

# Concepts & Management of Silent Killer – Diabetes Mellitus

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**Diabetes has been described as an epidemic, but predications for future increases in prevalence, especially in developing countries point to a major health care crisis for the future. Diabetes mellitus is a group of metabolic disease characterized by hyperglycemia resulting from defects in insulin secretion, insulin action or both. The eminent ancient ayurvedists, Charaka, Sushruta & Vagbhatta considered the body constitution and strength of the body of the patient when dealing with the management aspect.**

## Abstract

Diabetes has been described as an epidemic, but predications for future increases in prevalence, especially in developing countries point to a major health care crisis for the future. Current estimates suggest that the prevalence of type 2 diabetes worldwide is set to increase from its present level of 150 million to 250 million by the end of the decade and 300 million by 2025. Diabetes mellitus is a group of metabolic disease characterized by hyperglycemia resulting from defects

in insulin secretion, insulin action or both. The management can be planned as under: Education of Patient about diabetes mellitus, nutrition & exercise, monitoring the level of glycemic Control, assessment of glycemic Control, oral hypoglycemic agent, Insulin.

Madhumeha is a clinical entity in which patient passes large quantity of urine similar to Madhu having kashaya & Madhura taste, Ruksha texture & Honey like colour and thus body attains sweetness. In the context of medoroga, the managements described are parallel to that of meha

since the dosha & dushyas are same to major extent. After considering all the factors the two types of management emphasised are: Samshodhana Chikitsa Samshaman Chikitsa.

**KEYWORDS:** Diabetes, Madhumeha, concepts

## Definition of DM

Diabetes mellitus is a group of metabolic disease characterized by hyperglycemia resulting from defects

in insulin secretion, insulin action or both. The chronic hyperglycemia of diabetes is associated with long term damage, dysfunction and failure of various organs, especially the eyes, kidneys, nerves, heart and blood vessels.

## Epidemiology of DM

Diabetes has been described as an epidemic, but predications for future

increases in prevalence, especially in developing countries point to a major health care crisis for the future. Current estimates suggest that the prevalence of type 2 diabetes worldwide is set to increase from its present level of 150 million to 250 million by the end of the decade and 300 million by 2025. These figures represent only clinically diagnosed diabetes & many of more cases of diabetes remain undiagnosed and

untreated.

## Classification of DM

The current expert committee of American diabetes association has proposed changes to the NDDG / WHO classification scheme. The revised Etiologic classification of diabetes mellitus is as follows:

<p><b>1. Type 1 diabetes:</b> (beta -cell destruction, usually leading to absolute insulin deficiency.) A. Immune mediated. B. Idiopathic</p>	<p><b>2. Type 2 diabetes:</b> (may range from predominantly insulin resistance with relative insulin deficiency to a predominantly secretory defect with insulin resistance.</p>	<p><b>3. Gestational Diabets Mellitus (GDM)</b></p>
<p><b>A. Genetic defect of beta-cell function :</b> a. Chromosome 12, HNF-1 Alpha (MODY 3) b. Chromosome 7, Glucokinase (MODY 2) c. Chromosome 20, HNF 4 Alpha (MODY 1) d. Mitochondrial DNA <b>B. Genetic defects in insulin action :</b> Type A insulin resistance, Leprechaunism, Rabson Mendenhall Syndrome, Lipoatrophic diabetes.</p>	<p><b>C. Diseases of exocrine pancreas :</b> Pancreatitis, Trauma / Pancreatectomy, Neoplasia, Cystic Fibrosis, hemochromatosis, fibrocalculous pancreatopathy &amp; Others. <b>D. Endocrinopathies :</b> Acromegaly, Cushing’s syndrome, Glucagonoma, Pheochromocytoma, Hyperthyroidism, Somatostatinoma, Aldosteronoma &amp; Others.</p>	<p><b>E. Drug or Chemical induced :</b> Vacor, Pentamidine, Nicotinic Acid, Glucocorticoids, Thyroid Hormone Diazoxide, beta -adrenergic agonists, Thiazides, Dilantin, Alpha-Interferon &amp; Others. <b>F. Infections :</b> Congenital rubella, Cytomegalovirus &amp; Others</p>

## Criteria for Diagnosis of DM

The revised criteria for diagnosis according to American diabetes association is as under

(1) Symptoms of diabetes plus casual plasma glucose concentration >200 mg/dl (11.1 mmol/l), Casual is defined as any time of day without regard to time since last meal. Or

(2) F PG >126 mg/dl (7.0 mmol/l). Fasting is defined as no caloric intake for at least 8hrs. Or

(3) 2-h PG >200 mg/dl or (11.1

mmol/l) during an OGTT. The test should be performed using a glucose load containing the equivalent 75g anhydrous glucose dissolved in water.

## Clinical Features of DM

The classic symptoms of diabetes are as follows:

- Polyuria
  - Polydipsia
  - Unexplained Weight loss
- These are sometimes associated with polyphagia and blurred vision.

Pruritus vulvae or balanitis is a common presenting symptom since the external genitalia are especially prone to infection by fungi which flourish on skin & mucous membranes contaminated by glucose. Acute, life threatening consequence of diabetes are hyperglycemia with ketoacidosis or the nonketotic hypersmolar syndrome.

Long term complications of diabetes include retinopathy with potential loss of vision, nephropathy leading to renal failure, peripheral neuropathy with risk of foot ulcers, amputation and charcot joints and

autonomic neuropathy causing gastro intestinal, genitourinary and cardiovascular symptoms and sexual dysfunction. Diabetics have and increased incidence of atherosclerotic cardiovascular and cerebrovascular disease.

Hypertension, abnormalities of lipoprotein metabolism and periodontal disease are often found in people with diabetes. The emotional and social impact of diabetes and the demands of therapy may cause significant psychosocial dysfunction in patients.

### Treatment of DM

1. The goals of therapy for type 1 or type 2 diabetes mellitus :
  2. Eliminate symptoms related to hyperglycemia.
  3. Reduce or eliminate long term microvasular , macrovascular complications of DM
  4. Allow the patient to achieve as normal a life style as possible.
- So the management can be planned as under“
- (1) Education of Patient about diabetes mellitus, Nutrition and

Exercise.

- (2) Monitoring the level of Glycemic Control.
- (3) Assessment of glycemetic Control.
- (4) Oral Hypoglycemic Agents
- (5) Insulin

### Nutrition in DM

Medical Nutrition Therapy (MNT) is an integral component of Diabetes Management.

## Nutritional Recommendations for Diabetics

<b>Carbohydrate</b>	Whole grains, fruits, vegetables and low fat milk should be included in the healthy diet. The total amount of carbohydrate in diet is more important than source or type. As sucrose does not increase glycemia to a greater extent than isocaloric amounts of starch, sucrose and sucrose containing foods do not need to be restricted.
<b>Protein</b>	Protein intakes > 20% of total daily energy should be avoided.
<b>Fat</b>	Less than 10% of energy intake should be derived from saturated fats.
<b>Cholesterol</b>	<300 mg/day. Individuals with LDL>100 mg/dl should take cholesterol <200 mg/day.
<b>Vitamins &amp; Minerals</b>	As there is no evidence of benefit from it, vitamins & minerals are not advisable if person do not have underlying deficiencies.
<b>Antioxidant</b>	Routine supplementation of antioxidants is not advised because of uncertainties related to long term efficacy & safety.

## Complications of DM

Complications of Diabetes mellitus fall into two major divisions i.e. Acute Complications & Chronic Complications. The complications resulting from the disease are associated with the damage or failure of various organs such as the eyes, kidneys & nerves.

<b>Acute Complications:</b> Hypoglycemia Diabetic Ketoacidosis Non Ketoic hyperosmolar state	<b>Chronic Complications :</b> (1) Macrovascular Complications : (2) Microvascular Complications : · Diabetic Eye disease-Retinopathy, Glaucoma,Cataracts · Diabetic Neuropathy-Poly neuropathy /mono neuropathy Autonomic neuropathy. (3) Other Gastro intestinal [gastroparesis, diarrhoea] Genito urinary [uropathy /sexual dysfunction] Dermatologic infections, Diabetic foot.
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## Etymology of Madhumeha

The word Madhumeha consists two words i.e. Madhu & Meha. The word Madhu is derived from the root 'Manyante Visheshena Janati Jana Yasmin'. The root "Manjane" is applied by Dha Adesha and it shows the similarity of urine in taste, colour and appearance etc.

**Prameha:** Acharya Vagbhatta describes Prameha as frequent and copious urine with turbidity.

**Madhumeha:** Madhumeha is a clinical entity in which patient passes large quantity of urine similar to Madhu having kashaya & Madhura taste, Ruksha texture & Honey like colour and thus body attains sweetness.

## Classification of Prameha

KAPHAJA	PITTAJA	VATAJA
Shukrameha	Ksharameha	Vasasmeha
Ikshumeha	Kalameha	Majjameha
Sandrameha	Nil meha	Hastimeha
Sandrprasadmeha	Manjishthameha	Madhumeha
Pishtameha	Haridrameha	
Shitameha	Raktameha	
Siktameha		
Shanairmeha		
Lalameha		
Udakameha		

## Classification of Madhumeha

<p><b>Sahaja:</b> Sahaja prameha occurs as a result of Beejadoshā i.e. genetic origin. While describing prognosis, Acharya Charaka has narrated that prameha or madhumeha occurring due to Beeja dosha is incurable.</p>	<p><b>Apathyanimittaja:</b> Apathyanimittaja type itself suggests its etiology. It occurs due to Ahitahara. Sampraptighataka has many things to do with the prognosis &amp; treatment of the disease.</p>
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<p><b>Avaranjanya &amp; Dhatukshayajanya:</b> In Avaranjanya madhumeha, Kaphavardhaka nidanasevana leads to vata avarana, which in turn leads to Ojas Karshana which comes to the basti &amp; patient passes Madhura, Kashaya, Ruksha Mutra, which is said to be Madhumeha. Whereas in Dhatukshayajanya, due to vatavardhak nidana, vataprakopa occurs &amp; the madhuratva of Oja is displaced by Kashaya rasa &amp; it is brought to the basti leading to Madhuvat Mutratyaga, leading to Madhumeha.</p>	<p><b>Santarpanjanya &amp; Apatarpanjanya:</b> Santarpanjanya madumeha which is directly due to intake of nutritious diet, which are having kaphavardhaka properties. The excess intake of such substances will primarily lead to the vitiation of kapha, pitta, meda &amp; mamasa, which in turn cause madhumeha by doing avarana of vata. If the substances which deplete the dhatu &amp; aggravate vata are consumed then it leads to Apatarpanjanya Prameha. They act through vitiation of vata which in turn leads to the manifestation of madhumeha. In nutshell, Sahaja &amp; Apathyanimittaja are types of Madhumeha. The Krisha, Dhatukshayajanya &amp; Apatarpanjanya can be correlated with Sahaja madhumeha. The Sthula, Avaranjanya &amp; Santarpanjanya can be correlated with Apathyanimittaja madhumeha.</p>
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## Signs & Symptoms of Prameha

According to Sushrutacharya, the person should be diagnosed as pramehi when complete or partial prodromal symptoms of prameha accompanied by polyuria gets manifested. Acharaya Sushruta has described two types of prameha along with their manifestations as follows:

<p><b>(i) Sahaja Pramehi (Krisha-Asthenic)-</b> Ruksha (Dry body )</p> <ul style="list-style-type: none"> <li>● Alpashi(consumes less food)</li> <li>● Bhrish Pipasa (Voracious thirst)</li> <li>● Parisarpansheelata (Restless, always desires to wander)</li> </ul>	<p><b>ii) Apathyanimittaja (Sthula-Obese)</b> Bahuashi (Voracious eater)Snigdha (Unctuous body texture)Shayyasanswapnasheela (Like to sit down &amp; sleep always) Acharya Kashyapa has also narrated symptoms like Gaurava (Heaviness of the body), Baddhata (tightness) &amp; Jadata (Steadiness, laziness).</p>
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## Complications of Prameha & Madhumeha

(1)**General Complications** Trishna, Atisara, Daha, Daurbalya, Arochaka, Avipaka, Putimamsa Pidaka, Alaji, Vidradhi etc.

### (2)Specific Complications:

<p><b>Kaphaja meha:</b> Makshikopasarpanam, Alasya, Mamsopachaya, Pratishyaya, Shaithilya, Arochaka, avipaka, Kaphapraseka, Chardi, Nidra, Kasa &amp; Shwasa.</p>	<p><b>Pittaja meha:</b> Vrushanayorvadaranam, Bastibheda, Medhra toda, Hridshula, Amlika, Jwara, Atisara, Arochaka, Vamathu, Paridhumayanam, Daha, Murchha, Pipasa, Nidranasha, Panduroga, Pittavidmutranetratva &amp; Vidbheda.</p>	<p><b>Vataja meha:</b> Hridgraha, Laulya, Anidra, Stambha, Kampa, Shula, Baddha purishatva &amp; shosha, kasa, shwasa.</p>	<p><b>Madhumeha:</b> Acharaya Charaka has mentioned 7 types of pidaka as complication of madhumeha, While Sushruta &amp; Vagbhatta has mentioned 10 pidakas.</p>
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<p><b>PATHYA</b></p> <p>(a) <b>Aahara:Shook Dhanya:</b> Jeerna Shali, Yava, Godhuma, <b>Shimbi Dhanya :</b>Chanaka, Kulattha, Mudga</p> <p><b>Shaka Varga :</b> The leafy vegetables with a predominance of tikta-kashaya rasa, Patola, Karvellaka, Shigru</p> <p><b>Phala Varga:</b> Jambu, Dadima, Shringataka, Amalaki, Kapittha, Tinduka, Kharjura, Kalinga, Navina Mocha.</p> <p><b>Mamsa Varga :</b>Vishkira, Jangala mamsa</p> <p>(b) <b>Vihara :</b>To have walks, travelling on elephants, horses and different plays, different form of marshal arts, roaming in different places without chappal and umbrella.</p>	<p><b>APATHYA</b></p> <p>(a) <b>Aahara:</b>Jala, Milk, Ghee, Oils, Curd, Sugar, Different types of rice preparations, anupa, gramya and audaka mamsa, Ikshurasa, Pishtanna, Navanna.</p> <p>(b) <b>Vihara :</b>Eksthana asana, Divaswapa, Dhoompana, Sweda, Raktamoksha, Mutravega dharana.</p>
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## Chikitsa

The eminent ancient ayurvedists, Charaka, Sushruta & Vagbhatta are considering the body constitution and strength of the body of the patient when dealing with the management aspect. Charakacharya considers two types of patients, one is that with stout body structure & with strength and the other without strength & krisha. Sushrutacharya also says that sahaja meha rogi will be krisha & apathyanimittaja rogi will be sthula.

In the context of medoroga, the managements described are parallel to that of meha since the dosha & dushyas are same to major extent.

After considering all the factors the two types of management emphasised are:

(1) Samshodhana Chikitsa [Elimination Therapy]

(2) Samshaman Chikitsa [Normalizing Therapy]

Like every disease, those factors which are responsible for the production of the diseases are if eliminated and if further, causative factors are prevented meha can also be treated. Madhumeha can be treated in this way although it is described as incurable. In Pratyakhyeya vyadhis, symptomatic relief can be given by proper management.

kashaya & Madhura taste, Ruksha texture & Honey like colour and thus body attains sweetness. The eminent ancient ayurvedists, Charaka, Sushruta & Vagbhatta considered the body constitution and strength of the body of the patient when dealing with the management aspect. Charakacharya considers two types of patients; one is that with stout body structure & with strength and the other without strength & krisha. Sushrutacharya also says that sahaja meha rogi will be krisha & apathyanimittaja rogi will be sthula.

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### Compound Preparations Used In Prameha:

**Swarasa :** Amalaki, Haridra, Nimbapatra, Bilwapatra, Guduchi

**Kwatha :** Vidangadi, Phalatrikadi, Mustadi, Manjishthadi, Pathadi

**Churna :** Triphaladi, Mustadi, Gokshuradi, Arkadi

**Gutika :** Chandraprabha, Indravati, Pramehantak Vati

**Gugglu :** Gokshuradi Guggul

**Modaka :** Kastur Modaka

**Avleha :** kushavleha, Bangavleha

**Paka :** Pugapaka, Ashwagandhadi paka, Draksha Paka.

**Asava Arishta:** Lodhrasava, Dantyasava, Madhukasava, Devdarvyadiarishta, Lodhrarishta.

**Ghrita:** Dhanvantar ghrita, Trikantakadi ghrita, Sinhamrita ghrita, Dadimadi ghrita.

**Rasaushadhi:** Vasant kusumakar Rasa, Mehamudgar Rasa, Brihat Bangeshwar Rasa, Prameha gajkesri Rasa, Trivanga Bhasma.

## Conclusion

Diabetes has been described as an epidemic, but predications for future increases in prevalence, especially in developing countries point to a major health care crisis for the future. Diabetes mellitus is a group of metabolic disease characterized by hyperglycemia resulting from defects in insulin secretion, insulin action or both. Complications of Diabetes mellitus fall into two major divisions i.e. Acute Complications & Chronic

Complications. The complications resulting from the disease are associated with the damage or failure of various organs such as the eyes, kidneys & nerves. The management can be planned as under: Education of Patient about diabetes mellitus, nutrition & exercise, monitoring the level of glycemic Control, assessment of glycemic Control, oral hypoglycemic agent, Insulin.

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