# NAIDANIKA ASSESSMENT OF MADHUMEHA – A CLINICAL RESEARCH

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## ABSTRACT

**Introduction:** Ayurveda describes the imbalance of tridoshas as the basic cause behind every disease. Madhumeha is one of the disease which is included under *vatik prameha* where astringency is associated with sweetness in urine. The sedentary habits, excessive consumption of food preferred by the individuals specially *madhura* (sweet), *amla* (sour), *lavana* (salt) *rasa* predominant food with *guru* (heavy) and *snigdha* (oily and fatty) guna, are the factors which play key role for aggravating *doshas*. The modern medical science advocates sedentary life style with lack of exercise; intake of high carbohydrate and high saturated fat diets are associated with a higher risk of impaired glucose tolerance, and higher fasting glucose and insulin level. **Material and methods:** In this study 60 patients were selected from the OPD and IPD basing on the selection criteria and naidanik assessment of the patients was done basing on the demographic data obtained from the patients. **Result:** Taking in to consideration into the various observations, results obtained during study and discussion it can be inferred that Madhumeha is a Tridoshaja vyadhi with the main culprit dosha- *Kapha* and *vata*. Sedentary life style, indulgence of Kapha- meda vardhaka ahara, avoidance of regular exercise, day sleep is such findings of study which indicate *Santarpanajanya* origin of disease. Some of the patients were having positive family history of DM which is indicative of

prevalence of Kulaja pravritti of disease. 90% patients were having emotional stress. This clinical study also supports the naidanika factors as described in the Ayurvedic texts.

**KEYWORDS**: Madhumeha, Nidana, Kapha – Vata Dosha, clinical assessment.

**INTRODUCTION**

Ayurveda is the 'science of life'.[1] Ayurveda is based on the inter dependence of man and nature. All living and non-living things are mutually interlinked. The core principles of Ayurvedic philosophy revolve around three important factors of life, *viz. Vata Pitta* and *Kapha* which are called *Tridoshas*.[2] These are prime regulators of the body. All of us have a unique mix of the three which accounts for our basic nature or *prakriti*. Appropriate balance of *tridoshas* leads to a healthy state of life and inappropriate distribution causes imbalance in physiological or biochemical process that leads to different disorder or diseases.[3] *Madhumeha* is a disease included under *vatik prameha* where astringency is associated with sweetness in urine.[4] The word *Prameha* is derived from "*Miha sechane*" which means watering. '*Pra*' means excess of urine in both quality and frequency.[5] Thus, the manifestation of metabolic abnormality as well as urinary tract pathology are included in two symptoms: *prabhuta mutrata* (excessive urination) and *avila mutrata* (urine turbidity).[6] As per description if not cured or treated properly, in due course of time, *prameha* changes into *madhumeha.*[7]

**Different *Acharyas* have described various *nidana* (causative factors) for *Prameha-Madhumeha*, which are summarized below**

- *Charak* has described a wide range of *Nidana*s of *Prameha*. He has described the specific food types, their specific combinations and specific habits responsible for genesis of *Prameha*. He has also mentioned specific *Nidanas* responsible for aggravation of specific *dosha* and thereby specific *'doshaja'* type of *Prameha*.[8] In *Sutrasthana*, he has described specific causes responsible for '*Madhumeha*'.[9] In *Chikitsasthana*, *Charak* has stated *Sahaja* and *Kulaja* origin of disease.[10]

- *Sushruta* has described two types of *Prameha* i.e. *Sahaja* and *Apathyanimittaja*[11], which gives quite clear idea about the causes of P*rameha*.

- *Ashtanga Hridaya[12], Ashtanga Samgraha[13]* and *Madhav Nidan[14]* have given the same description as Charak Samhita.

- In *Bhela samhita two* types of *Pramehas* like- *Prakrutijameha* and *Swakrutameha* are described. *Prakrutijameha* is due to maternal or paternal genetic defects resulting in

*Prameha* since birth, whereas *Swakrutameha* is due to *apathya sevan.*[15]

- In *Harita Samhita,* while describing the causative factors, *vihara* is emphasized ahead of *ahara*. Excessive physical labour, excessive indulgence in sexual act and unethical practice; excessive consumption of *Tikshna- Ushna bhojana*, *Katu rasa*; excessive intake of wine or milk causes *Prameha.*[16]

As a whole, *Nidans* responsible for *Prameha* can be classified into three categories according to origin of disease as-
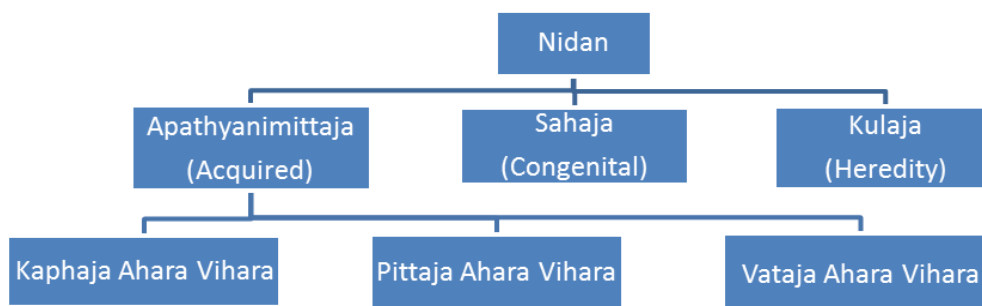


**1) Apathyanimittaja Nidan** (Table-1,2)

**Samanya Nidan:** These are the common etiological factors for *Kaphaja, Pittaja* and gradually turned *Vataja* varieties of *Prameha.* The etiological factors which are commonly responsible for Prameha i.e. *Samanya Nidan* of *Prameha*, are described by Charak[3] as-

a) *Asyasukham-* interest in sedentary habits.

b) *Swapnasukham-* pleasure of sleep.

c) *Dadhini-* overindulgence of various preparations of curds.

d) *Gramya, audaka, anoopa rasa-* soups of meat of domestic; aquatic and marshy land animals.

e) *Payansi-* various milk products.

f) *Navannapanam-* freshly harvested food articles and freshly prepared drinks (*madya-*alcohol).

g) *Guda vaikritam-* jaggery and its products.

h) All factors which are responsible for the aggravation of *Kapha* can cause *Prameha.*

- *Samanya Nidan*s described by *Sushruta*[4] are the same as described by *Charak*. He has described two additional *Nidan*s as-

a) *Medya sevinam-* over indulgence of fatty substances which are responsible for genesis of fat in body.[11]

b) *Dravannapana sevinam-* excessive use of food in the form of liquid form.

- *Vagbhatta* has described the same facts. He has accused the food and behavior pattern responsible for genesis of *Meda, Mutra* and *Kapha* in evolution of *Prameha.*[5]

**Nidan for Specific Doshaja Prameha** (Table-3)

**1. *Kaphaja Prameha Nidan*[17]**

a) Overuse of freshly harvested grains like *Hayanaka, Yavaka, Chinaka, Uddalaka, Naishadha, Itkata, Mukunda, Mahavrihi, Pramodaka, Sugandhaka.*

b) Intake of fresh pulses like *Harenu* and *Masha* along with *ghee*.

c) Intake of meat of *Gramya* (domestic), *Anoopa* (marshy) and *Audaka* (aquatic) animals.

d) Intake of Shaka, Tila, Palala, Pishtanna, Payasa, Krishara, Vilepi, Ikshuvikaras.

e) Intake of milk, fresh alcoholic preparations, immature curd, liquid, sweet and newly harvested food articles.

f) Avoidance of *udvartana* (massage) and physical exercise.

g) Indulgence of sleep, bed rest, sedentary habits.

h) Any behavior or act that induce the production of *Shleshma, Meda* and *Mutra*.

**2. *Pittaja Prameha Nidana*[18]**

a) Intake of *Ushna* [hot], *Amla* [sour], *Lavana* (salty), *Kshara* (alkaline) and *Katu* (pungent) food.

b) Intake of food before the digestion of previously taken food.

c) Exposure to excessively hot sun, heat of fire, physical exertion and anger.

d) Intake of uncoordinated food articles.

Above said factors cause immediate aggravation of *Pitta* and gives rise to *Pittaja Prameha* in individuals having constitution suitable for genesis of *Prameha*.

**3. *Vataja Prameha Nidan*[19]**

a) Excessive intake of *Kashaya* [astringent], *Katu* [pungent], *Tikta* [bitter], *Ruksha* [dry], *Laghu* [light for digestion], *Sheeta* [cold] things.

b) Excessive indulgence in sex and physical exercise.

c) Excessive administration of *Shodhana* therapies like *Vamana* [emesis], *Virechana* [purgation], *Asthapana Basti* [a kind of enema], *Shirovirechana* [elimination of *doshas* from head].

d) *Vegasandharana* [suppression of manifested urges], *Anashana* [fasting], *Abhighata* [assault], exposure to sun, grief, anxiety, excessive bloodletting, overnight awakening and

unco-ordinated posture of body.

In individuals having *Vata prakruti (vatik* body constitution), above said factors cause immediate aggravation of *Vata dosha* and thereby genesis *Vataja Meha*.

**2) Sahaja Nidan**

*Sushruta* has described *Sahaja Prameha*. Defective *Beeja* of *'matru'* and/or *'pitru'* causes *Prameha* in next generation. Patient having *Sahaja* origin of *Prameha* is *krusha* (cachectic), having dryness in body, eats little amount of food, often thirsty and by nature he is very unstable.[11] *Charak* has also given the clue regarding the involvement of *Beeja-dosha* in *Prameha*. These type of *Pramehas* are *asadhya* (incurable) in nature.[20] Charak has also described the *Garbhaja* origin of *Prameha* in *Sharirasthana*. Excessive intake of *madhura rasa* by mother during pregnancy causes *Prameha* in child.[21]

**3) Kulaja Prameha**

*Charak* has mentioned the *Kulaja Pravritti* of *Prameha.*[20] According to *Chakrapani, Kulaja Vikaras* are inherited from ancestors i.e. from generation to generation and are *asadhya*.

**Madhumeha Nidana**

Causative factors responsible for *Madhumeha* can be classified into three categories as-

**1) *Nidan* of *Keval Vataja Madhumeha*[19]**

- Madhumeha is described as one type of vataja prameha. Causative factors responsible for *Vataja Prameha*, produce a specific etiopathogenesis giving rise to *Madhumeha*.

- The specific nidan for vataja prameha has been describred before.

- These are mainly *Dhatukshyaja Hetus.*

**2) *Nidan* of *Avaranajanya Madhumeha*[9]: **(Table-4)

*Charak* in has described the causative factors and specific etiopathogenesis responsible to create *Madhumeha* as –

- Intake of excessive *Guru, Snigdha, Amla, Lavana ahara*, intake of excess amount of food, newly harvested food and drinks,

- Excessive sleep and sedentary habits, giving up of mental and physical exercise and avoidance of *Samshodhana Chikitsa* (purification of body) aggravates *Pitta* and *Kapha dosha, Meda* and *Mamsa dhatu*.

- These are mainly *Santarpana Hetus* (i.e. factors causing over nutrition).

3) **Ultimately evolved as *Madhumeha*[7]**

- *Madhumeha* is described as the terminal stage of all types of *prameha*.

- All *Prameha* reach to the stage of *Madhumeha* in due course of time when they are kept untreated or ill-treated for longer time.

**Nidanarthakara Roga of Prameha/Madhumeha**

- **Ajirna-** *Ajirna* leads to *Kaphaja Prameha*.[22]

- **Sthoulya-** Susruta has told that all *apathyanimittaja Pramehis* are *sthoola*.[11]

- **Prameha-** All other types of *pramehas* if neglected in its due course, lead into Madhumeha.[7]

**MATERIALS AND METHODS**

Following the criteria of selection, total 60 patients of Madhumeha (Type-2 Diabetes mellitus) from both the sexes within the age group of 30-70 years were selected from O.P.D. and I.P.D. of G.A.M, Puri for the propose of clinical study. Only Type 2 DM cases without any complications were accepted and all the cases of Type 1 DM and Type 2 DM with any complication were excluded. The cause of exclusion is that the type 1 DM cases do not respond to oral hypoglycemic agents, so insulin is inevitable for them. Also Type 2 DM cases with any complications would need another associated medication simultaneously. In both these cases the study results would be erroneous, thus excluded.

**Ethical clearance**

With due approval by the IEC (Institutional Ethical Committee), GAM, Puri the study has been conducted among the patients registered for the purpose. Written consent was obtained from each patient participated in the study with prior proper information.

**Criteria for selection of patients**
**Inclusion Criteria**

- Age- 30-70 years

- Sex- Both male and female

- Clinical features-

a) Bahumutrata (Polyuria)

b) Trushadhikyata (Polydipsia)

c) Kshudhadhikyata (Polyphagia)

d) Dourbalya (Weakness) etc.

- **Biochemical Features**

a) Fasting Plasma Glucose ≥ 126 mg /dl

b) Post prandial Plasma Glucose ≥ 200 mg /dl

c) Glycated Haemoglobin (HbA1c) ≥ 6.5

d) Glycosuria

**Exclusion Criteria**

- Age below 30 years and above 70 years

- Type-1 Diabetic mellitus

- Fasting Plasma Glucose ≥ 200mg/dl

- Angina or Myocardial Infraction

- Nephropathy

- Pancreatitis

- Pregnancy

- Pyrexia and any other systemic disorders

- Case having medical emergencies.

**Diagnostic investigation**

1. FBS

2. PPBS

3. HbA1c

4. Urine-RE, ME

**OBSERVATION**

1. **Age:** (Table. No-5)

- In the present study maximum no. of patients 29 (48.33%) were found in the age group 40-49 years.

- Textual references say that diabetes mellitus is a disease of middle age group. The present study also supports to this statement. The reason behind may be middle age is prone to weight gain and now-a-days to overcome social burdens one has to bear with utmost stress and monotonous foods, which favour this disease condition.

- The national urban diabetes survey in India showed that more than 50% of the diabetic

cases had the onset below 50 years. The present study is near to the statement.

**Sex**

- In the present study, out of 60 patients, 35 (58.33%) of the patients were Males and 25(41.67%) of the patients were Females.
- Textual references show that the male diabetic are excess in South –East Asia region. The Present study is in support to the statement.[2]

**Occupation:** (Table No.6)

- On occupational point of view, higher incidence 22(36.67%) was found among the housewife, followed by businessmen 15 (25%).
- The reason behind may be sedentary life style, less physical activeness and day sleep habits. This observation put lights on the *asyasukha* and *swapna sukha* as causative factors for disease.

**Onset of disease**

- As regards to onset of *madhumeha* it was completely gradual.
- Type 2 DM is typically gradual in onset. The Present study is in support to the statement.[3]

**History of Past illness**

- In this study 3 (5%) patients were with history of previous illness. Two of them had gestational DM in the past and one patient had type 2 DM which was subsided with medications and lifestyle management before.
- The ADA warrants gestational DM as one of the risk factors for developing type 2 DM in future.[4]
- And life style management and hypoglycemics subside the symptoms of Diabetes. On discontinuation of medications, the disease process may reverse.

**Family History:** (Table No-7)

- The present study shows positive Family History was found in 23 (38.33%) patients.
- As per textual references genetic factor plays an important role in developing
- *Madhumeha*. The observations from present study strengthen the data.[5]

**Socio-economic status**

- In the present study it has been observed that the maximum cases i.e. middle (73.33%) economic status group of people are more likely affected by disease.

- In the present era persons belonging to middle class are under the utmost stress and strain both socially and economically which may be a pre-disposing factor of *Madhumeha.*

**Nature of work:** (Table No-8)

- From the observation it is evident that most of the patients 32(51.67%) were habituated with light work, followed by medium 20 (33.33%) and Heavy 9 (15%).

- Light work indicates less physical activeness. There is always a chance of developing Insulin resistance. This might be the cause behind more prevalence of diabetes in light work patients.

**Sleeping habits:** (Table-9)

- In the present study it has been observed that amount of sleep was inadequate (53.33%) and adequate (46.67%); but the nature of sleep was sound in the maximum cases (73.33%) and incidence of day sleep in (48.33%) patients.

- These data are in accordance with the *swapna sukha nidan* of *Madhumeha.*

- Inadequate night sleep and day napping are associated with higher risk of diabetes. Present study is in accordance with the data.[6,7]

**Habitat**

- In the present study it has been observed that the maximum no. of patients i.e. 55(91.67%) were habitat of *anupa desha* (costal area); 2(3.33%) and 3(5%) were from *jangala* (hilly area) and *sadharana desha* (plain area).

- The predominance of *anupa desha* may be due to the geographical situation of study area. *Kapha* predominance is seen in *Anupa desha*.[8] This might be a predisposing factor for *Madhumeha*.

**Diet habits:** (Table No.10)

- In the present study it has been observed that there was an incidence of excessive consumption *Madhura* (100%), *Amla* (73.33%), *Lavana* (98.89%) and *Katu rasa* (83.33%). There was also excessive consumption milk and its derivatives (65%), curd (47%), *Navanna* (83.33%) and *Guda vikar* i.e. jaggery & its derivatives (100%)etc.

- Among 40 non-vegetarian patients 20 (50%)were taking *gramya mamsa* (meat of

domestic animal) and 40 (100%) taking *Audaka mamsa* (meat of aquatic animal).

- These factors are contributory for commencement of the pathological process for *Madhumeha.* In the light of *Guna* theory it was analysed and found that all the aforesaid food articles are responsible for the enhancement of the *Gunas* like *Snigdha, Guru-Sita, Manda, picchila* etc. All of these plays key role for aggravating respective *doshas* and also impairing the normal physiological process of the body.

**Addiction**

- In this study, 15 patients were addicted with tea/ coffee, 12(20%) with tobacco, 5 (8.33%) with smoking and 6 (10%) with alcohol.

- Tea/ coffee causes extra sugar intake, which in turn causes imbalance in the blood sugar level.

- Smoking increases inflammation and causes oxidative stress. These may be related to an increased risk of diabetes. Smoking also encourages the production of cortisol, a hormone that increases blood sugar. The 2014 Surgeon General's report estimates smokers have a 30 to 40% higher risk of Diabetes than non-smokers.[9]

**Stress:** (Table No- 11)

- In this study, 54(90%) patients were having emotional stress.

- *Chinta-shoka* are described as the *vata-pitta parakapa nidan* and acts as a precipitating factor for the evolvement of *madhumeha.*[10]

  - The relationship between stress and diabetic has been established by Modern science.[11,12]

**Prakriti (**Table-12)

- The role of *doshik prakruti* in the formation of disease, complication and prognosis has been established in the classical texts. It is said that *Madhumeha* though comes under *Vatik* category of *Prameha* still there is a strong association of *Kapha dosha.*[13]

- In this present study it has been observed that 55% of patients are of *vata- kaphaja prakruti*. So this is in support of the classical view.

**Agni**

- In the present study, 22 (36.67%) patients were having *Vishamagni*; 21(35%) and 17 (28.33%) patients were having *mandagni* and *tikshnagni* respectively.

- This variation in *agni* may be due to *apathya ahara* and *vihar sevan*.

- *Mandagni* leads to formation of *ama vata-pitta-kapha* which contributes to the pathogenesis of *madhumeha*.[14] In *Avarana* condition *Kapha* and *Meda* obstructs the path of *Vata*. This obstructed *Vata* revolves in the *Kostha* and increases the *Agni*, in turn enhancing the appetite.[15] Hence *Tikshnagni* may be found in *Avaranajanya Madhumeha*.

**Kostha**

- In the present study, 30 (50%) of the patients were having *Krura Kostha*, 14 (23.33%) were having *Madhyama Kostha* while 16 (26.67%) were having *Mridu Kostha*.

- Assessment of *Kostha* gives an idea about the constitution of patient. In this study, maximum no. of patients was of *Krura Kostha* which indicate dominance of *Vata dosha* in their constitution. Likewise, patients with *Madhya* and *Mridu Kostha* indicate dominance of *Kapha* and *Pitta* in their constitution.[16]

**Body Built**

- In the present clinical study, obese (13.33%) and overweight (48.33%) persons are affected with *madhumeha*.

- The ADA warrants gestational DM as one of the risk factors for developing type 2 DM in future. (Harrison's Principle of Internal Medicine; 19th Edition, page-2401)

- Obesity or significant weight gain induces carbohydrate intolerance. higher insulin levels and insensitivity to muscle and fat tissue to insulin, leading to this disease condition.

**Srotadusti: (Table-13)**

- In the present study the sign and symptoms like *Bahumutrata* (polyuria)*, Avila mutrata* (turbid urination) and *Trushna* (polydipsia) were found which suggests the involvement of *mutrabaha srotasa* and udakabaha srotas in all patients. Apart from this 58 (96.67) patients were found with *Medabaha dusti* symptoms like *alasya* (lassitude) and *Karapada-daha* (burning sensation) which is in favour of *samprapti* of *Madhumeha*.

**TABLES**

**Table 1: Showing the Aharaja Nidana of Madhumeha.**

| SN | Ahara as Nidan | Ch. Ni | Su. Ni. | A Hr. Ni | Ma.Ni. | Bhe.S. | B.P. | Y.R. |
|----|----------------|--------|---------|----------|--------|--------|------|------|
| 1 | *Dadhi Sevana* (Curd) | + | - | - | - | + | + | + |
| 2 | *Gramyamarasa* (flesh of domestic animal) | + | - | - | - | + | + | + |
| 3 | *Audakarasa* | + | - | - | + | + | + | + |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (flesh of acuatic animal) | | | | | | | |
| 4 | *Anupa Rasa* (flesh of marshy land animal) | + | - | + | + | + | + | + |
| 5 | *Payansi/ Kshira* (milk) | + | - | - | - | + | + | + |
| 6 | *Nava Anna* (New rice) | + | - | - | - | + | + | + |
| 7 | *Nava Pana* (New drinks/ wine) | + | - | - | - | + | + | + |
| 8 | *Guda Vaikruta* (jaggery and products) | + | - | + | - | + | + | + |
| 9 | *Kaphakara Hetu* | + | + | + | + | + | + | + |
| 10 | *Sheeta* (Cold property) | - | + | + | - | - | - | - |
| 11 | *Snigdha* (Soothingness) | - | + | + | - | - | - | - |
| 12 | *Madhura* (Sweet) | + | + | + | - | - | - | - |
| 13 | *Medovardhaka* (Fatty) | + | + | - | - | - | - | - |
| 14 | *Drava Anna* (liquid diet) | + | + | - | - | - | - | - |
| 15 | *Drava Pana* (drinks) | + | + | - | - | - | - | - |
| 16 | *Nava Dhanya* (Newly harvested rice). | + | - | + | - | - | - | - |
| 17 | *Nava Sura* (freshly prepared alcohol) | + | - | + | - | - | - | - |
| 18 | *Lkshu* (sugarcane) | + | + | + | - | - | - | - |
| 19 | *Gorasa* (Milk) | - | + | + | - | - | - | - |
| 20 | *Amla* (sour) | - | + | + | - | - | - | - |
| 21 | *Guru* (heaviness) | - | + | + | - | - | - | - |
| 22 | *Picchi*la (Slimness) | - | + | + | - | - | - | - |
| 23 | *Mandaka* (ill prepared curd) | + | + | - | - | - | - | - |

**Table 2: Showing Viharaja nidan of Madhumeha.**

| SN | Vihara as Nidan | C.S. | Su.S. | A.Hr. | Ma.Ni. | Bhe.S. | B.P. | Y.R. |
|---|---|---|---|---|---|---|---|---|
| 1 | *Asyasukha* (sedentary habits) | + | - | - | + | - | + | + |
| 2 | *Swapnasukha* (pleasure of sleep) | + | - | - | + | - | + | + |
| 3 | *Divaswapna* (day sleeping) | - | + | - | - | + | - | - |
| 4 | *Avyayama* (no exercise) | + | + | - | - | + | - | - |
| 5 | *Alasya* (laziness) | - | + | - | - | - | - | - |
| 6 | *Ekasthanasana* (sitting at a place) | - | - | + | - | - | - | - |
| 7 | *Rati* (sexual activity) | - | - | + | - | - | - | - |
| 8 | *Vidhirahita shayana* (not following the rules for sleep) | - | - | + | - | - | - | - |
| 9 | *Swapnaprasanga* (sleeping) | + | - | - | - | - | - | - |
| 10 | *Sayanaprasanga* | + | - | - | - | - | - | - |
| 11 | *Asanaprasanga*(sitting) | + | - | - | - | - | - | - |
| 12 | *Shareera sodhana varjya* (avoiding purification of body) | + | - | - | - | - | - | - |

**Table 3: Showing the *Nidans* for specific *dosaja prameha*.**

| *Nidan* | *Kapha* | *Pitta* | *Vata* |
|---|---|---|---|
| | | | |

| Ahara | *Hayanaka-Yavaka-Chinaka-Uddalaka-Naishada-Ithkata-Mukunda-Mahavrihi -Modaka-Sughandaka; Sarpi,Navaharenu, Masha; Anupa- Audaka-Gramyamamsa; Shaka, Palala, Tila; Pistanna-Payasa-Krushara-Vilepi; Ikshu, Sharkara, Kshira, Navamadhya, Mandaka-Dadhi, Drava- Madhura-Tarunaprayanam* | *Ushna, Amla-Lavana-Kashaya-Katu, Ajirna-Vishamashana* | *Kashaya-Katu-Tikta, Ruksha-Laghu-Sheeta,* |
|---|---|---|---|
| Vihara | *Mrujavarjana, Abyayama, Swapnashayana, Aasanaprasanga* | *Atiatapasevana, Santapa, Shrama, Krodha* | *Atiyoga of Vyavaya, Vyayama, Vamana, Virechana, Ashtapana, Shiroovirechana, Shonita Atisheka, Sandharana, Anashana, Abhighata, Atapa, Udvega, Shokha, Jagarana,Vishama Shareera, Asana, Upasevana.* |

**Table 4: Showing the *nidan* for *Avaranajanya Madhumeha.***

| Ahara | Vihara |
|---|---|
| *Guru-Snigdha, Amla-Lavana, Navanna-pana* | *Nidra sukha, Asya sukha, Tyakta vyayama, Achintana Sansodhana Akurvatam* |

**Table 5: Showing the incidence of age in patients.N=60**

| Age in years | f | % |
|---|---|---|
| 30-39 | 11 | 18.33 |
| 40-49 | 18 | 30 |
| 50-59 | 16 | 26.67 |
| 60-69 | 15 | 25 |

N= Total No of Patients, f= Frequency/No. of patients, % = Percentage

**Table 6: Showing the incidence of occupation in patients.N=60**

| Occupation | F | % |
|---|---|---|
| Service Holder | 12 | 20 |
| Businessman | 15 | 25 |
| Labourer | 6 | 10 |
| Housewife | 22 | 36.67 |
| Retired | 5 | 8.33 |

N= Total No of Patients, f= Frequency/No. of patients, % = Percentage

**Table 7: Showing family history in patients.        N=60**

| Family History | f | % |
|---|---|---|
| Present | 23 | 38.33 |
| Absent | 37 | 61.67 |

N= Total No of Patients, f= Frequency/No. of patients, % = Percentage

**Table 8: Showing the nature of work in patients.  N=60**

| Nature of work | F | % |
|---|---|---|
| Heavy | 9 | 15 |
| Medium | 20 | 33.33 |
| Light | 31 | 51.67 |

N= Total No of Patients, f= Frequency/No. of patients, % = Percentage

**Table 9: Showing the sleeping habit in patients.   N=60**

| Sleeping habits | f | % |
|---|---|---|
| **Amount of sleep** | | |
| Adequate | 28 | 46.67 |
| Inadequate | 32 | 53.33 |
| **Nature of Sleep** | | |
| Disturbed | 16 | 26.67 |
| Sound | 44 | 73.33 |
| **Day Sleep** | | |
| Day sleep | 29 | 48.33 |

N= Total No of Patients, f= Frequency/No. of patients, % = Percentage

**Table 10: Showing the Food habit as Nidan (causative factor) in patients.       N=60**

| Food habits | f * | % |
|---|---|---|
| **Rasa abhyasa** | | |
| Madhura (Sweet) | 60 | 100 |
| Amla (Sour) | 44 | 73.33 |
| Lavana (Salt) | 59 | 98.89 |
| Katu (Pungent) | 50 | 83.33 |
| Tikta (Bitter) | 4 | 6.67 |
| Kashaya (Astringent) | 26 | 43.33 |
| **Food articles** | | |
| Payah (Milk) | 39 | 65 |
| Dadhi (curd) | 47 | 78.33 |
| Navanna (Fresh grains) | 53 | 83.33 |
| Guda vikara (Jaggery and its products) | 60 | 100 |
| **Mamsa sevan** | | |
| Gramya | 20 | 33.33 |
| Audaka | 40 | 66.67 |

N= Total No of Patients, f= Frequency/No. of patients,* = multiple involvement % = Percentage

**Table 11: Showing the incidence of stress in patients       N=60**

| Stress | f | % |
|---|---|---|
| Present | 54 | 90 |
| Absent | 6 | 10 |

N= Total No of Patients, f= Frequency/No.of patients, % = Percentage

**Table 12: Showing the incidence of prakriti in the patients         N=60**

| Prakriti | F | % |
|---|---|---|
| Vata | 0 | 0 |
| Pitta | 0 | 0 |
| Kapha | 0 | 0 |
| Vata-pitta | 18 | 30 |
| Vata-kaphaja | 33 | 55 |
| Kapha-pittaja | 8 | 13.33 |
| Tridoshaja | 1 | 1.67 |

N= Total No of Patients, f= Frequency/No.of patients, % = Percentage

**Table 13: Showing Incidence of Srotodusti in patients.    N=60**

| Srotodusti | f * | % |
|---|---|---|
| Mutra | 60 | 100 |
| Udaka | 60 | 100 |
| Rasa | 17 | 28.33 |
| Rakta | 43 | 71.67 |
| Mamsa | 27 | 45 |
| Meda | 58 | 96.67 |
| Majja | 50 | 83.33 |
| Sukra | 7 | 11.67 |

N= Total No of Patients, f= Frequency/No.of patients, % = Percentage *Multiple Involvement.

**DISCUSSION**

Ayurveda states that '*Madhumeha*' is the terminal stage of all the *Pramehas*. All the *pramehas* turn to *madhumeha* in due course of time due to improper treatment or negligence. As per the references all *prameha* can be interpreted as *Madhumeha* in terms of sweetness of body and urine. *Madhumeha* can be compared with Diabetes mellitus considering the state of hyperglycemia and glycosuria. All the factors (food and regimens), that increase the quantity and vitiate *Kapha dosha* in the body, are said to be the main causative factors of *madhumeha*. The sedentary habits, excessive consumption of food preferred by the individuals specially *madhura* (sweet), *amla* (sour), *lavana* (salt) *rasa* predominant food with *guru* (heavy) and *snigdha* (oily and fatty) guna, are the factors which play key role for aggravating *doshas.* The modern medical science advocates sedentary life style with lack of exercise; intake of high carbohydrate and high saturated fat diets are associated with a higher risk of impaired glucose tolerance, and higher fasting glucose and insulin level. Higher proportions of saturated fatty acids in serum lipid or muscle phospholipid have been associated with higher fasting insulin, lower insulin sensitivity and a higher risk of type 2 DM. Thus both Ayurveda and Modern

science agree with the same causative factors for the diseases *Madhumeha* and this is also obtained from the present study.

Due to *Nidana sevana* (aforesaid diet and lifestyle), the *Kapha* gets vitiated and transformed into *bahu drava slesma* which in turn hampers the *visarga karma* of *Kapha*. This could be correlated as the soluble glucose abundantly found in blood in case of impaired glucose metabolism leading to hyperglycaemia. Simultaneously the *Meda dhatu* gets vitiated and remains as *Bahu* and *Abaddha* state. Here the *samhanana of meda* is diminished and *sithilata* prevails. This may be correlated with the free fatty acids in blood because of increased lipolytic rate in Diabetes.

These changes in *dosha* and *dushya* and in the subsequent *dosha-dushya samurcchana* phase *visyandana-kledana karma* - prevails leading towards *mutra bruddhi*. This could be correlated as the increased catabolism. So Triglycerides, Glycogen etc. are decomposed and excreted out via respective pathways. In this overall process the role of *vata* is executed either due to *Avaranajanya* of *Dhatukshayajanya*. This *Avaranajanya vayu vikriti* could be simulated as the Insulin insensitivity resulting due to Amylin deposition among β-cells of islet of langerhans. The *dhatu kshayajanya vayu prakopa* can be seen as enhancement of catabolic processes in the body and increase of free radicals.

**CONCLUSION**

Taking in to consideration into the various observations, results obtained during study and discussion it can be inferred that Madhumeha is a Tridoshaja vyadhi with the main culprit dosha- *Kapha* and *vata*. Diabetes mellitus, which is a metabolic disorder, can be compaired with Madhumeha according to presentation of disease as well as according to etiological factors involved. Sedentary life style, indulgence of Kapha-meda vardhaka ahara, avoidance of regular exercise, day sleep is such findings of study which indicate *Santarpanajanya* origin of disease. Some of the patients were having positive family history of DM which is indicative of prevalence of Kulaja pravritti of disease. 90% patients were having emotional stress. This clinical study also supports the naidanika factors as described in the Ayurvedic texts.

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