epidemic of Diabetes mellitus. Globally and nationally, DM with its complications has the most important contemporary and challenging health hazards. It is the leading cause of end-stage renal disease (ESRD), non-traumatic lower extremity amputations, and adult blindness. It also predisposes to cardiovascular diseases. With an increasing incidence worldwide, DM will be a leading cause of morbidity and mortality for the foreseeable future.

The US Department of Health And Human Services and ADA on 27th march 2002 gave the term Prediabetes.

It is the state in which some but not all of the diagnostic criteria for diabetes are met.

It is often, described as the “grey area” between normal blood sugar and diabetic levels.

Globally, numerous terms have been given for prediabetes such as, borderline diabetes, chemical diabetes, touch of diabetes etc. In the early stages of the disorder, glucose tolerance remains near normal, despite insulin resistance, because the pancreatic beta cells compensate by increasing insulin output. As insulin resistance and compensatory hyperinsulinemia progress, the pancreatic islets in certain individuals are unable to sustain the hyper insulinemic state. IGT is characterized

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by elevations in postprandial glucose. A further decline in insulin secretion and an increase in hepatic glucose production lead to overt diabetes with fasting hyperglycemia.

Concept of *Madhumeha* and Diabetes Mellitus

DM as disease entity has been vividly described in the context of *Prameha/Madhumeha* in Ayurvedic classics with striking resemblance of its Ayurvedic concepts with latest knowledge on Diabetes mellitus as known in conventional medical sciences.

The causes of Diabetes mellitus are comparable to the disease entity Madhumeha of Ayurveda.

The major categories of the etiological factors are

- Genetic and hereditary factors and
- Lifestyle related errors such as sedentary habit and high calorie diet.

The texts also describe the pathogenesis of this disease in an extremely evolved manner, involving the *three Doshas (Kapha* predominant *doshas*) and ten *Dushyas* (ranging from *Rasa* to *Ojas*, especially *Meda*).

The idea of significance of *Meda* (Adipose tissue) as the principal *Dushya* has been recently confirmed also in modern medicine where the central obesity and dyslipidemia are being considered as the main components of the basic matrix of this disease.

The recent concept of the Metabolic Syndrome also seems to have been conceived in Ayurveda.

Most of the ancient texts emphasize that all three Doshas are involved in this disease but vitiation of *Kapha Doshas* is the main initiating factor.

The involvement of a wide range of *Dushyas* 10 in number is of special significance, because such a pathogenic feature of the disease indicates that *Prameha* disease involving the whole body. Type 2 DM is largely a preventable disease, while Type 1 DM is generally manageable.

However, it is not curable once it established in the organism.

The most pertinent fact being realized by many Diabetologist is the fact that DM Type-2 is largely a preventable disease through diet and life style management.

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However, once it is established in the organism it mostly takes an incurable course and continues to develop its progressive stage including Type-2 DM & Type-1 DM and its complications including diabetic neruropathy, nephropathy, cardiomyopathy, carbuncles, etc, a fact that has been clearly conceived in Ayurveda.

Many times the complications continue to progress even if the blood sugar levels are controlled by medication.

One may find a comprehensive description of drug and non-drug modalities of treatment for different kinds of Diabetes with a wide range of herbal, mineral and herbo-mineral formulations for the treatment of Prediabetes & Diabetes mellitus.

Seeing this fact it seems profitable to explore the possibilities of developing an Ayurved- inspired line of management and medication for contemporary use today.

The issues depicted above can be tackled with the holistic approach of Ayurvedic medicine utilizing the package of exercise, dietary control and stress management with use of such Ayurvedic drugs which may produce *Rasayana* effect besides the efficacy to control the dyslipidemia and sugar in the system.

The *Rasayana* drugs of Ayurveda are claimed to produce bio-balancing effect, promoting essential nutrition and immune enhancing effect.

Such a line of management is preferred in Ayurveda because of the role of *Oja*, which is responsible for the immune status of an individual and is depleted in case of Diabetes mellitus and most of the diabetics remain in an immune compromised state. Because *Oja* is considered as one of the major *Dushya* of *Prameha* which can be controlled by *Rasayana* Therapy. Such an exercise of 'Reverse Innovation' in the management of Prediabetes & Diabetes mellitus and its complications is considered because of the fact that modern management of Diabetes mellitus is really not satisfactory.

When such a disease is really established in the system, it is difficult to treat because of its deep seated and widespread pathogenic involvement.

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Classification of *Prameha*:

Ancient Indian physicians have tried their level best to classify the disease in different manner such as-

Doshika classification: *Kaphaja*- 10, *Pittaja*- 06 and *Vataja*- 04[80].

Aetiological classification: *Sahaja* (hereditary) another is *Apathyanimittaja* (Acquired)[81].

Constitutional classification: *Sthula* and *Krisha Pramehi*[82].

Prognostic classification:-

Yapya and *Asadhya*[83].

Detail Classification

- *Doshika*- 3: As per Urinary Abnormalities[83].
- *Kaphaja*-10 types .
- *Pittaja*-6 types
- *Vataja*-4 types

Aetiological[84]

(a)Sahaja Prameha (patients of Type I DM) *Matripitribeejadoshakrita* i.e. defects in[85].

1. *Bija*- sperm/ ovum

2. *Bijabhaga*- chromosome

3. *Bijabhagavayava*- genes

(b). *Apathyanimittaja Prameha*[86]

It is caused by-

1. Faulty dietary habit

2. Sedentary life style

3. Lack of physical exercise

4. Psychological factors: worry, grief, anger, anxiety etc.

Constitutional[87]

Sthula pramehi: patients of Prediabetes & DM with or without insulinresistance.

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Krisha pramehi: malnutrition related diabetes mellitus or Type-I DM.

Prognostic[88]

1. *Sadhya*: curable (*Kaphaja* type)
2. *Yapya*: palliative (*Pittaja* type)
3. *Asadhya*: untreatable (*Vataja* type)

The Ayurvedic texts reflect two major categories of Prameha [89]

1. *Sahaja Prameha* and
2. *Apathyanimittaja Prameha*

Out of these two, *Apathyanimittaja Prameha* closely resembles with the contemporary concepts of Prediabetes/Type-2 Diabetes mellitus. On this basis, Ayurveda has described *Sthula Pramehi*, which clearly corresponds to the current concepts of overweight & obesity and its role in the genesis of Diabetes mellitus.

Etiopathogenesis of Prameha-Madhumeha

In conventional medicine, it is also believed high calorie diet, sedentary habits, and stressors (physical, mental, social etc.) play an important role in the eiopathogenesis of Prediabetes but its actual cause is still unknown. Side by side positive familial history, overweight andobesity are the basic risk factors for insulin resistance and for the development of type-2 diabetes mellitus.

Those patients who were falling in the stratum of IGT or IFG are at increased risk of cardiovascular disease. (Diabetes Care, 2002).Ancient scholars of Ayurveda give similar opinion.

आस्यासुखं स्वप्नसुखं दधीनि ग्राम्यौदकानुपरसाः पयांसि ।

नवान्नपानं गुडवैकृतं च प्रमेहहेतुः कफकृत् च सर्वम् ॥[90]

द्वौ प्रमेहौ भवतः– सहजोऽपथ्यनिमित्तश्च :|[91]

It includes following lifestyle errors:

1. Use of early-ripened Pulses and grains.

2. Use of sugarcane and its product like-*Guda, Khanda, Sharkara,* Sugar etc.

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3. Use of milk and its products, *Mandaka dadhi*.

4. Intake of meats and soups of different *Anupa, Audaka* and *Gramya* animals.

5. Lack of exercise, Laziness, Excessive sleep during day, alcohol consumption etc. 6. Psychological factors such as Anxiety, Anger, Worry, Grief etc. have been described to play an important role.

7. Indulging in sex / sleep with full belly etc.

8. Excessive consumption of alcoholic beverages.

9. Person having *Medavrittavata*.

10. Person associated with Overweight & Obesity.

11. Person have positive family history (*Sahaja Prameha*).

According to Sushruta Madhura Ahara, taken in excess along with daysleep and sedentary life style may convert into fat due to metabolic block (AmaRasa).[S.S.15/32pp74]. It contributes to the adiposity of the body leading to overweight. So the present day concept of metabolic syndrome in obese patients where most of the carbohydrate being converted into fatty acids is well conceived in Ayurveda.Overweight in prediabetic patients has been observed to be associated with hyperinsulinemia and increased FFAs level. Due to the increased FFAs level in the serum, the glucose entry to the cells is hampered, resulting in insulin resistance and finally diabetes.The FFAs are the soluble form of fat, which are fit for utilization in energy metabolism, coming from adipose tissue. So one can conclude that triglyceride content of Adipose tissue is an example of *Baddha Medas* and FFAs may be compared with *Abaddha Medas*. Hence, sometimes the *Kaphaja* type of *Prameha* is correlated with Type 2 diabetes mellitus with or without Insulin resistance.

The relationship of *Ama* with psychological factors, as stated in *Charaka Samhita* is the evidence of relationship of *Prameha* with mental stress.The emotional factors enhance the level of counter-regulatory hormones (cortisol, ephinephrine, norephinephrine) that may alter the carbohydrate, protein and fat metabolism. The mode of action of these hormones in the genesis of diabetes is through mobilization of FFAs from TG of adipose tissue. Adrenal hyperactive secretion causes excess glucose in the blood. On the other hand excess thryroid secretion causes lipolysis and protein breakdown resulting in muscle wasting. Stress also increases sympathetic activity which

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causes increased insulin secretion but the other glands are predominant that check the insulin response at tissue level.

TABLE 3. Aetiological factors of *Kapha* And *Pittaja Prameha*

KAPHAJA PRAMEHA[75]	*PITTAJA PRAMEHA*[76]
Mukundaka	*Krodha*
Mahabrihi (Type of Rice)	*Lavana* (Salt)
Pramodaka	*Katu* (pungent)
Navanna Atimatra Seven (new grains)	*Usna*
Gramya Mamsa	*Kshara*
Udaka Mamsa (Meat of the animal found in water)	*Ajirna*
Anupa Mamsa (meat of the animal found at wet place)	*Atapsevana*
Payasa (Milk)	*Agni Sevana*
Pistanna	*Santapa Sevana*
Iksuvikara (Sugarcane Preparations)	*Shrama*
Hayanaka	
Yavaka	
Chinaka	
Saka	
Palala	
Vilepi	

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Mandaka	
Drava	
Koddalaka	
Navaharenu	
Mansha	
Dadhi (Curd)	
Navamadhya (recently distilled alcohol *)*	
Madhura (sweet)	
Vyayam Varjana (absence of exercise)	
Svapna, Shayya, Asna Prasanga (sedentary habit)	

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Table 4. Aetiological factors of *Dhatu-Kshayaja- Madhumeha*[77].

CLASS	ARTICLES
AHARA	*Kashaya* (astringent)
	Katu (pungent Substances)
	Tikta (bitter)
	Ruksha (dry)
	Laghu (light)
	Shita (cold)
	Anashana (Starvation)
VIHARA	*Ativyayam* (excessive exercise)
	Ativyavayam (excessive sexual acts)
MANASIKA	*Udvega* (mental tension)
	Shoka (grief)
	Jagarana (indisposed to sleep)
	Vishama-Sharira-Nyasa (Sitting) in proper position
MISCELLANEIOUS	*Vamantiyoga* (over use of emetics)
	Virechanatiyoga (over use of purgative)
	Shonitatiyoga (excessive bleeding)
	Ashatapanati yoga (over use of enema)
	Vegdharan (superssion of natural urges)
	Atapseva (sunlight)
	Jagarana (lack of sleep)
	Abhighata (Trauma)

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***Samprapti Ghataka* of *Prameha* :**

Dosha- Tridosha (specially *Kapha Dosha*)[78]

Dushya- Rasa, Rakta, Lasika, Mamsa, Meda, Kleda, Majja, Oja, Shukra,Jala[79]

Agni - Jathharagni, Dhatvagni, Bhutagni (Specially *Medoagni*)[80].

Ama - Aparipakva Ama and *Aparipakva dushyas*[81]

Srotasa- Rasavaha, Medovaha, Mutravaha, Raktavaha, Udakavaha,

Mamsavaha, Majjavaha, Shukravaha[82] (Specially *Mutravaha*)

Srotodushti – Atipravritti[83]

Adhishthana- Vasti[84]

Pratyatma lakshana - Prabhuta Mutrata & Avila-Mutrata[85]

Sancharsthana- Sarvag.

Roga Marga – madhyam marga[86].

Sadhya/asadhyata -Kaphaja-Sadhya, Pittaja-Yapya, Vataja- Asadhya[87].

Vyadhi Svabhava – Chirakara

Table 5.*Purva Rupa* of *Prameha* Vis-a-vis *Madhumeha*

Purvarupa	**Charaka Samhita**[88]	**Sushruta Samhita**[89]	**Astanga Hridaya**[90]	**Madhava Nidana**[91]
Kesheshu-Jatilabhava (Matting of the hairs)	+	+	-	-
Asya Madhurya (Sweet Taste of month)	+	-	+	+
Kara Pada Daha	+	+	+	+

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(Burning in hands and feet)				
Kara Pada Suptata (Numbness in hands and feet)	+	-	-	+
Mukha-Talu-Kanta Shosha (Dryness in mouth, palate and throat)	+	-	+	-
Pipasa (Thirst)	+	+	-	+
Alasya (Dullness)	+	-	-	-
Kaye Mala	+	-	-	-
Paridaha Angeshu (Burning in the organs)	+	-	-	-
Supata Angeshu (Numbness in the organs)	+	-	-	-
Kayacchhidreshupdeha (Deposits of secretions in the body pores)	+	-	-	-
Satapada Pipilikabhi-Sharirabhi Saranam	+	-	-	-
Satapada Pipilikabhi	+	-	+	-
Mutrabhi Saranam (attraction of ants at body & urine)	+	-	+	-
Mutra Doshan	+	-	-	-

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Abnormalities in the urine)				
Vishra Sharira Gandha (foul order of the body)	+	-	+	-
Nidradhikya (Smonolence)	+	-	-	-
	Charaka Samhita	**Sushruta Samhita**	**Astanga Hridaya**	**Madhava Nidana**
Tandra Saravakalam (Always dormancy)	+	+	-	
Shithilangata (sluggishness in the body)	+	-	+	-
Sayya-Asana-Svapna-Sukherati (increased desire to sleep and bed rest)	+	-	+	-
Hri-Netra-Jivya-Sharavan-Updeha (accumulation of secretion of heart, eyes, tongue and ears)	+	-	+	+
Ghanangata (firmness or density of the body)	+	-	+	-
Keshativriddhi (Growth of hairs)	+	-	+	-
Nakhativirddhi (increase growth of nails)	+	+	+	-

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Shita Priyata (desire for cold things)	+	-	+	-
Snigdha Gatrata (viscosity in the body)	-	+	-	-
Picchila Guru Gatrata (heaviness in the body)	-	+	-	-
Swasa (Dyspnoea)	-	+	-	-
Madhura, Sukla Mutrata (sweet and white urine)	-	+	-	-
Talu,Galam Jivya, Danteshu Malotpatti (Accumulation of secretion on throat, palate, tongue and teeth	-	+	-	-

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A. General Feature of *Madhumeha*

1) *Prabhuta Mutrata* (excessive urination)

2) *Avil Mutrata* (Turbidity)

3) *Sharir Madhuryyata* (sweetness of body) (As.Hr.Ni.10/12)

4) Specific feature of urine.

Kashaya and *Madhura* taste of urine

Pandu and *Ruksha* appearance of the urine (Cha.Ni.4/44-48)

5) Specific feature of patient

Files sitting on the body frequently

Alasya (indolence)

Daurbalya (weakness or debility)

B. Symptoms of *Sahaja Madhumeha*

1) *Krisha* (lean and thin)

2) *Alpashi* (less appetite)

3) *Ruksha* (rough skin)

4) *Bhrish Pipasa* (polydipsia)[92]

These symptoms may be correlated with the patient of Juvenile diabetes which are as follows,

Usually begins before the age of 40

Often in childhood or adolescences

Mostly the patients are not obese

May be wasted

Excessive thirst

Excessive urination

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Increased appetite

Weight loss occurring over a period of several days.

C. Sypmtoms of *Apathyanimityaja Madhumeha*

Sthula (obese)

Bahuashi (Polydepsia)

Snigdha (unctuous)

Shayyarati (like to lying)

Asanarati (like to sitting)

Svapnarati (like to sleeping) [93]

These symptoms are seen usually in middle age due to excessive nutrition. This type of Madhumeha may be correlated with maturity onset diabetes mellitus of the modern medicine, the main symptoms of which are as follows.

- Usually begins in middle age
- Patients are over weight, may be obese
- With general symptoms of diabetes mellitus
- Polypepsia
- Polydepsia
- Poly-uria
- Polyphagia

On the basis of various description of *Samprapti* following *Samprapti Ghataka* seems to take part in the pathogenesis of *Madhumeha* at different stages.

Dosha - *Kapha (Bahu Drava)*

- *Pitta (Vriddha)*
- *Vata (Avritta or Vitiated)*

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Dushya	-	*Meda (Bahu Abhadha)*
	-	*Mamsa Kleda*
	-	*Shukra, Shonita*
	-	*Vasa, Majja, Lasika*
	-	*Rasa, Oja*[94]
	-	*Sveda* [95]
Strotasa	-	*Mutravaha Strotasa*
	-	*Udakavaha Strotasa*
	-	*Medoavaha Strotasa*
Agni	-	*Medohatvagni*
	-	*Mamsa-dhatvgani*

The *Dhatus* which are involed in the pathogenesis their *Dhatvagnimandya* may also occur which causes *Aparipakvata* of all these *Dhatus*. The involvement of *Dosha* and *Dushya* are being described here separately to understand its pathogenesis in more detail.

Table 6. Complications Of *Prameha*

Complication	**Charka**[96]	**Shusruta**[97]	**A.Hridya**[98]	**A.Sangraha**[99]
Trishna (Poplydypsia)	+	+	+	+
Atisara (Diarrhoea)	+	+	+	+
Jvara (Pyrexia)	+	+	+	+
Daha (Burning Sensation)	+	-	-	-
Daurbalya (Debility)	+	-	-	-
Arochaka (Anorexia)	+	+	+	+
Avipaka (Indigetion)	+	+	+	+

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Putimamsa (Necrosis)	+	-	-	-
Pidika (Carbuncles)	+	-	-	-
Alaji (type of carbuncles)	+	-	-	-
Vidradhi (type of carbuncles)	+	-	-	-
Makshikopasarpanam (Attraction of flies at Urine and body)	+	-	-	-
Alasya (indolence)	-	+	-	-
Shosha	-	-	+	+
Mamsopachaya (anabolism of muscle)	-	+	-	-
Pratisyaya (Rhinorrhoea)	-	+	+	+
Shaithilya (Sluggishness)	-	+	-	+
Kaphaprasek (emesis)	-	+	-	-
Nidradhikya (Somnolence)	-	+	+	+
Kasa (Cough)	-	+	+	+
Svasa (dysponea)	-	+	+	+
Vidbeda (loose motion)	-	-	+	-
Vrisnavadaranas (throbbing pain in testicles)	-	+	+	+
Vasti bheda (pain in urinary bladder)	-	+	+	+

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Medra Toda (pricking pain in pents)	-	+	+	+
Hrita shula (precordial pain)	-	+	-	-
Vamana (emesis)	-	+	+	+
Paridhumayana	-	+	-	-
Daha (burning sensation)	-	+	+	+
Murcha (coma)	-	+	+	+
Nidranasha (insomnia)	-	+	+	+
Panduroga (anemia)	-	+	-	+
Pit-Vin-Mutra-Netrata (yellow colouration of eyes, urine, fecaces)	-	+	-	-
Hridgraha (Cardiac cramp)	-	+	+	+
Laulyam (gread for all sorts of test)	-	+	+	+
Anidra (insomnia)	-	+	+	+
Stambha (stiffness)	-	+	-	-
Shula (pain)	-	-	+	+
Kampa (tremors)	-	+	+	+
Baddha Purishta (Constipation)	-	+	-	+

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They are of 7 types and occur at fleshy places like *Mamsa* and *Sandhi*. The various *Prameha-Pidika* described in Ayurvedic texts have been shown in following table.

Table 7.*Prameha Pidika* in described in the Ayurvedic Texts.

Type of *Pidika*	Charaka[100]	Sushruta[101]	Vagabhata[102]	Sharangdhara[103]	Bhoja
Sharavika	+	+	-	+	+
Kachchhapika	+	+	+	+	-
Jalini	+	+	+	+	+
Sharashapika	+	+	+	+	+
Alaji	+	+	+	+	+
Vinata	+	+	+	+	-
Vidradhika	+	+	+	+	+
Masurika	-	+	+	+	-
Purtini	-	+	+	+	+
Vidarika	-	+	+	+	+
Kurmika	-	-	-	-	+
Kulathika	-	-	-	-	+

Purvaroopa and Roopa- They are valuable signs and symptoms *to* predict the disease in its early stage & to check its progression towards *Madhumeha* and its complications by applying appropriate therapeutic measures.

Risk Factors for Type 2 Diabetes Mellitus:

1. Family history of diabetes (i.e.parent or sibling with type 2 diabetes)
2. Obesity (BMI 25 kg/m2)
3. Habitual physical inactivity.

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4. Race/ethnicity (e.g., African American, Latino, Native American, Asian
5. American, Pacific Islander)
6. Previously identified IFG or IGT
7. History of GDM or delivery of baby >4 kg (>9 lb)
8. Hypertension (blood pressure 140/90 mmHg)
9. HDL cholesterol level <35 mg/dL (0.90 mmol/L) and/or a triglyceride level
10. >250 mg/dL (2.82 mmol/L)
11. Polycystic ovary syndrome or acanthosis nigricans
12. History of vascular disease.

Diagnostic Criteria for *Prameha-Madhumeha*-:

Historically, Ayurvedic diagnosis of DM was primarily based on the sweetness of urine that was identified by a swarm of flies and ants over the urine. Ayurvedic texts give the signs and symptoms of 10-*Kaphaja*, 6-*Pittaja* and 4-*Vataja Pramehas* for diagnosis, which is based on physico-chemical characteristics of urine. However, on this basis physician is unable to reach the final diagnosis.

So, the newer diagnostic tools and techniques should be utilized as an aid for diagnosis and assessment of prognosis until a still better and simple method is introduced in Ayurveda.

Prediabetic/diabetic diagnosis can be broadly divided into three groups-

A. In asymptomatic undiagnosed individuals:

- Testing of all individuals at the age of 45 years and if it is normal, it shouldbe repeated at 3 years intervals.
- Testing should be carried out more frequently in individuals, who—
    - are obese (BMI >=27 kg/mt2)
    - have a first degree relative with diabetics.
    - are a member of a high risk ethnic population.
    - are hypertensive (>=140/90 mm of Hg)
    - have HDL level < 35 mg/dl &/ or triglyceride level_ 250 mg/dl.
    - on previous testing has IGT or FPG.

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B. In symptomatic individual having Prediabetes:

Prediabetes is usuallydiagnosed with a blood test:

- Fasting blood sugar (glucose) level of:
- 110 to 125 mg/dL (6.1 mM to 6.9 mM) - WHO criteria
- 100 to 125 mg/dL (5.6 mM to 6.9 mM) - ADA criteria
- Two-hour glucose tolerance test after ingesting the standardized 75Gm glucose solution the blood sugar level of 140 to 199 mg/dL (7.8 to 11.0mM).
- Glycosylated hemoglobin between 5.7 and 6.4 percent.

C. In symptomatic individual having Diabetes mellitus:

Diabetes is diagnosed (ADA-2000) by measuring blood glucose levels. It is diagnosed by three ways and each must be confirmed on subsequent day. They are-

- Classical symptoms of diabetes + casual glucose concentration > 200 mg/dl.
- Fasting plasma glucose (FPG) _126 mg/dl.
- 2 hour plasma glucose (PPG) _ 200 mg/dl.
- Glycosylated Hb (HbA1c- < 6.5% in normal individual)

Blood urea, Serum creatinine, Lipid profile, Serum cholesterol, CRP, NCV etc are needed to assess the complications.

Charaka and *Sushruta* have strongly emphasized the first and foremost principle of prevention as well as the treatment of any disease is to protect oneself from causative factors i.e.-

संक्षेपत: क्रियायोगो निदान परिवर्जनम् ।[123]

Charaka has divided the diabetics into two groups, i.e. *Sthula pramehi* (obese diabetics) and *Krisha pramehi* (lean and thin diabetics) on the basis of vitality, constitution and aetiology of the disease. This needs different lines of management for the two types of diabetics. In *Sthula pramehi* (Prediabetics & type-2 diabetics) biopurificatory measures and lightening measures are advocated such as-

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स्थूल प्रमेहि बलवानिह एक: कृशस्तथैक: परिदुर्बलश्च ।

संतर्पणम् तत्र कृशस्य कार्यं संशोधन दोष बलाधिकस्य ॥[124]

At present, the goal of Prediabetic treatment is not only to normalize the blood glucose level within the range but also to improve the *Ojas* status, *Agni* status & improve the quality of life.

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METHODOLOGY

In the previous chapters' review of literature on the concept of *Oja, Ojavistramsa*, *Ojovyapad*, *Ojakshaya* & *Madhumeha* was mentioned in detail. The review shows that there is direct relation between *Oja* & type 2 DM. For an accurate assessment of the symptoms appearing in the patients of *Ojavistramsa, Ojovyapad* & *Ojakshaya* a survey was conducted. In this survey an attempt was made to show the relationship of symptoms of DM type II with *OjaVistramsa, Vyapad* & *Kshaya*.

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Study design: -

This is an observational cross-sectional study comparing the *Oja vistramsa, vyapad* and *kshaya* and the chronicity of type 2DM patients.

The method adopted for this study has been divided into following steps.

Literature study was carried out regarding *Oja*, *OjaVistramsa, Vyapad, Kshaya* & DM Type2. Extensive review of *Bruhattrayi* with the necessary part of commentaries and necessary books of Modern medicine of type 2DM.

Cross sectional study: Case record form (CRF) was designed actual survey was carried out. In this survey study, patients were examined with the help of CRF and investigation of BSL F/PP and by observing the signs & symptoms of *OjaVistramsa,Vyapad,Kshaya* .A case record form was designed to capture the details of patient.

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CASE RECORD FORM

CRF No.

O.P.D. Registration No-

I.P.D. Registration No-

Date-

Name of the Patient- Age- Sex – Male / Female

Residential Address-

Tel No.-

Economic Status-

Educational Status-

Profession-

Religion / Caste-

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Date of written informed consent for Participation

1] Present Complaints and Duration-

Symptoms Duration

i. Daurbalya

ii. Kshudhavriddhi

iii. Pipasavriddhi

iv. PrabhutavilMutrata

v. Pindikodweshtana

vi. Swedatipravritti

(Excluding seasonal variations)

vii. Hastpadataladaha

2] Past history-

3] Medical history-

4] Family history –

Matrukul-

Pitrukul-

Swakul-

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5] Ashtavidh Parikshan –

Nadi -

Mutra -

Mala -

Jivha -

Shabda -

Sparsha -

Netra -

Akruti -

6] Aatur Parikshan (Dashavidh) –

1. Prakruti - (Sharirprakrurita)

2. Vikruti –

3. Sara –

4. Samhanan–

5. Praman –

6. Satmya –

Aahar –

Vihar-

7. Satva –

8. Aahar Shakti –

Abhyavaharan-

Jaran-

9. Vyayam Shakti –

10. Vay–

7] Samanya Parikshan –

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1. Raktdab –

2. Swashan –

3. Dehoshma –

4. Dehabhar --

8] Tvak Parikshan –

9] Strotas Parikshan –

1. Pranavaha strotas –

Nasa-

Kantha-

Ura-

Phuphus- Shvasan-

Maha strotas-

Pranavaha strotas dusti lakshan -

2. Annavaha Strotas –

Austha-

Mukha-

Danta

Jivha-

Vamparshva-

Aamashay-

Pachyamanashay-

Annavaha strotas

Dusti lakshan –

3. Udakvaha Strotas -

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Talu -

Klom-

Udakvaha Strotas

Dusti lakshan –

4. Rasvaha Strotas –

Hriday-

Nadi-

Lasika-

Rasvaha Strotas

Dusti lakshan –

5. Raktavaha Strotas –

Yakrut-

Pliha-

Raktavaha

Strotas Dusti lakshan -

6. Mansavaha strotas –

Snayu-

Khamal-

Twak -

Mansapeshi-

Pratyavartan (Reflexes)-

Mansavaha strotas

Dusti lakshan -

7. Medovaha Strotas –

Vrukka-

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Vapavahanam-

Udar, sphik, stana (Lambanam)-

Sweda-

Romkupa-

Medovaha Strotas

Dusti lakshan –

8. Asthivaha Strotas -Kati-

Danta-

Janghanam-

Nakha-

Kesh-

Asthivaha Strotas Dusti lakshan –

9. Majjavaha Strotas –

Asthi-

Sandhi-

Majjavaha strotas dusti Lakshan –

10. Shukravah / Artavaha strotas –

Vrusana-

Garbhashay-

Medram-

Rajah-

Shukravah / Artavaha strotas

Dusti lakshan -

11. Purishvaha Strotas –

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Pakvashaya-

Sthulaguda -

Purish -

Purishvaha Strotas

Dusti Lakshan -

12. Mutravaha Strotas –

Vankshana-

Basti-

Mutra -

Mutravaha Strotas

Dusti Lakshan –

13. Swedavaha Strotas –

Sweda-

Romkupa-

Swedavaha Strotas dusti Lakshan -

14. Manovaha Strotas –

Dhi/Dhruti/Smruti-

Swapna-

Manovaha Strotas

Dusti Lakshan -

10] Shatkriyakal Parikshan –

1. Sanchay-

2. Prakop-

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3. Prasar-

4. Stansanshray-

5. Vyakti-

6. Bhed-

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11] Dushta Dosha Nirdesh –

Vata- pran/ Udan/ Vyan/ Saman/ Apan

Pita- Pachak/ Ranjak/ Sadhak/ Bhrajak/ Aalochak

Kapha- Avalambak /Kledak/ bodhak/ Tarpak/ Sleshak

12] Dushta Dushya Nirdesh –

Ras- Rakta- Mansa -

Meda - Asthi- Majja- Shukra

13] Dushta Mala Nirdesh–

Purish Mutra

Sweda Khamal

14] Marg- Bahya Aabhyantar Madhyam

15] Samuthan- Aamashayottha /Pakvashayottha

16] Sadhya / Asadhyatva- Sukhsadhya / Kasthasadhya/ Yapya Asadhya

17] VyadhiAvastha – Saam / Niram / Nav Jirna

18] Vyadhibal - Hin / Madhyam/ Uttam.

Clinical Examination –

Complete Clinical examination will be done to diagnose Patients

The patients will be diagnosed on the basis of signs and symptoms of madhumeha

Symptoms

- Daurbalya

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- Kshudhavriddhi
- Pipasavriddhi
- PrabhutavilMutrata
- Pindikodweshtana
- Swedatipravritti
- (Excluding seasonal variations)
- Hastpadataladaha

Clinical assessment: Oja vistransa, vyapad and khsaya in madhumeha

Oja vyapad

Oja vistramsa

Oja kshaya

1)**Ojo vitsramsa-**

1. Sandhi vishlesha
2. Gatrasad
3. Doshachavan
4. Kriya sannirodha

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2)***Ojo vyapad-***

1. Stabdhagatrata
2. Gurugatrata
3. Vata shopha
4. Varna bheda
5. Glani
6. Tandra
7. Nidra

3)***Oja kshaya-***

1. Murcha
2. Mamsakshaya
3. Moha
4. Pralap

4) Doshachyavan: Present /Absent

Assessment of Oja Dosha-Vriddhi/Kshaya	Present	Absent
Vata Vriddhi		
Vata Kshaya		
Pitta Vriddhi		
Pitta Kshaya		
Kapha Vriddhi		
Kapha Kshaya		

Sandhivishlesha: Present /Absent

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Sandhi nama	Rachana vikruti	Kriya vikruti

Mamsakshaya: Present /Absent

a) Muscle weakness (Mamsa peshi daurbalya): Present /Absent

b) Thinness (Kshaya): Present /Absent

Mamsa peshi daurbalya calculated according to Medical Research Council (**MRC)** scale for muscle strength

Medical Research council (MRC)scale for Muscle Strength

Grade 5: muscle contracts normally against full resistance.

Grade 4: muscle strength is reduced but muscle contraction can still move joint against resistance

Grade 3: muscle strength is further reduced such that the joint can be moved only against gravity with the examiner resistance completely removed

Grade 2: Muscle can move only if the resistance of gravity is removed

Grade 1: only a trace of flicker of movement is seen or felt in the muscle or fasciculation are observed in muscle

Grade 0: no movement is observed

b) *karshya* calculated according to BMI

Formula for BMI – weight (kg)/height in $(m)^2$ [Normal range -18.5 to 24.99]

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Karshya (Thinness)Grade	BMI
1	17 to 18.49
2	16 to 16.99
3	< 16

Vaivarnya –present/absent

Site-

Skin lesions-present/absent

Lesion Morphology

Primary skin lesions	Primary skin lesions	Secondary skin lesions
Macula	Telagiectasia	Scale
Papule	Petechiae	Crust
Plaque	Purpura	Excoriation
Nodule	Ecchymosis	Lichenificatrion
Papilloma	Hematoma	Fissure
Vesicle	Poikiloderma	Erosion
Bulla	Erythema	Ulcer
Pustule	Burrow	Sinus
Weal	Comedo	Scar
		Keloid scar
		Atrophy

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	Stria

Vata shopha: Present /Absent

Vat Shopha Lakshanas	Present	Absent
Kshiprothhan prasham		
Varna-shyama,aruna,prakrut		
Piditani unnamati ashu		
Shotho naktam pranashyati		
Snehoshnamardnabhyam shothaha pranashyati		
Shotha chala (sankramanvan)		
Shotha spandan (kampan)		
Khar, parusha,bhinna twak roma		
Vedana vishesha		
Swapa pipilikabhi sansaranvat vedana		
Chedvat vedana		
Suchibhiriv todvat vedana		
Bhedvat vedana		
Pidanvat vedana		
Sarsahapkalkaavalipta iva chimchimayan		
Sankochavat vedana		
Ayamvat vedana		

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Gatrasad, stabdhagatrata, gurugatrata and *kriyasannirodha* will be diagnosed based upon the score of '**The Barthel (activities of daily living) ADL index**

Gatrasada: Present/Absent
Stabdhagatrata: Present/absent
Gurugatrata: Present/Absent
Kriyasannirodha: Present/absent

Analysis of Data was organized and analysed with the help of statistical methods in view of aim and objectives. Observations were noted and the results were drawn.

(4) Interpretation of the results obtained.

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Meaning of operational definitions used is as follows -

Oja Vistramsa----sthanachuti--karmebhyah bahishkaroti=karmahani

Sluggish or very slow motor activity

1)Sandhivislesh--sandhinam vighatanam

i)Weak ligaments of joints

ii) Loose joint capsule

iii)Laxity of joints(looseness)

iv) Very slow joint activity

v)Partial loss of muscle tone

2) Doshachyavan → Swasthanat vatadinam bhramshah

i)Dosha-Dhatu-Mala-Vriddhi or Kshaya

ii)Exudation of fluid and emigration of blood cells outside the blood vessels

iii)Malanam chyavanam

3)Gatrasad -lethargy

4) Kriyasannirodh- kriyanam kaya vak mananam means Prakrit kriya hani

i)Normal physical, mental,sensory& psycological funtions are hampared

ii) Poor motor activities and all other body movements

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Oja Vyapad --- dushta dosha- dushyasansargat gunahinatwat.

partial loss of merits, qualities or properties of oja

1) *Stabdhagatrata -janvadeenamasamarthatwat*

I)loss of joint movements

II) loss of muscle tone

2) *Gurugatrata*--- Heaviness of extremities and other active body organs

3) *Vatashopha* -- Accumulation of blood or fluid and cells in the subcutaneous fibro-muscular area. Oedema formation

4) *Varnabheda*-Discolorations of skin

5) *Glani- Apraharsha* . Drowsiness

6) *Tandra - Indriyarthanam akarmanyata*,insensitivity to stimulus and loss of awareness
7)*Nidra*- Deep sleep

Oja Kshaya- Pramanatahkshaya **decrease in quantity.**

(I) production of scanty amount of Oja having low caliber and poor merits (In inactive form)

1)*Mansakshaya*- loss of musculature.Very thin muscles, cachexia

2)*Murcha*- giddiness, vertigo

3) *Moha*-semi consciousness

4)*Pralap*- muttering

5)*Murccha-vidyanendriyatanirodha*.Unconsciousness - leading to Death

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Diagnostic Criteria for Type2 DM

Diabetes is diagnosed (ADA-2000) by measuring blood glucose levels. It is diagnosed by the ways and each must be confirmed on subsequent day. They are-

- Classical symptoms of diabetes + casual glucose concentration > 200 mg/dl.
- Fasting plasma glucose (FPG) _126 mg/dl.
- 2 hour plasma glucose (PPG) _ 200 mg/dl.
- Glycosylated Hb (HbA1c- < 6.5% in normal individual)

Blood urea, Serum creatinine, Lipid profile, Serum cholesterol are needed to assess the complications.

For this survey work prediagnosed type 2DM patients were taken. Their fasting blood sugar was above 126mg/dl and pp was above 200mg/dl with their hypoglycaemic treatment. The treatment was either Modern or Ayurved**.**

The Barthel ADL index and MMS index used are as below -

The Barthel (Activities of daily Living) ADL Index:

Item	Categories	Score
Bowels	Incontinent (or needs to be given enema)	0
	Occasional accident (once per week)	1
	Continent	2
Bladder	Incontinent/catheterized unable to manage	0
	Occasional accident (max once every 24 Hrs.)	1
	Continent	2
	Needs help with personal care	0

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Grooming	Independent	1
Toilet use	Dependent	0
	Need some help but can do something alone	1
	Independent (on and off dressing wiping)	2
Feeding	Unable	0
	Need help	1
	Independent	2
Transfer	Unable no sitting balance	0
	Major help(1 or 2 people, physical)can sit	1
	Minor help(verbal or physical)	2
	Independent	3
Mobility	Immobile	0
	Wheelchair independent(include corner)	1
	Walk with help of one (verbal/physical)	2
	Independent (may use any aid e.g. stick)	3
Dressing	Dependent	0
	Need help, does about half unaided	1
	Independent(includes buttons,zips,shoes)	2
Stairs	Unable	0
	Need help(verbal physical),carrying aid	1
	Independent	2
Bathing	Dependant	0

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	Independent	1

Glani/tandra/murcha/pralap will be assessed upon the score of mini mental status examination

Glani	Present	Absent
Tandra	Present	Absent
Murcha	Present	Absent
Moha	Present	Absent
Pralap	Present	Absent

Mini mental status examination-

orientation-1 point for each correct answer

what is

time,date,day,month,year -5 points

what is name of this

ward,hospital,district,town,country -5 points

registration

name three object, score 1,2,3 points according to how many are repeated-3 points

attention and calculation-

the patient is asked to subtract 7 from 100 and then the result a total of 5 time

1 point is given for each correct subtraction -5 points

recall

patient is asked to name three object used in registration test,1 point is awarded to each correct answer -3 points

language

1 point each for 2 objects correctly named[pencil and watch] -2 point

1 point for correct repletion of 'no its not, and buts' -1 point

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3 points if 3 stage commands correctly obeyed ‘take this piece of paper in your right, fold in half and place it on the floor’ -3 point 1 point for correct response to a written command such as close ur eyes -1point the patient is asked to write a sentence.1 point is awarded if the sentence is Meaningful has a verb and subject. -1 point testing the patient’s ability to copy a complex diagram of 2 intersected pentagons -1 point Total score-30

Study Center : Government Ayurved college Nanded and M. A. Podar hospital Mumbai.

Ethical clearance

As per the ICMR guidelines for Ethical Research the proposal of this study was presented before Institutional Ethics Committee of Ayurved section of Tilak Maharashtra Vidyapith Pune ,Government Ayurved college Nanded and M. A. Podar hospital Mumbai.

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Sample selection :

Sample Size-Total 172 patients were taken randomly from visiting institute.

Inclusion criteria for type 2DM patients in survey

- Age group: above 18 yrs of age
- Gender: either
- Patients with elevated BSL level: F & PP.
- Patient undergoing OHA or insulin or both for treatment of DM type2.

Exclusion criteria for type 2DM patients in survey

- Patients suffering from any coagulopathy or any other diseases.
- Patient suffering from any other complicated diseases.

Statistical analysis

Tests for correlation spearman co-efficient & Chi square test were applied.

Data interpretation - On above statistical calculation observations & results are interpreted.

Data presentation - In Tabular form, Pie diagram, Bar diagram data is presented.

References: Available *samhitas* and available commentaries are taken as reference books with modern texts

For accurate assessment of the symptoms appearing in the patients of *OjaVistramsa,Vyapad* & *Kshaya* a survey was conducted. In this survey an attempt was made to show the relationship of symptoms of DM type II with *OjaVistramsa,Vyapad* & *Kshaya* .

Parameters of the study

For the study, 172 patients were surveyed and the signs and symptoms of DM type II selected. The patients were surveyed at the Government Ayurveda Hospital Nanded & M A Podar hospital Mumbai. No specific duration is considered.

- *Method* – Survey
- *Type of Study* - Observational

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- *Study design* – cross sectional study
- *Patient Selection criteria* - Randomized

Confirmation of diagnosis

- By symptoms of Diabetes type2
- Blood Sugar level fasting and post prandial

This survey was carried out on the basis of Assesment of *Ojovistramsa,Vyapad* & *ojakshaya* according to **Dalhana**. Exact meaning was considered and special proforma was prepared.

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OBSERVATION

It was a cross sectional study planned to see the prevalence of ***Ojo dosha lakshanas*** in patients suffering from Diabetes Mellitus. The observations were as follows.

Total no of patients screened were **172.**

Mean age of patients enrolled was **54.29**±13.45 **CI (52.28-56.30)** years. MEDIAN(RANGE)=54(18-94). The oldest patient is 94 years old while youngest is 18 years old. Patients in the age group 20-40yrs were 30. Patient belonging to age group 40-60yrs were 82, while patient belonging to age group 60-80yrs were 58.

Mean weight of patients enrolled was **58.75**±8.79 **CI (57.43-60.07)** kg. MEDIAN (RANGE)= 59(35-80) Patient weighing below 40 kg were 7. Those who weigh between 40-50 kg were 26. Patient weighing between 50 -60kg were 82 in number. Persons weighing between 60 -70 were 43, those who weigh between 70- 80 were 14.

When looking at gender distribution there were 66 females and 106 male patients.

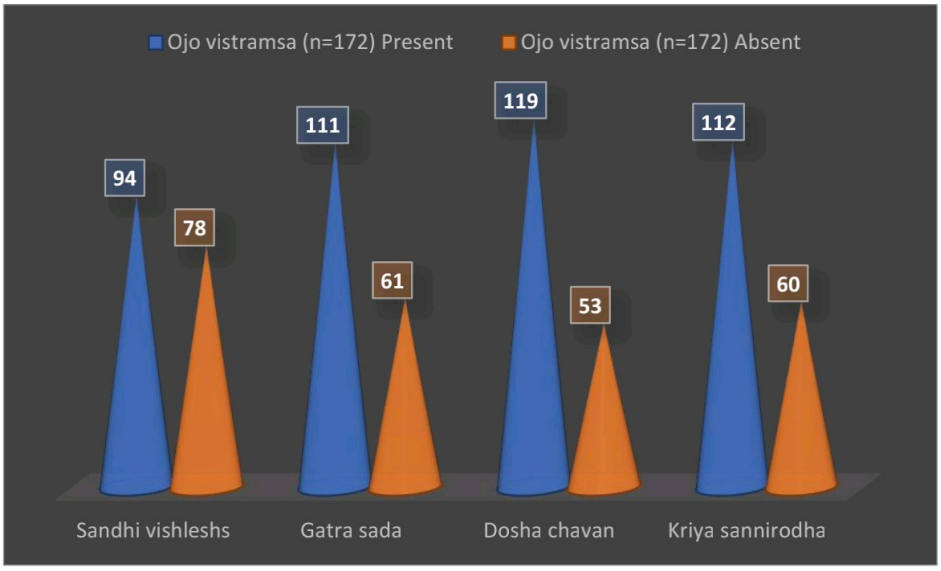
Table no. 8 : Among the signs of *Ojo vistramsa*(n=172)

Sr. no.	Sign	Present	%	Absent
1	*Sandhi vishleshs*	94	**54**	78
2	*Gatra sada*	111	**64.53**	61
3	*Dosha chavan*	119	**69.18**	53
4	*Kriya sannirodha*	112	**65.11**	60

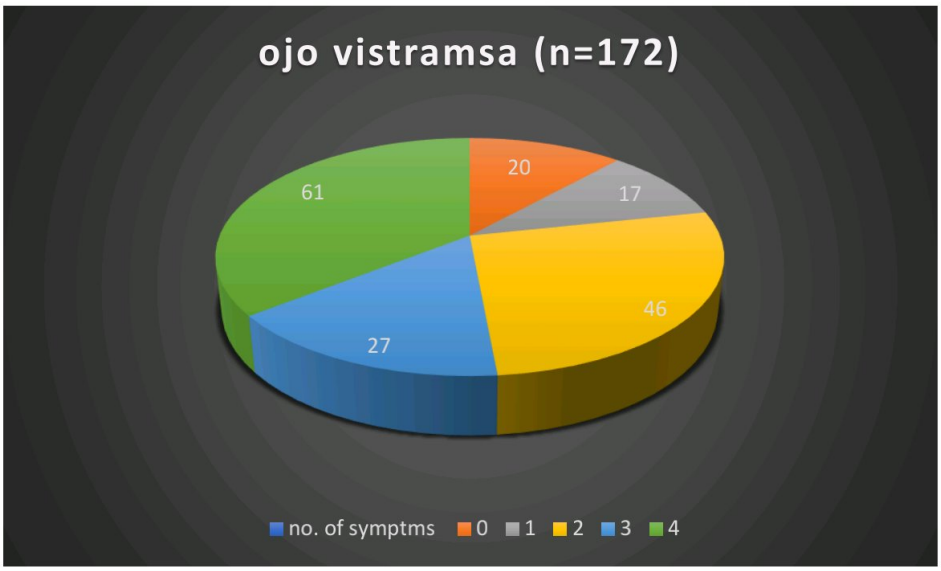
Among those 172 patients screened for signs and symptoms of *Ojo vistramsa*.The occurrence of signs of *Doshchavan* was maximum i.e. 69.18% however occurrence of the symptom *sandhi vishlesha* is lowest i.e. 54%.

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Graph 1 : **Signs of *Ojo vistramsa***



Graph 2 : Distribution of occurrence of symptoms of Ojovistramsa according to severity.



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Table no.9 : Severity of symptoms and signs of *ojo vistramsa*

no. of symptoms present from *Ojo vistramsa*	no. of patients showing these no. of symptoms.
0	20
1	17
2	46
3	27
4	61

The distribution of 6 symptoms of *Ojo Vistramsa* is as shown in figure. Patient who showed none of the symptom of *Ojo Vistramsa* were 20. While the patients who exhibited all the symptoms were 61.

Table no.10 : Assessment of *Ojo vistramsa* according to Sex.

Sr. no	Sign	Male(n=106)			Female(n=66)		
		Present	%	Absent	Present	%	Absent
1	*Sandhi vishlesha*	58	54.71	48	36	54.54	30
2	*Gatra sada*	68	64.15	38	43	65.15	23
3	*Dosha chavan*	75	70.75	31	44	66.6	22
4	*Kriya sannirodha*	62	58.49	44	50	75.75	16

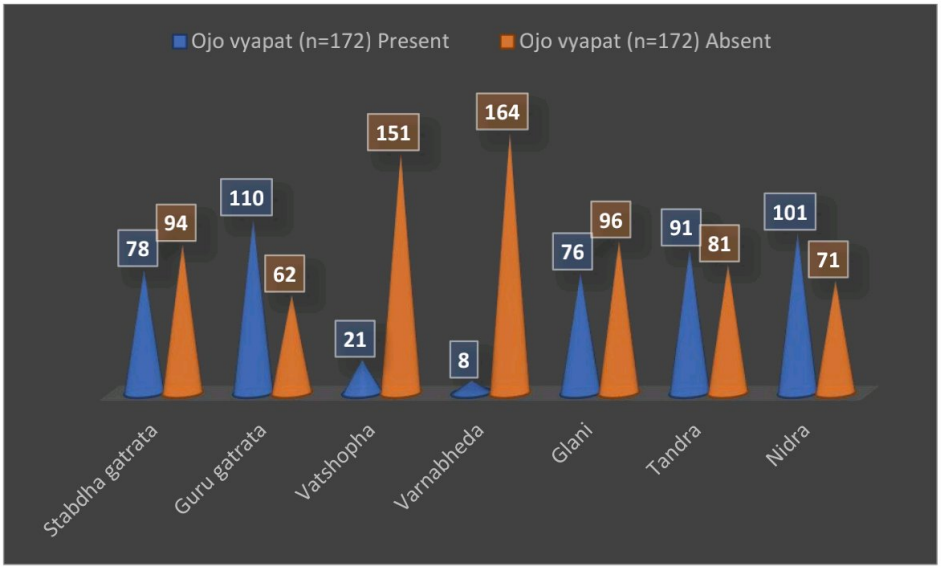
Sex wise distribution of symptom of *ojo vistramsa* is shown in table 3. Maximum no. of male patient showed presence of symptom *doshchavan* while maximum no . Of female patient showed the symptom *kriyasannirodha.*

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Table no.11 : Signs of *Ojo Vyapata* (n=172)

Sr. no.	Sign	Present	% of present	Absent
1	*Stabdha gatrata*	78	45.34	94
2	*Guru gatrata*	110	63.95	62
3	*Vatshopha*	21	12.20	151
4	*Varnabheda*	8	4.65	164
5	*Glani*	76	44.18	96
6	*Tandra*	91	52.90	81
7	*Nidra*	101	58.72	71

Graph 3 : Signs of *Ojo vyapat*



Among those 172 patients screened for signs and symptoms of *Ojo vyapata*. The occurrence of sign of *guru gatrata* was maximum i.e. 58.72% however occurrence of the symptom *varnabheda is* lowest i.e. 4.65%.

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Graph 4: Distribution of occurrence of symptoms of *Ojovyapat* according to severity.

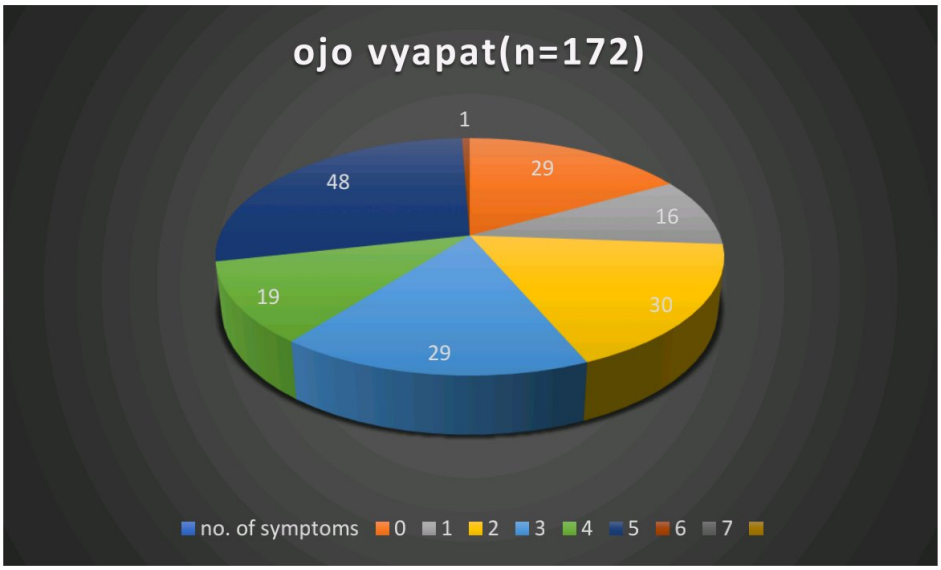


Table no.12 : Severity of symptoms and signs of *ojo vyapat*.

no. of symptoms present from *Ojo vyapat*	no. of patients showing these no. of symptoms.
0	29
1	16
2	30
3	29
4	19
5	48
6	1
7	0

The distribution of 5 symptoms of *Ojo Vyapat* is as shown in figure. Patient who showed none of the symptom of *Ojo Vistramsa* were 29. No patient exhibited all the symptoms collectively at the same time. Maximum of the symptoms i.e. 6 were shown by only 1 patient. Collectively 5 symptoms were shown by 48 patients.

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Table no. 13: Distribution of *Ojo vyapat* according to sex

Sr. No.	Sign	Male(n=106)			Female(n=66)		
		Present	**%**	**Absent**	**Present**	**%**	**Absent**
1	*Stabdha gatrata*	49	45.28	57	29	43.93	37
2	*Guru gatrata*	65	61.32	41	45	68.18	21
3	*Vatshopha*	13	12.26	93	8	12.12	58
4	*Varna bhed*	5	4.71	101	3	4.54	63
5	*Glani*	43	40.56	63	33	50	33
6	*Tandra*	50	47.16	56	41	62.12	25
7	*Nidra*	57	53.77	49	44	66.66	22

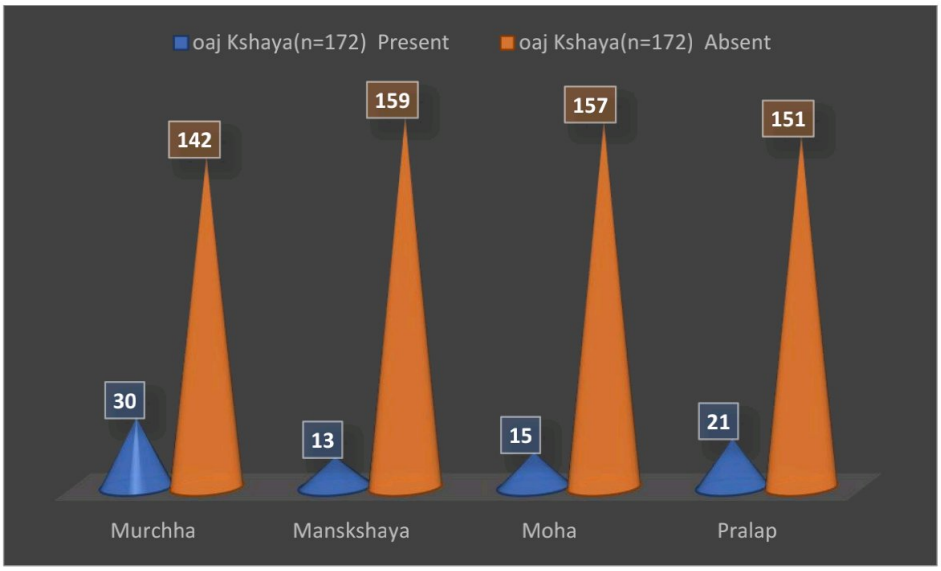
Sex wise distribution of symptom of *ojo vyapata* is shown in table 6. Maximum no. of male patient as well as female patient showed presence of symptom *guru gatrata*. Occurrence of symptom varnabheda was least in both the groups.

Table no.14: Signs of *Oja Kshaya*

Sr. no	Sign	Present	%	Absent
1	*Murchha*	30	17.44	142
2	*Manskshaya*	13	7.55	159
3	*Moha*	15	8.72	157
4	*Pralap*	21	12.2	151

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Graph 5 : Symptoms of *Oja Kshaya.*



Among those 172 patients screened for signs and symptoms of *Ojo kshaya*. The occurrence of sign *Murccha* was experienced by 17.44% patients while *manskshaya* was exhibited by 7.55% patients.

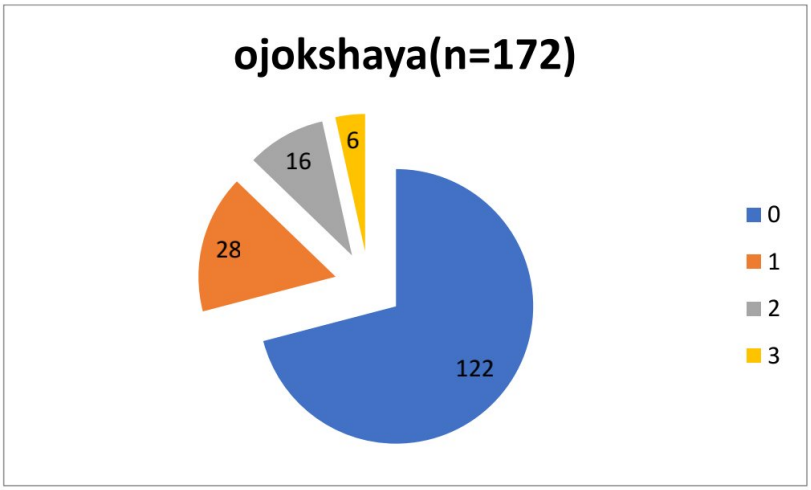
Table no. 15: *Oja Kshaya* Distribution according to sex.

Sr. No	Sign	Male(n=106)			Female(n=66)		
		Present	%	Absent	Present	%	Absent
1	*Murchha*	19	17.92	87	11	16.66	55
2	*Manskshaya*	6	5.66	100	7	10.6	59
3	*Moha*	5	4.7	101	10	15.15	56
4	*Pralap*	10	9.43	96	11	16.6	55

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Sex wise distribution of 4 symptom of *ojo ksahya* is shown in table 8.No. of male patient showed presence of symptom *murccha* while maximum no . Of female patient showed the symptom *murccha* and *pralap.*

Graph 6: Distribution of occurrence of symptoms of *Ojokshaya* according to severity (i.e. No. of symptoms)



The distribution of 4 symptoms of *Ojo kshaya* is as shown in figure. Patient who showed none of the symptom of ojo kshaya were 122. No patient exhibited all the symptoms collectively at the same time. Maximum no. of patient experienced only 1 among all the symptoms were 28.

Table no. 9 Severity of symptoms and signs of *ojo kshaya*.

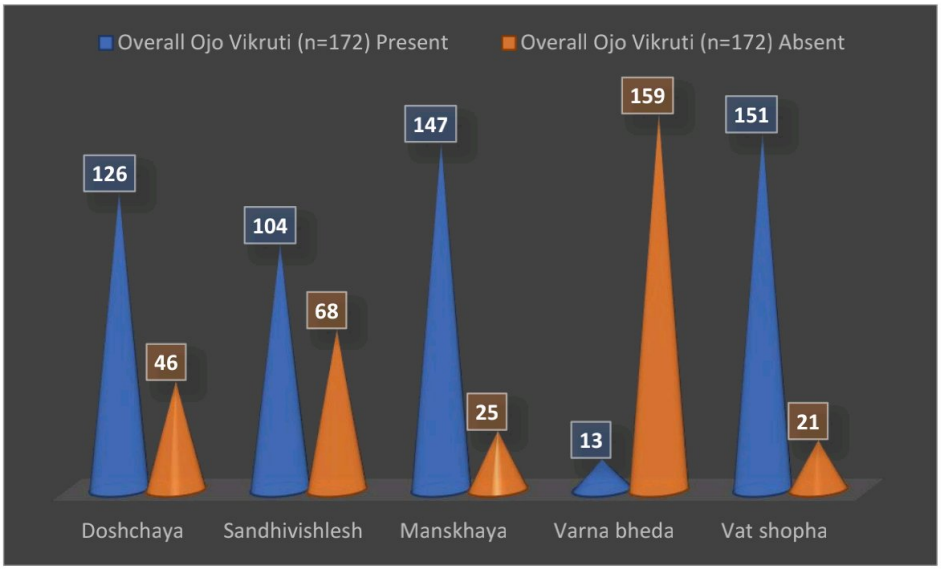
no. of symptoms present from *Ojo kshaya*	no. of patients showing these no. of symptoms.
0	122
1	28
2	16
3	06

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Table no.17: Signs of overall assesment of *oja dushti lakshana* :

Sr. No.	Sign	Present	%	Absent
1	*Doshcchavan*	126	73.25	46
2	*Sandhivishlesh*	104	60.46	68
3	*Manskhaya*	147	85.46	25
4	*Varna bheda*	13	7.55	159
5	*Vat shopha*	151	87.79	21

Graph 7 : Overall Assessment of *Ojo dosha*



Among those 172 patients screened for overall assessment of signs and symptoms of *Ojo dosha*. The occurrence of sign *manskshaya* was experienced by 85.25% patients while *varnabheda*, the least experienced was exhibited by 7.55 % patients.

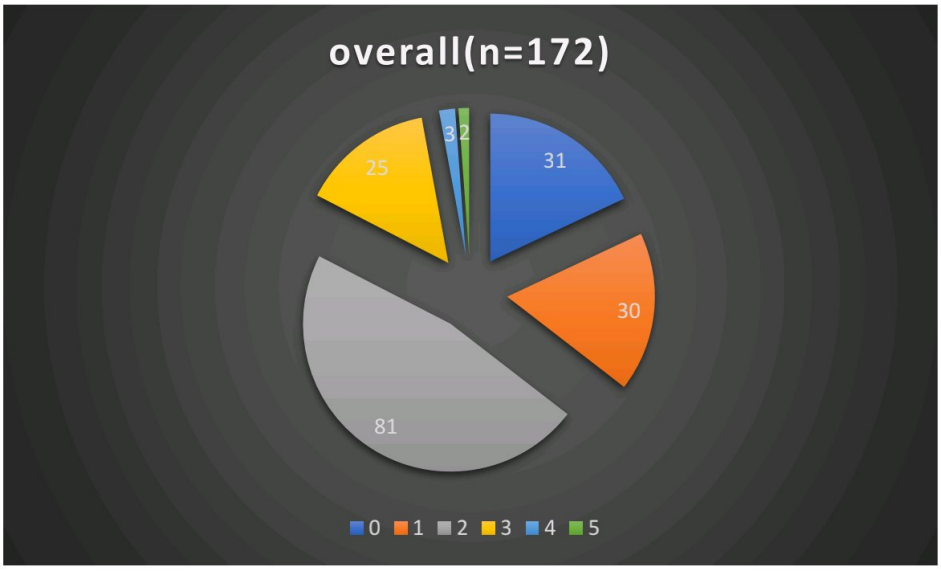
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Table no. 18: According to sex Signs of assesment of *oja vitramsa, vyapat & kshaya lakshana*

Sr. No.	Sign	Male			Female		
		Present	%	Absent	Present	%	Absent
1	*Doshcchavan*	78	73.58	28	48	77.09	18
2	*Sandhivishlesh*	65	61.3	41	39	59.09	27
3	*Manskhaya*	14	13.2	92	11	16.6	55
4	*Varna bheda*	7	6.6	99	6	9.09	60
5	*Vat shopha*	14	13.2	92	7	10.6	59

Sex wise distribution of symptom of *overall ojovikruti* is shown in table 11.No. of male as well as female patient showed presence of symptom '*doshcchavan.*'

Graph 8: Distribution of occurrence of symptoms of overall *Ojo dosha* according to severity (no. of occurrence.)



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Table no.19 : Severity of symptoms and signs of overall *ojo dosha*

no. of symptoms present from overall *Ojo dosha*	no. of patients showing these no. of symptoms.
0	31
1	30
2	81
3	25
4	3
5	2

The distribution of 5 symptoms of overall *Ojo dosha* is as shown in figure. Patient who showed none of the symptom of *ojo kshaya* were 31. Maximum no. of patient experienced 2 symptoms at the same time among all the symptoms were 81.

Table no.20 : STATUS OF BLOOD SUGAR (n=172)

Parameter	**Mean +Sd**	**CI**	**Median (range)**	**SEM**
Fasting BSL	134.75±40.49	128.63-140.88	130(67-276)	**3.12**
Post Prandial BSL	199.46±56.0	191.04-207.89	190(112-455)	**4.3**

Mean fasting blood sugar of the patient was found to be 134.75±40.49, CI(128.63-140.88), SEM-3.12. MEDIAN (RANGE)= 130(67-276)

Mean post prandial blood sugar is 199.46±56.0, CI(191.04-207.89),SEM-4.3. MEDIAN (RANGE)=190(112-455)

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14. EFFECT ON ADL INDEX.

MEAN ADL INDEX was found to be 18.51± 2.73. SEM was 0.20.CI-(18.10-18.92). MEDIAN (RANGE)=20(7-20)

15. EFFECT ON MMS

Mean MMS was found to be 23.8± 4.17 CI (23.23-24.48) SEM 0.31 . MEDIAN (RANGE) =26(25-29)

16. STATUS OF Manskshaya according to MRC-

Out of 172 patients screened for *Manskshaya* according to MRC 101 patients showed the signs positive for the same.

17. STATUS OF URINE Exudates-

Out of 172 patients screened for urine exdates**152** patients were found positive for it.

18. STATUS OF SERO EX-

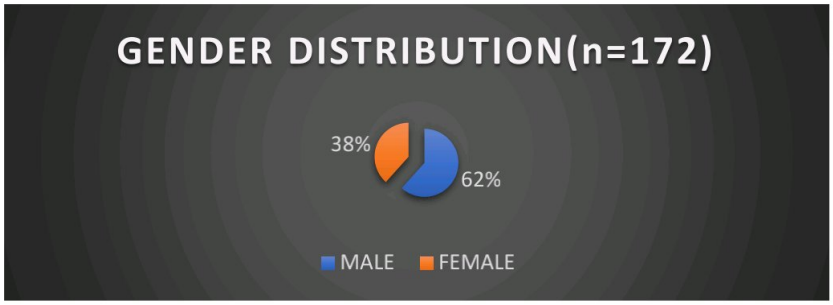
out of 172 patients screened for sero ex. **15** patients were found positive for it. Rest of the patients i e. **157** were negative for it.

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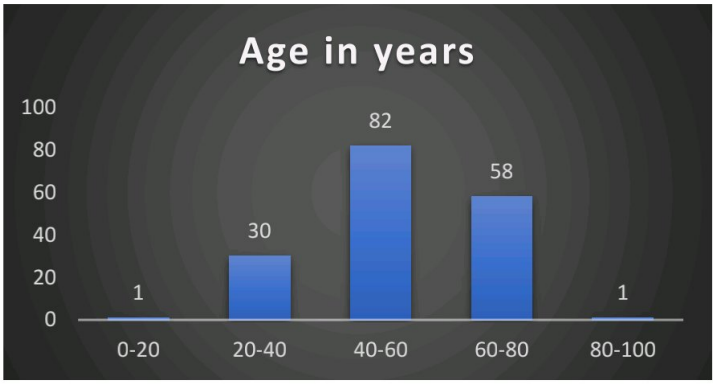
Results

Graph 9 : Gender Distribution

Predominance of male patients was found in the present group.



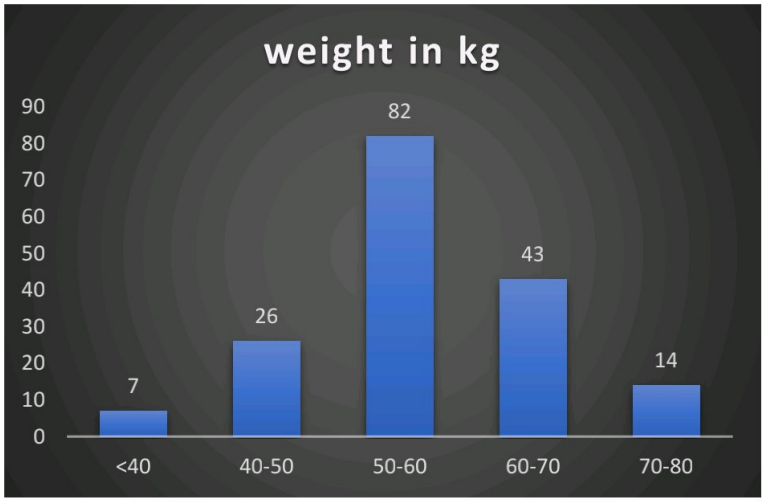
Graph 10 :Age wise distribution of the patient. (n=172)



Maximum no of patient belong to age group 40-60 yrs i.e. middle age.

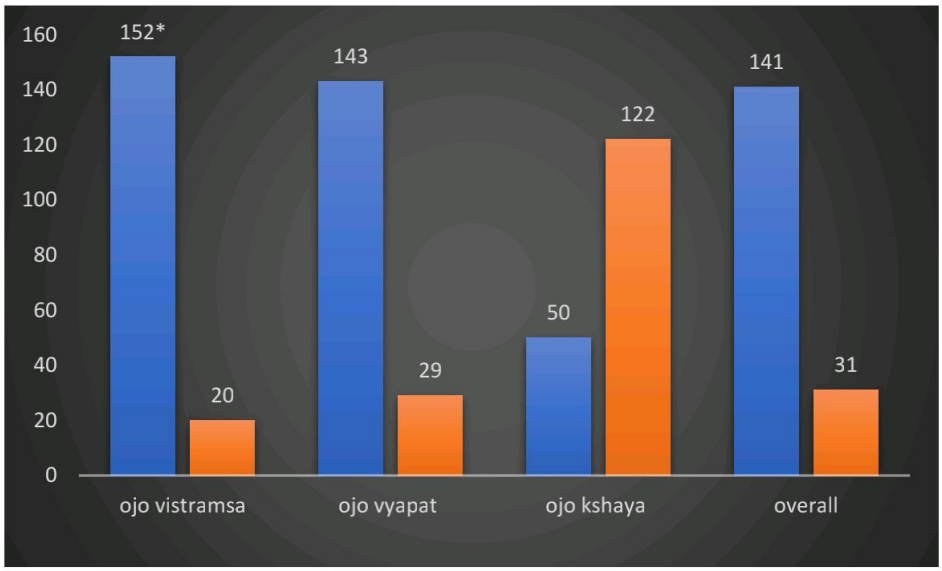
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Graph 11:Weight wise distribution of patients.(n=172)



Maximum no of patients were found in the weight of 50-60 kg.

Graph 12 :Occurrence of *Ojo dosha* (n=172)



*p<0.0001 using Chi-square test

Occurrences of symptoms of *Ojo vistramsa* is maximum and no of patients showing collective maximum symptoms are from *Ojo vistramsa* group. However *Ojo kshaya* symptoms were at minimum occurrence.

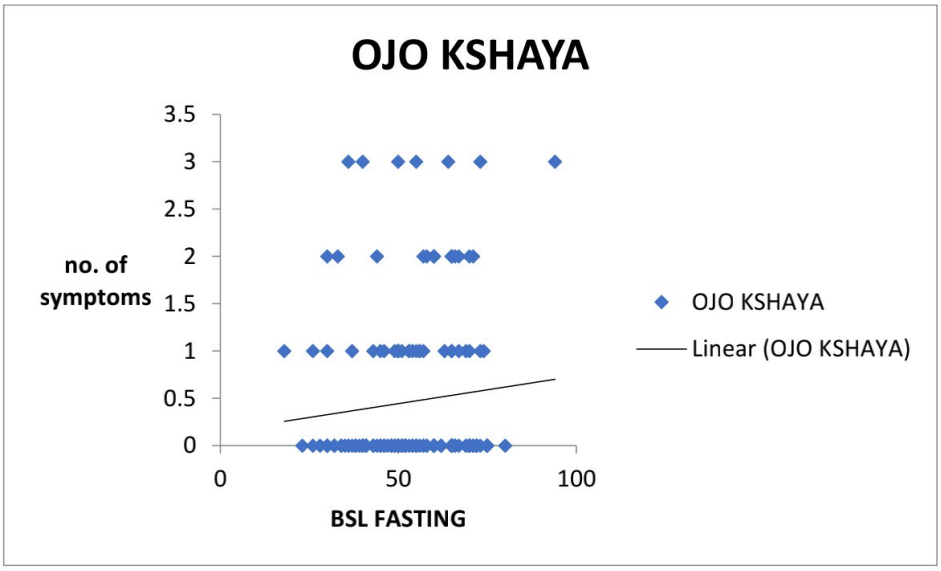
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Table no.21 : Effect of fasting blood sugar and *Ojodosha* . Correlation tests. (n=168)

Ojo vistramsa	Ojovyapata	Ojo kshaya	Total overall
Spearman r = 0.1213 (corrected for ties) 95% confidence interval: -0.03573 to 0.2724 The two-tailed P value is 0.1185 Considered not significant.	Spearman r = 0.1196 (corrected for ties) 95% confidence interval: -0.03690 to 0.2704 The two-tailed P value is 0.1224, considered not significant.	Spearman r = 0.08192 (corrected for ties) 95% confidence interval: -0.07489 to 0.2348 The two-tailed P value is 0.2911	Spearman r = 0.3763 (corrected for ties) 95% confidence interval: 0.2341 to 0.5026 The two-tailed P value is < 0.0001*

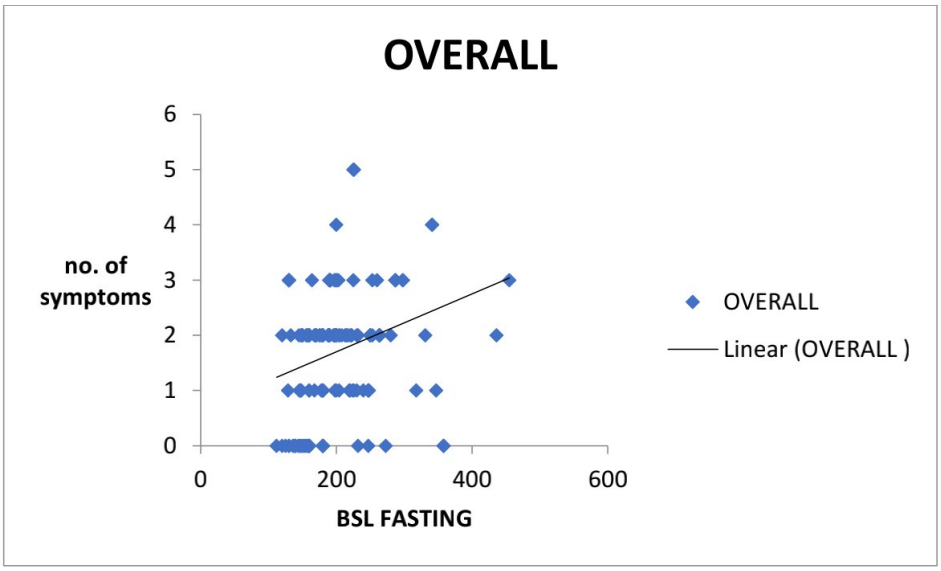
The symptoms of overall *Ojo dosha* and BSL fasting **are found positive for correlation**. But The symptoms of *Ojo vistramsa* and *vyapat* are not related to higher levels of fasting blood Sugar levels significantly .

Graph 13 : Correlation between Oja kshaya and BSL fasting.



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Graph 14 : Correlation between the overall ojokshaya and fasting BSL



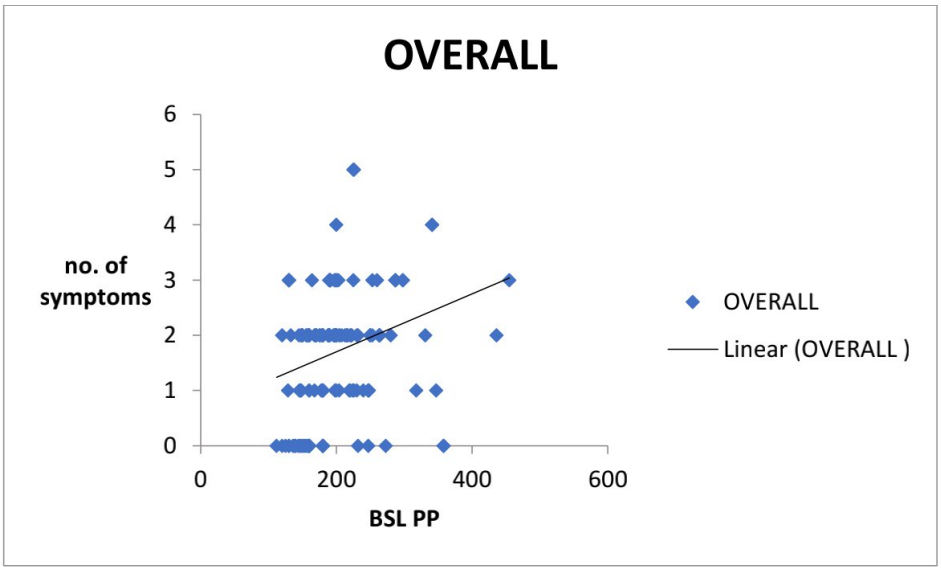
The symptoms of *Ojo kshaya* and BSL fasting are found positive for correlation. The symptoms of *Ojo kshaya* are directly related to higher levels of fasting blood Sugar levels.

Table no.22 : Effect of PP blood sugar and *Ojo dosha* . Correlation tests. (n=168)

Ojo vistramsa	*Ojovyapata*	*Ojo kshaya*	Total overall
Spearman r = 0.1149 (corrected for ties) 95% confidence interval: -0.04071 to 0.2652 The two-tailed P value is 0.1355, considered not significant.	Spearman r = -0.1182 (corrected for ties) 95% confidence interval: -0.2682 to 0.03744 The two-tailed P value is 0.1248, considered not significant.	Spearman r = 0.02826 (corrected for ties) 95% confidence interval: -0.1272 to 0.1824 The two-tailed P value is 0.7145,	Spearman r = 0.3415 (corrected for ties) 95% confidence interval: 0.1970 to 0.4715 The two-tailed P value is < 0.0001*

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Graph 14 : Correlation between the symptoms of overall ojokshaya and BSL PP.



The symptoms of overall *ojodosha* and BSL PP are found positive for correlation. The symptoms of overall *ojodosha* are directly related to higher levels of Post prandial blood Sugar levels.

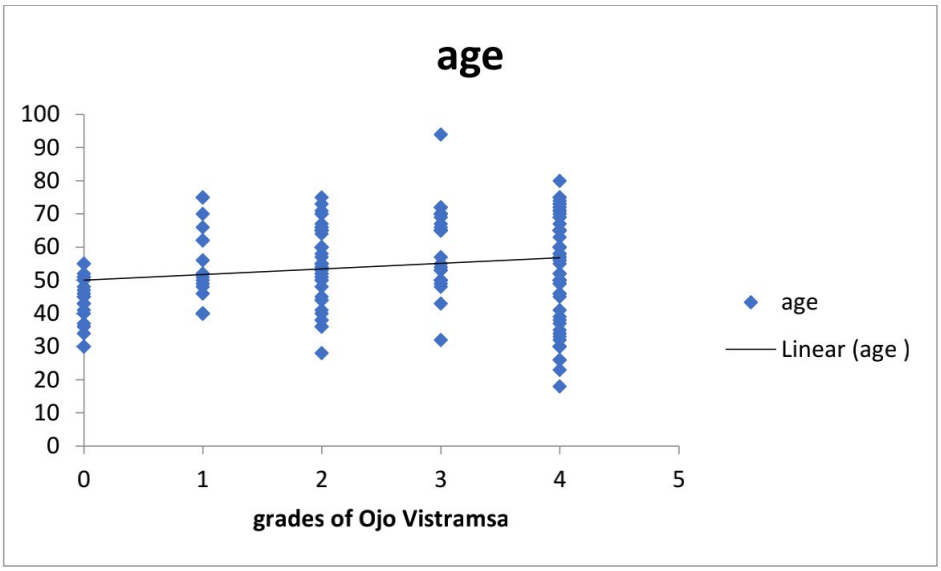
Table no.23 : Correlation of Age and signs of Ojo dosha

Ojo vistramsa	Ojovyapata	Ojo kshaya	Total overall
Spearman r = 0.1767 (corrected for ties) 95% confidence interval: 0.02328 to 0.3219 The two-tailed P value is 0.0204, considered significant.	Spearman r = -0.05746 (corrected for ties) 95% confidence interval: -0.2096 to 0.09743 The two-tailed P value is 0.4540, considered not significant.	Spearman r = -0.1812 (corrected for ties) 95% confidence interval: -0.3265 to -0.02749 The two-tailed P value is 0.0177, considered significant.	Spearman r = -0.05806 (corrected for ties) 95% confidence interval: -0.2106 to 0.09729 The two-tailed P value is 0.4507, considered not significant.

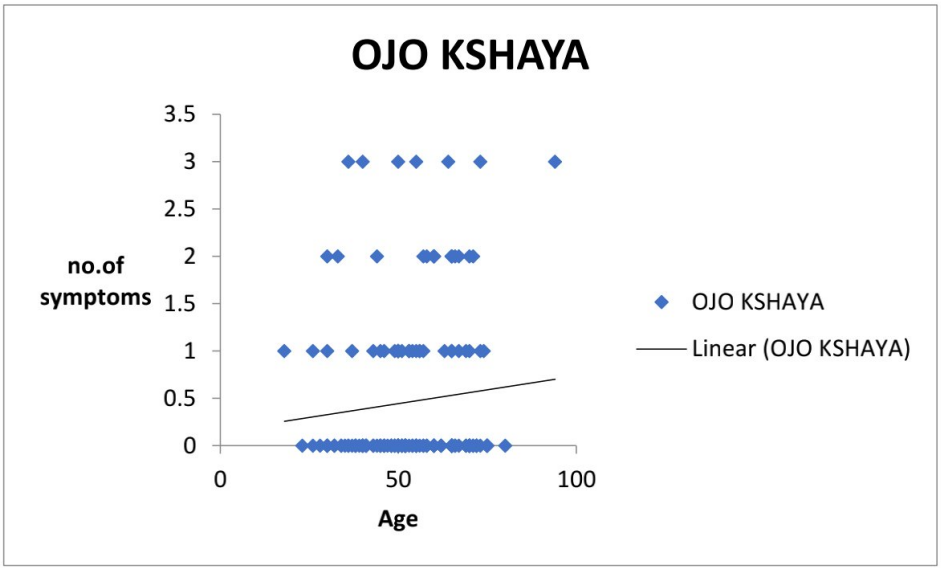
There was a positive correlation found between increasing age and signs of Ojo Vistramsa .

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Graph 15 :Correlation between increasing age and signs of ojo vistramsa.



Graph 16 : Correlation between Oja kshaya and age.



Also a weak negative correlation is found between Oaj Kshaya and Age .

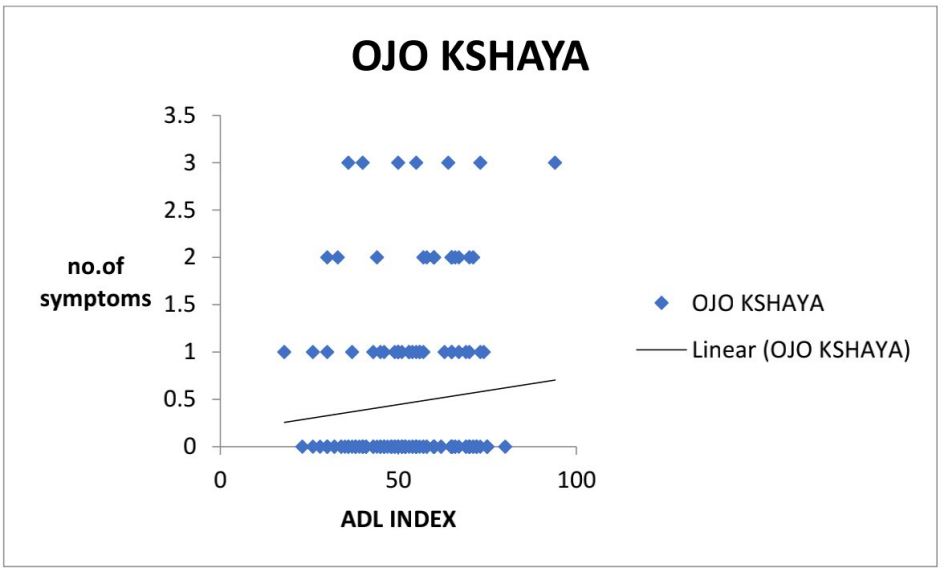
Table no.24: Correlation of ADL index and Ojodosha.(n=172)

Ojo vistramsa	Ojovyapata	Ojo kshaya	Total overall
Spearman r = -0.1348 (corrected for ties)	Spearman r = -0.1533 (corrected for ties)		

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95% confidence interval: -0.2830 to 0.01959 The two-tailed P value is 0.0778, considered not quite significant.	95% confidence interval: -0.3002 to 0.0007365 The two-tailed P value is 0.0447, considered significant.	Spearman r = -0.2103 (corrected for ties) 95% confidence interval: -0.3529 to -0.05814 The two-tailed P value is 0.0056, considered very significant.	Spearman r = -0.1045 (corrected for ties) 95% confidence interval: -0.2544 to 0.05034 The two-tailed P value is 0.1725, considered not significant.

Graph 17 : Correlation between signs and symptoms of ojo kshaya and ADL index.



There was a weak negative correlation found between signs and symptoms of *Ojo vistrmsa, ojo vyapat* and ADL index. There was a correlation found between ADL INDEX AND symptoms of *ojo kshaya* and ADL index. Signs and symptoms of *ojo dosha* and ADL index changes are inversely proportional.

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Table no.25: Co-relation of Mini Mental Status and Ojo dushti. (n=172)

Ojo vistramsa	Ojovyapata	Ojo kshaya	Total overall
Spearman r = 0.04713 (corrected for ties) 95% confidence interval: -0.1077 to 0.1997 The two-tailed P value is 0.5393, considered not significant.	Spearman r = -0.02001 (corrected for ties) 95% confidence interval: -0.1735 to 0.1344 The two-tailed P value is 0.7945, considered not significant.	Spearman r = 0.01376 (corrected for ties) 95% confidence interval: -0.1406 to 0.1674 The two-tailed P value is 0.8578, considered not significant.	Spearman r = 0.02154 (corrected for ties) 95% confidence interval: -0.1329 to 0.1750 The two-tailed P value is 0.7791, considered not significant.

There was no correlation found between MMs and symptoms of ojo dosha.

Table no.26 : Relation of Ojo dosha and *Manskshaya* according to MRC,(using Fisher Exact Test.)

Ojo vistramsa	Ojovyapata	Ojo kshaya	Total overall
The two-sided P value is < 0.0001, considered extremely significant. The row/column association is statistically significant. Relative Risk	The two-sided P value is < 0.0001, considered extremely significant. The row/column association is statistically significant. Relative Risk	The two-sided P value is < 0.0001, considered extremely significant. The row/column association is statistically significant. Relative Risk	The two-sided P value is < 0.0001, considered extremely significant. The row/column association is statistically significant. Relative Risk

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Relative risk = 2.734 95% Confidence Interval: 1.832 to 4.078 (using the approximation of Katz.)	Relative risk = 2.021 95% Confidence Interval: 1.461 to 2.795 (using the approximation of Katz.)	Relative risk = 0.5238 95% Confidence Interval: 0.4075 to 0.6733 (using the approximation of Katz.)	Relative risk = 1.917 95% Confidence Interval: 1.403 to 2.620 (using the approximation of Katz.)

Effect of all types of Ojo dosha is evident on the presence of MMs ex. It occurs if any type of Ojo dosha is present.

Table no.27. Effect of Ojo Dosha on Urine Exudates .(using Fishers exact test.)

Ojo vistramsa	**Ojovyapata**	**Ojo kshaya**	**Total overall**
The two-sided P value is < 0.0001, considered extremely significant. The row/column association is statistically significant. Relative Risk Relative risk = 1.942 95% Confidence Interval: 1.321 to 2.855	The two-sided P value is 0.0101, considered significant. The row/column association is statistically significant. Relative Risk Relative risk = 1.470 95% Confidence Interval: 1.078 to 2.005	The two-sided P value is < 0.0001, considered extremely significant. The row/column association is statistically significant. Relative Risk Relative risk = 0.4098 95% Confidence Interval: 0.3184 to 0.5275	The two-sided P value is 0.0218, considered significant. The row/column association is statistically significant. Relative Risk Relative risk = 1.401 95% Confidence Interval: 1.039 to 1.888

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(using the approximation of Katz.)	(using the approximation of Katz.)	(using the approximation of Katz.)	(using the approximation of Katz.)

The Fisher exact test for association is found statistically significant in all types of Ojo Dosha. This means all types of Ojo dosha are associated with presence of Urinary exudates.

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Discussion

This study exclusively comments on the *Oja , ojo dushti* , types of *ojo dushti* and relation of *ojo dushti* and status of the disease Diabetes Mellitus.

Evolution of the concept of *Oja* :

Charak explains *Oja* in sutrasthana in the context of marma and records that harm to this element may prove fatal. This element is present at the time of conception of human foetus and responsible for healthy progeny. Charaka terms this *Oja* as *prakut shlesha,* one of the body elements which can be measured in quantity. He sates the seat of the *Oja* and its characteristics which can be tested organoleptically.

Chakrapani comments that this is the factor which initiates the first heartbeat, it is important for healthy growing of foetus. All stages of development are dependent on *Oja*. Thus *oja* is responsible for healthy activities of all elements in the body.

Sushrut states, the most vital energy is *Oja*. The essence of all dhatus is termed as *oja*. The same he further quotes as *Bala*. The energy used for daily activities is nothing but bala which is due to *Oja* of the body . As ghee is present in milk in the same way *Oja* is an integral, core part of all the *Dhatus*.

He recommends that normal activities, a well formed healthy body, pleasant voice is due to unaffected *Oja*. *Dalhana* adds that normal healthy activity of sensory organs and locomotive organs and co-ordination between them is nothing but due to *Oja* only. Healthy thinking is also due to unaffected *oja*.

Vagbhata also comments as most vital force of the body is *oja* due to which normal functioning of the body happens.

Oja* is responsible for different *vyadhi

We state that once there is derangement of *Oja* is evident this is really hard to correct. On the basis of amount of *Ojo dushti*, we may have the classification of types *vyadhi* as follows.

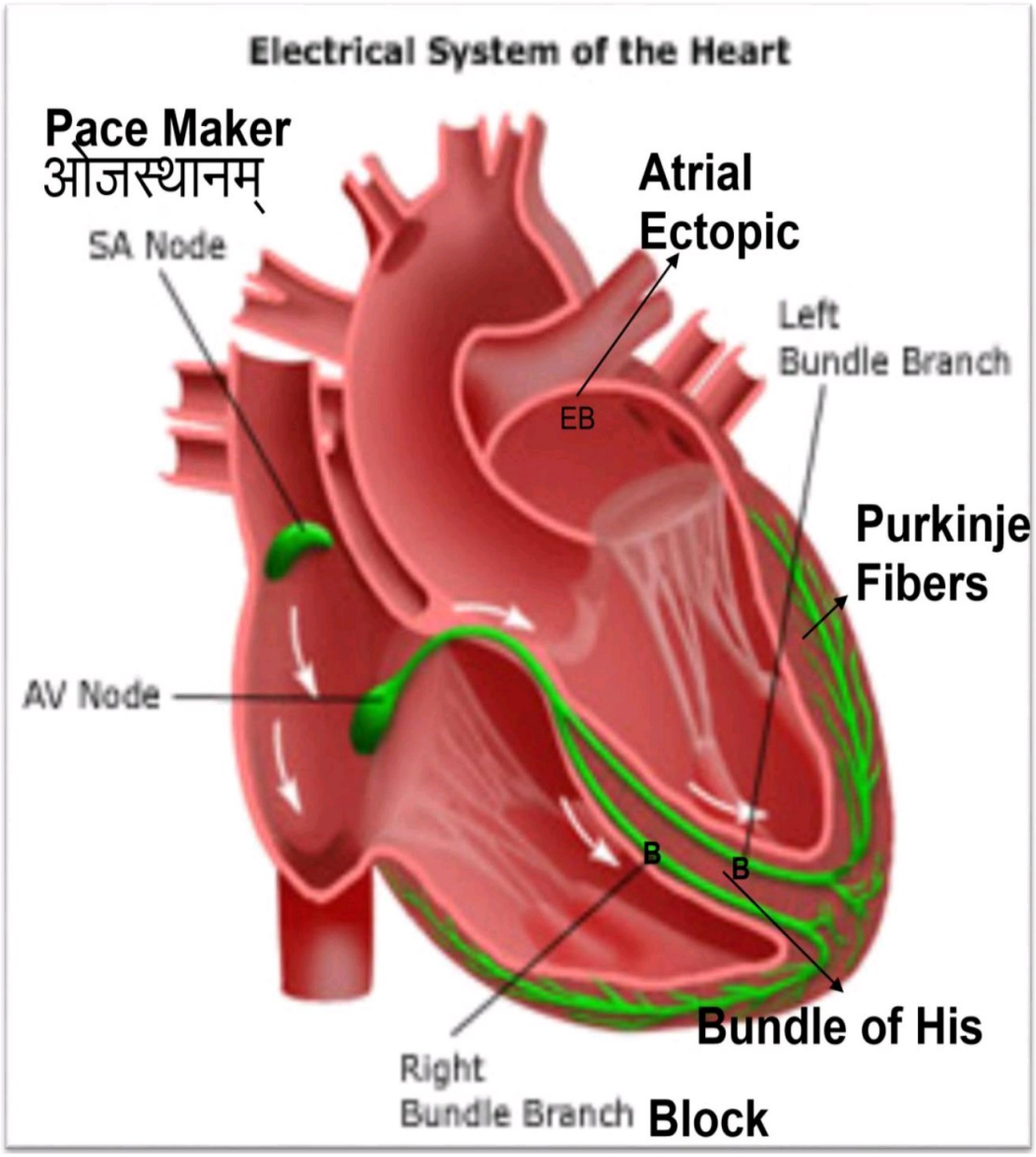
- *Sukhsadhya* – easily curable with minimum efforts and where derangement of *Oja* is minimum.

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- *Krucchsadhya* – difficult to cure where you find advanced derangement of Oja and has to be managed with at most care.
- *Yapya* – When there is advanced and irreversible type of *Ojo dushti* and amount of *Ojo dushti* is in correctable, then the health of the patient depends upon the efforts taken by Vaidya and patient himself. But in this type continuous derangement of *Oja* keep happening and disease ultimately is incurable.
- *Pratyakhyeya* : Irreversible , permanent damage to *Oja* which ultimately leads to death in no time.

Seat of *Par Oja* in heart

Par Oja is a vital energy responsible for bodily activity.It is like generator which provides source of energy for activity. According to modern anatomy SA node in heart provides impulse for heart



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beat and all other activity depends upon those heart beat. The size of SA node is also near about 8 drops of honey which corresponds to the amount of *Par Oja*.

Madhumeha vis -a-vis Type II DM and Ojo dushti -

Charak says: -"*Prameeho – Anushanginam*" – Ch.Su.25/40

Charak says that there is no permanent cure for '*Prameha*. By Observing & following the typical daily routines of food & exercise mentioned in Ayurvedic texts, the patients may become free from irritating Psyche-somatic symptoms but there is no permanent cure for this disease. The patients must follow the typical daily routines in their food Habits and exercise throughout their life time to maintain fitness. Thus Madhumeha is nothing but a *Yapya Vyadhi*.

When the symptoms of *Ojo dushti* and components of Diabetes Mellitus like BSL, ADL index, urine exudates and Mini mental status examination were compared. It was found that there is a close relationship with these factors and *Ojo dushti*.

Madhumeha is a *yapya vyadhi* where patient is alive and he may be in good general condition also. Hence the signs of *Ojo vistramsa* are found more. Where patient continues his life with the active disease and some degree of discomfort. However, the amount of *Ojo dushti* will progress gradually towards higher level of ojo dushti.

This is seen in the current study as well. As values of BSL and age of the patient increases the degree of *Ojo dushti* increases. Hence in all types of *vyadhi Oja* is to be protected primarily.

In *Prameha*, the "*Oja* pathology" including its qualitative loss becomes evident in three stages, i.e. *Ojo Vistramsa, Ojo Vyapad* and *Ojo Kshaya*.

1) The *Vistramsa* :- Means loss of attachment or in other words displacement from one's own seat. Thus activity is affected. It results in loss of absorption and utilization of the vital *Snigdha element* of the *Oja* by the body tissues which inevitably include blood, Muscles ligaments etc. This produces partial loss of muscle tone, laxity or looseness of ligaments & weakness of tendons resulting in '*Sandhi Vishlesh*'.

This results in alteration in capacity of joint activities and poor contractions and relaxations of skeletal muscles. This further produces '*Gatra Sad*' which means generalized slower activities of all the voluntary and involuntary muscles. Because of poor utilization of '*Oja'* all the motor

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activities are badly hampered, or stopped, and this is known as '*Kriya Sannirodha*.' This is the 1st stage of derangement of *Oja*.

If these patients (suffering form *Madhumeha*) are not treated properly or if they do not follow the daily food routines and exercise the patients go in to the 2nd stage of *Oja* derangement known as *Ojo Vyapad*.

Ojo *Vyapad*:-In this stage *Sandhi vishlesh* gets converted into loss of joint movements i.e *Sandhi stabhata. Gatrasad* further leads to loss of all the voluntary movements i.e *Stabhada Gatrata*. Odema develops on the dependent parts and discoloration of skin is also evident.

Oja kshaya :-Further stage of derangement of *Oja* is known as '*Oja Kshaya*.' There is an actual quantitative deficiency of *Oja*. The signs and symptoms of *Oja-Kshaya* that are predominantly seen in *Madhumeha* patients are *Moorchha, Mamsa Kshaya, Moha, Pralap* And further ending into Death.

In this study maximum patients were having symptoms of *Ojovistramsa* the first step of *Ojo Dushti*. Many patients did not show the symptoms of *Ojo kshaya* which is obvious as DM is in progressive stage.

In the present study mean age of the patients is between 40-60 yrs. It shows that the diabetes Mellitus is maturity onset disease. As age increases degree of signs and symptoms of *Ojo dushti* also increases this is because *Jara* is also a disease and ojo dushti is seen in every disease.

As weight of patient increases the sign and symptoms of *Ojo dushti* also increases. This is also evident that as rate of metabolism decreases signs of *Ojo dushti* also increases.

Total collective signs and symptoms of *Ojodushti* is directly proportional to higher levels of fasting and post prandial blood sugar. As amount of Blood sugar level increases it leads to more and more organ damage and turns into progressive disease stage and ultimately higher degree of *Ojodushti* occurs.

ADL index and quality of Mini Mental Status are inversely proportional to *Ojo vikruti* as the patient approaching to this study are quite independent. Hence if at all *Ojo dushti* is there the ADL Index and quality of Mini Mental Status are quite in good shape.

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Muscle examination status as per MRC is positive in 58%patients which suggests that muscle vesting happens due to Diabetes Mellitus and signs of *Ojo dushti* are also present along with that.

Urine exudates are found along with the signs and symptoms of *Ojo kshaya* which is obvious as *prameha* is associated with *prabhut avil mootrata* i.e Turbid urine.

So it is proposed that *Ojo dushti* is always associated with the state of Diabetes Mellitus and as disease progresses that will also progress further till *Oja Kshaya*. It can also be correlated with the immunity of the body also.

Limitations

1) The number of patients were 172 only and the limitation for study the observation of signs and symptoms only of *oja -dosha* in Type II DM patients
2) The investigation were limited to initial fasting and P.P. Blood sugar levels only
3) The observation study was limited to OPD patients only I.P.D. patients were not studied.

Scope For Further Work

1) Today the No. of patients of Type II DM is very High and thus there is a vast scope for comparative study of fasting and P.P. Blood sugar levels and its correlation with *Oja dosha Lakshanas*.(signs and symptoms)
2) There is vast scope to find out Ayurvedic treatment to correct the qualitative and quantitative derangement of '*Oja'*.

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Conclusion:

Occurrences of symptoms of *Ojo vistramsa* is maximum and number of patients showed collective maximum symptoms are from *Ojo vistramsa* group. However, *Ojo kshaya* symptoms were at minimum occurrence in patients of Diabetes mellitus.(p.81)

The signs and symptoms of *Ojo dushti* are directly related to higher levels of blood Sugar levels in patients of Diabetes mellitus.(p.83)

The signs and symptoms of *Ojo dushti* are directly related to increase in age in patients of Diabetes mellitus.(p.85)

The signs and symptoms of *Ojo dushti* are directly related to increase in weight in patients of Diabetes mellitus.(p.81)

The Signs and symptoms of *Ojo dushti* and ADL index changes are inversely proportional. As the amount of *Ojo dushti* increases quality of life decreases in patients of Diabetes mellitus.(p.86)

Effect of all types of *Ojo dushti* is evident in the presence of Muscular weaknesses in patients of Diabetes mellitus. It occurs if any type of *Ojo dosha* is present.(p.87)

There was no correlation found between quality of Mental status of patients of Diabetes mellitus and signs and symptoms of *ojo dosha.*(p.87)

Any kind of *Ojo dushti* is associated with presence of Urinary exudates in patients of Diabetes mellitus confirms the statement that in *Madhumeha Oja* is passed through Urine.(p.88,89)

There is a close relation between *Ojo dushti* and Diabetes Mellitus . Every patient with Diabetes Mellitus will present with some degree of *Ojo dushti.*

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–सु.सू.१/१४

२. एवमयं लोकसम्मितः पुरुषः । यावन्तो हि लोके मूर्तिमन्तो भावविशेषास्तावन्तः पुरुषे, यावन्तः पुरुषे तावन्तो लोके इति; बुधास्त्वेवं द्रष्टुमिच्छन्ति ॥१३॥

–च.शा.४/१३

३. अस्मिञ्छास्त्रे पञ्चमहाभूतशरीरिसमवायः पुरुष इत्युच्यते ।

–सु.सू.१/२२

४. तदायुर्वेदयतीत्यायुर्वेदः ;कथमिति चेत्? उच्यते– स्वलक्षणतः सुखासुखतो हिताहिततः प्रमाणाप्रमाणतश्च; यतश्चायुष्याण्यनायुष्याणि च द्रव्यगुणकर्माणि वेदयत्यतोऽप्यायुर्वेदः ।

–च.सू.३०/२३

५. सिद्धान्तो नाम स यः परीक्षकैर्बहुविधं परीक्ष्य हेतुभिश्च साधयित्वा स्थाप्यते निर्णयः ।

–च.वि.८/३७

६ .महाभूतानि खं वायुरग्निरापः क्षितिस्तथा ।
शब्दः स्पर्शश्च रूपं च रसो गन्धश्च तद्गुणाः ॥२७॥

–च.शा.१/२७

७. वायुः पित्तं कफश्चोक्तः शारीरो दोषसङ्ग्रहः ।

–च.सू.१/५७

८. रसो निपाते द्रव्याणां, विपाकः कर्मनिष्ठया ।
वीर्यं यावदधीवासान्निपाताच्चोपलभ्यते ॥६६॥

–च.सू.२६/६६

९. खादीन्यात्मा मनः कालो दिशश्च द्रव्यसङ्ग्रहः ।
सेन्द्रियं चेतनं द्रव्यं, निरिन्द्रियमचेतनम् ॥४८॥

–च.सू.१/४८

१०. खादीन्यात्मा मनः कालो दिशश्च द्रव्यसङ्ग्रहः ।
सेन्द्रियं चेतनं द्रव्यं, निरिन्द्रियमचेतनम् ॥४८॥

–च.सू.१/४८

११. शान्तेऽग्नौ म्रियते, युक्ते चिरं जीवत्यनामयः ।
रोगी स्याद्विकृते, मूलमग्निस्तस्मान्निरुच्यते ॥४॥

–च.चि.१५/४

१२. प्राकृतस्तु बलं श्लेष्मा विकृतो मल उच्यते ।
स चैवौजः स्मृतः काये स च पाप्मोपदिश्यते ॥११७॥

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–च.सू.१७/११७

१३. तत्र रसादीनां शुक्रान्तानां धातूनां यत् परं तेजस्तत् खल्वोजस्तदेव बलमित्युच्यते ॥१९॥

–सु.सू.१५/१९

१४. यत् सारमादौ गर्भस्य यत्तद्गर्भरसाद्रसः ।

–च.सू.३०/१०

१५. कफः पित्तं मलाः खेषु प्रस्वेदो नखरोम च॥६३॥
स्नेहोऽक्षित्वग्विशामोजो धातूनां क्रमशो मलाः।

–अ.ह्र.शा.३/६३

१६. रसादीनां शुक्रान्तानां धातूनां यत् परं तेजस्तत् खल्वोजस्तदेव बलमित्युच्यते ॥१९॥

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१७. दशैवायतनान्याहुः प्राणा येषु प्रतिष्ठिताः ।
शङ्खौ मर्मत्रयं कण्ठो रक्तं शुक्रौजसी गुदम् ॥३॥

–च.सू.२९/३

यद्धि तत् स्पर्शविज्ञानं धारि तत्तत्र संश्रितम् ॥६॥
तत् परस्यौजसः स्थानं तत्र चैतन्यसङ्ग्रहः ।

–च.सू.२९/३

१८. ओजः सङ्क्षीयते ह्येभ्यो धातुग्रहणनिःसृतम् ।

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प्राकृतस्तु बलं श्लेष्मा विकृतो मल उच्यते ।

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२०.स्तन्यं रजश्च नारीणां काले भवति गच्छति ॥२८॥
शुध्दमांसभवः स्नेहः सा वसा परिकीर्तिता ।
स्वेदो दन्तास्तथा केशास्तथैवोजश्च सप्तमम् ॥२९॥
इति धातुभवा ज्ञेया एते सप्तोपधातवः ।

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–सु.सू.१५/२४–२५

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ओजस् नं उड् असुन बलोपे गुणः ।

दीप्तो, अवष्टम्भे, प्राणबले,प्रकाशे,सामर्थ्ये । शब्दस्तोममहानिधी

ओजो दीप्तौ बलं,उब्जति अनेन वा ।

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उब्ज आर्जवे उब्जर्जले बलोपश्च । उ.४/१९२ इक्ष्यसुन्

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२७.संवर्तमानं ह्रद्यं समविंशति यत् पुरा ।च.सू.३०/४

२८.षडङ्.गम् अङ्.गं विज्ञानम् इंद्रियाणि अर्थपञ्चकम्

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२९.यत् शुध्दं रक्तम् ईषत्पीतकम् ।च.सू.१७/७४

३०.प्रथमं जायते ही ओजः शरीरेऽस्मिन् शरीरिणाम् ।

स्र्पिवर्णं मधुरसं लाजगन्धि प्रजायते ।च.सू.१७/७५

३१.अष्ट् बिन्दुकम् इति निष्कर्षः । इंदु टीका अ.सं.सू.१९/२७

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तत् परस्यौजसः स्थानं तत्र चैतन्यसङ्.ग्रहः ।।च.सू.३०/६

३४.दशैवायतनानि आहु .....।च.सू.२९/३

३५.....दश । ओजोवहाः शरीरेऽस्मिन् विधम्यन्ते समन्ततः । च.सू.३०/८

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३९.जीवशोणितं अपि ओजः शब्देनामनन्ति केचित् । डह्लण टीका सु.सू.१५/१९

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४३.कफ: पित्तं .....ओजो धातूनां क्रमशो मल: । अ.ह्र.शा.३/६३

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४७.प्राकृतस्तु बलं श्लेष्मा विकृतो मल उच्यते ।

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४८.ओज: सोमात्मकं .....। सु.सू.१५/२१

४९मलीभवति तत् प्राय: कल्पते किञ्चिदोजसो ।च.चि.८/४१

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५२.ओजसोऽपि मधुमेहे दूष्यत्वात् । चक्रपाणि टीका च.चि.६/८

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५५.ओजोस्तेजोऽग्नय: प्राणाश्चोक्ता देहाग्निहेतुका: ।च.चि.१५/३

५६.त्रिविधं बलमिति –सहजं,कालजं,युक्तिकृतं च ।च.सू.११/३६

५७.तत्र बलेन स्थिरोपचितमांसता सर्वचेष्टा स्वप्रतिघात: स्वरवर्णप्रसादो बाह्यानामाभ्यन्तराणां च करणानामात्मकार्यप्रतिपत्तिर्भवति । सु.सू.१५/२०

५८.स एवम् गुणयोगात् श्लेष्मला .....ओजस्विन: ....भवन्ति । च.चि.८/९६

५९.गुरु शीतं मृदु श्लक्ष्णं बहलं मधुरं स्थिरम् ।

प्रसन्नं पिच्छिलं स्निग्धमोजो दशगुणं स्मृतम् ।च.चि.२४/३१

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६०.ओजः सोमात्मकं स्निग्धं शुक्लं शीतं स्थिरम् सरम् ।

विविक्तं मृदु मृत्स्नं च प्राणायतनमुत्तमम् ॥ सु.सू.१५/२१

६१.स्निग्धं सोमात्मकं शुद्धं ईषल्लोहितपीतकम् । अ.ह्र.सू. ११/३८

६२.अभिघातात्क्षयात्कोपाच्छोकाद् ध्यानाच्छ्रमात्क्षुधः ।

ओजः सड्.क्षीयते ..... ॥ सु.सू.१५/२३

६३.व्यायामो अनशनं चिन्ता रुक्षाल्पाप्रमिताशमनम् ।

वातातपौ भयं शोको रुक्षपानं प्रजागरः ।च.सू.१७/७६

६४.....धातुग्रहणनिः सृतम् ।

तेजः समीरितं तस्माद्विस्रंसयति देहिनः ॥ सु.सू.१५/२३

६५.एतेन द्विविधमोजो दर्शयति – परम परं च ।चक्रपाणि टीका च.सू.३०/७

६६.तत् परस्यौजासःस्थानं तत्र चैतन्यसड्.ग्रहः ।च.सू.३०/७

६७.दश । ओजोवहाः शरीरेऽस्मिन् विधम्यन्ते समन्ततः ।च.सू.३०/८

६८.अम्बः पृथ्विभ्यां श्लेष्मा ।अ.सं.सू.२०/१

६९. प्राकृतस्तु बलं श्लेष्मा विकृतो मल उच्यते ।

स चेवौजाः स्मृतः काये स च पाप्मोपदिश्यते ।च.सू.१७/११७

७०.रसात्मकं वहति ओजः तत् निबध्दं हि चेष्टितम् । अ.ह्र.शा.३/१८

प्राकृतस्तु बलं श्लेष्मा विकृतो मल उच्यते ।

स चेवौजाः स्मृतः काये स च पाप्मोपदिश्यते ।च.सू.१७/११७

७१.प्रीणनं जीवनं लेपो

७२ .युनक्ति प्राणिनं प्राणः शोणितं ह्यनुवर्तते । च.सू.२४/४

७३.ऊष्माणमप्योजः शब्देनापरे वदन्ति । डह्लण टीका सु.ड्ô.१५/१९

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७४.यत् सारमादौ गर्भस्येति शुक्रशोणितसंयोगे जीवाधिष्ठितमात्रे यत् सारभूतं ,तन्नापि तिष्ठति । गर्भरसात् इति गर्भरसात् शुक्रशोणित संयोग परिणामेन कललरुपात् । चक्रपाणि टीका च.सू. ३०/१०

७५.शुक्रस्य सारमोजः ।अ.सं.शा.६/४६

७६.....ओजो धातूनां क्रमशो मलाः । अ.ह्र.शा.३/६३

७७.सप्तमी शुक्रधरा ,या सर्वप्राणिनां सर्वशरीरव्यापिनी । सु.शा.४/२०

७८.शुक्रं धैर्यं च्यवन प्रीति देहबलं हर्ष बीजार्थं च । सु.सू.१५/५(१)

७९.यत् परं तेज तत् खलु ओजः । सु.सू.१५/१९

८०.कफोत्था दश,पित्तजाः षट्,पवनात् चतुष्कः। च.चि.६/७

८१.द्वौ प्रमेहौ भवतः – सहजोऽपथ्यनिमित्तश्च । सु.चि.११/३

८२.स्थुल प्रमेही बलवानिहैकः कृशस्तथैकः परिदुर्बलश्च । च.चि.६/१५

८३.साध्या कफोत्था दश,पित्तजाः षट् याप्या, न साध्याः पवनात् चतुष्कः । च.चि.६/७

८४.तत्र सहजो मातृपितृबीजदोषकृतः। सु.चि.११/३

.यस्य यस्य हि अङ्.गावयवस्य विकृतिरुपजायते । च.शा.३/१७

८६.अहिताहारजोऽपथ्यनिमित्तः। सु.चि.११/३

८७.स्थुल प्रमेही बलवाननिहैकः कृशस्तथैकः परिदुर्बलश्च ।च.चि.६/१५

८८.साध्या कफोत्था ..... ।च.चि.६/७

८९.द्वौ प्रमेहौ भवतः– सहजोऽपथ्यनिमित्तश्च :। सु.चि.६/७

९०.आस्यासुखं स्वप्नसुखं दधीनि ग्राम्यौदकानुपरसाः पयांसि ।

नवान्नपानं गुडवैकृतं च प्रमेहहेतुः कफकृत् च सर्वम् ।च.चि.६/४

९१.द्वौ प्रमेहौ भवतः सहजोऽपथ्यनिमित्तश्च । तयोः पूर्वणोपद्रुत : कृशोरुक्षोऽल्पाशी पिपासुर्भृशं परिसरणशीलाश्च भवति उत्तरेण स्थुलो बहवाशी स्निग्धः शय्यासन स्वप्नशीलः प्रायेणेति । सु.चि.११/३

९२.श्लेष्मनिमित्तानां प्रमेहाणामाश्वभिनिर्वृत्तिकरा भवन्ति–

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तद्यथा– हायनकयवक चीनकोद्दालकनैषधैत्कटमुकुन्दकमहाव्रीहि प्रमोदक सुगन्धकानां नवानामतिवेलमतिप्रमाणेन चोपयोग,तथा सर्पिष्मतां नवहरेणुमाषसूप्यानां,ग्राम्यानूपौदकानां च मांसानां ,शाकतिलपललपिष्टान्नपायसकृशराविलेपीक्षुविकाराणां क्षीरनवमध्यमन्दकदधिद्रव मधुर तरूण प्रायाणां चोपयोग:मृजाव्यायामवर्जन,स्वप्नशयनासनप्रसङ्.ग,यश्च कश्चित् विधि: अन्योऽपि श्लेष्ममेदोमूत्रसञ्जनन:,स सर्वो निदान विशेष: ॥ च.नि.४/५

९३.उष्णाम्ललवणाक्षार कटुकाजीर्णभोजनोपसेविनस्तथाऽतितीक्ष्णातपाग्निसन्तापश्रम क्रोधविषमाहारोपसेविनश्च तथाविध :। शोकशोणितातिषेकजागरणविषमशरीरन्यासानुपसेवमानस्य तथाविध शरीरस्यैव क्षिप्रं वात: प्रकोपमापध्यते ।च.नि.४/३६

९४.कषाय कटुतिक्त रुक्षलघुशीतव्यवाय व्यायाम वमनविरेचनास्थापन शिरोविरेचनातियोगसन्धारणानशनाभिघातातपोद्वेग शोक शोणितातिषेकजागरणविषमशरीरन्यासानुपसेवमानस्य तथाविध शरीरस्यैव क्षिप्रं वात: प्रकोपमापद्यते ।च.नि.४/३६

९५.त्रिदोषकोपनिमित्ता विंशति प्रमेहा भवन्ति ।च.नि.४/३

९६.बहु अबध्दं मेदो मांसं शरीरजक्लेदं शुक्रंशोणितं वसामज्जा लसीका रसश्चौज: सङ्.ख्यात इति दूष्यविशेषा:। च.नि.४/७

९७.भौमाप्याग्नेयवायव्या: पञ्चोष्माण: सनाभस:।च.चि.१५/१३

९८.उष्मणोल्पबलत्वेन् धातुमाधमपाचितम् ।

दुष्टमामाशयगतं रसं आमं प्रचक्ष्महे ॥ अ.ह्र.सू.१३/१५

९९. बहु अबध्दं मेदो मांसं शरीरजक्लेदं शुक्रंशोणितं वसामज्जा लसीका रसश्चौज: सङ्.ख्यात इति दूष्यविशेषा:। च.नि.४/७

१००.अतिप्रवृत्ति: सङ्.गो वा ..... ।च.वि.५/२४

अतिप्रवृत्तिरिह स्त्रोतोबाह्यस्य रसादेर्बोध्दव्या: । चक्रपाणि टीका च.वि.५/२४

१०१.मेदश्च मांसं च शरीरजं च क्लेदं कफो बस्तिगतं प्रदूष्य ।च.चि.६/५

१०२.तन्नाविलप्रभूतमुत्रलक्षणा: सर्व एव प्रमेहा भवन्ति । सु.नि.६/६

१०३.शिरोहृद् बस्तिरोगाश्च मध्यमार्गानुसारिणो भवन्ति रोगा: ।च.सु.११/४९

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१०४.साध्या: कफोत्था दश ,पित्तजा: षट् याप्या न साध्य: पवनाच्चतुष्क : । च.चि. ६/७

१०५.तद्यथा – जटिलीभावं केशेषु,माधुर्यमास्यस्य करपादयो: सुप्ततादाहौ , मुखतालुकण्ठशोषं , पिपासाम् आलस्यं ,मलं काये ,कायच्छिद्रेषु उपदेहं ,परिदाहं सुप्ततां च अंगेषु षट्पदपिपीलिकाभिश्च शरीरमूत्राभिसरणं, मूत्रे च मूत्रदोषान्,विस्त्रं शरीरगन्धं,निद्रां,तन्द्रां च सर्वकालमिति । च.नि.४/४७

१०६.तेषां तु पूर्वरुपाणि – हस्तपादतलदाह: स्निग्ध: पिच्छिल गुरुता गात्राणां मधुरशुक्लमुत्रता तन्द्रा साद: पिपासा दुर्गन्धश्च श्वासस्तालुगलजिव्हा दन्तेषु मलोत्पत्तिर्जटिलीभाव: केशानां वृध्दिश्च नखानाम् । सु.नि.६/५

१०७.स्वेदोऽड्.गन्ध: शिथिलत्वमड्.गे शय्यासनस्वप्नसुखाभिषड्.ग: ।

ह्रुन्नेत्रजिव्हाश्रवणोपदेहो घनाग्ड्.ता केशनखातिवृध्दि: ॥

शीतप्रियत्वं गलतालुशोषो माधुर्यमास्ये करपाददाह: ।

भविष्यतो मेहगणस्य रूपं मुत्रेऽभिधावन्ति पिपीलिकाश्च ॥ अ.ह्र.नि.१०/३८–३९

१०८.दन्तादीनां मलाढयत्वं प्राग्रूपं पाणिपादयो: ।

दाहचिक्कणता देहे तृट् स्वाद्वास्यं च जायते ॥ मा.नि. ३३/५

१०९.तयो: पूर्वेणोपद्रुत: कृशो रुक्षोऽल्पाशी पिपासार्भृशं परिसरणशीलश्च भवति । सु.चि.११/३

११०.उत्तेण स्थूलो बहवाशी स्निग्ध: शय्यासन स्वप्नशील: प्रायेणेति । सु.चि.११/३

१११.बह्वबध्दं मेदो मांसं शरीरजक्लेद: शुक्रं शोणितं वसा मज्जा लसीका रसश्चौज: सड्.ख्यात् इति दुष्यविशेषा: ।च.नि.४/७

११२.दूषयित्वा वपु:क्लेदस्वेदमेदोरसामिषम्। अ.ह्र.नि.१०/४

११३.उपद्रवास्तु खलु प्रमेहिणां तृष्णातीसारज्वरदाहदौर्बल्यारोचकाविपाका: पूतिमांसापिडकालजीविद्रध्याद्यश्च तत् प्रसड्.गाद् भवन्ति ।च.नि.४/४९

११४.मक्षिकोपसर्पणमालस्यं मांसोपचय: प्रतिश्याय: शैथिल्यरोचकाविपाका: कफप्रसेक्अच्छर्दिनिद्राकासश्वासाश्चेति श्लेष्मजानामुपद्रवा: ,वृषणयोरवदरणं बस्तिभेदो मेढ्रतोदो ह्रदि शुलमम्लीका ज्वरातिसाररोचका वमथु: परिधुपन दाहो मूर्च्छा पिपासा निद्रानाश: पाण्डुरोगा: पीतविण्मुत्रनेत्रत्वं चेति पैतिकानां , ह्रद्ग्रहो लौल्यमनिद्रा स्तम्भ: कम्प:शूल: बध्दपुरीषत्वं चेति वातजानाम् । एवमेते विंशति प्रमेहा: सोपद्रवा व्याख्याता: । सु.नि. ६/१३

११५.अविपाकोऽरुचिश्छर्दीर्निद्रा कास: सपीनस: ।

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उपद्रवा: प्रजायन्ते मेहानां कफजन्मनाम् ॥

बस्तिमेहनयोस्तोदो मुष्कावदरणं ज्वार: ।

दाहस्तृष्णाम्लको मूर्च्छाविड्भेद्: पित्तजन्मनाम् ॥

वातिकानामुदावर्तकण्ठह्रद्ग्रहलोलता: ।

शूलमुन्निद्रता शोष: कास: श्वासश्च जायते ॥ वा.नि.१४/२२–२४

११६.तत्र प्रतिश्याय: शरीरशैथिल्यमरोचकाविपाकौ प्रसेकश्च्छर्दिर्निद्रा कासश्चा श्लेष्मजाणामुपद्रवा भवन्ति ।

वृषणावदरणं बस्तिमेढ्रतोदोऽम्लक: पिपासाज्वरो दाहो मूर्च्छातीसार: पाण्डुरोगश्च पित्तजानाम् ।

ह्रद् ग्रहो लौल्यम् अनिद्रता कम्प: शूलं बध्द पुरीषत्वं शोष : कास: श्वासश्च वातजानाम् । अ.सं.नि १०/१७–१८–१९

११७.शराविका कच्छपिका जालिनी सर्षपी तथा ।

अलजी विनताख्या च विद्रधी चेति सप्तमी ॥च.सू.११/८३

११८.तद्यथा – शराविका,सर्षपिका,कच्छपिका,जालिनी,.विनता,पुत्रिणी,मसूरिका,अलजी,.विदारिका,विद्रधिका चेति । सु.नि.६/१४

११९.शराविका कच्छपिका जालिनी विनताऽलजी।

मसुरिका सर्षपिका पुत्रिणी सविदारिका ॥

विद्रधिश्चेति पिटिका: प्रमेहोपेक्षया दश । अ.ह्र.नि.१०/२५–२६

१२०.....प्रमेहपिटीका दश ।

शराविका कच्छपिका पुत्रिणी विनतालजी ।

मसूरिका सर्षपिका जालिनी च विदारिका ।

विद्रधिश्च दशैता: स्यु: पिटीका मेहसंभवा: ॥ शार्ग्ङ्.धर संहिता पूर्वखण्ड ७/६३–६४

१२१. भोज

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१२२.संक्षेपतः क्रियायोगो निदान परिवर्जनम् । सु.उ.१/२५

१२३.स्थूल प्रमेहि बलवानिह एकः कृशस्तथैकः परिदुर्बलश्च ।

संतर्पणम् तत्र कृशस्य कार्यं संशोधन दोष बलाधिकस्य ॥च.चि.६/१५

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