

DIABETES AND DIET***Dr. Bhawana Sharma**

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ABSTRACT

Diabetes mellitus is a syndrome characterized by hyperglycemia due to relative or absolute insulin deficiency. Its prevalence is increasing rapidly and has already reached an epidemic proportion in India. Each year about 17 million people die prematurely as the result of the global epidemic of larger preventable diseases or life style diseases. According to WHO, world deaths from life style diseases will double by 2015 unless all out efforts are taken to combat. Diet is an essential factor for management of diabetes. In Type 2 Diabetes mellitus, diet restriction is the first step of treatment. Diet restriction doesn't mean prohibition of lots of food stuffs, but a sensible diet and understanding

the concept of calorie intake according to age, sex and nature of job. It is necessary to know about the percentage energy intake of dietary constituents. In Ayurvedic text, effective drugs like *Gurmar*, *Neem*, *Haridra* etc. are mentioned as well as significance of diet is also described.

KEYWORDS: *Diabetes mellitus, Insulin, Life style diseases, Gurmar, Neem, Haridra.*

INTRODUCTION

Diabetes Mellitus is a common chronic disorder prevalent all over the world. It has turned to be the biggest silent killer today in the world. Depending upon the etiology of the DM, factors contributing to hyperglycemia may include reduced insulin secretion, decrease peripheral utilization of glucose and increased glucose production. The metabolic dysregulation associated with DM causes secondary pathophysiological changes in multiple organ system that imposes a tremendous burden on the individual with diabetes and on the health care system.

According to International Diabetes Federation 61.3 million people in India have diabetes in 2011 that figure is projected to rise to 101.2 million by 2030. IDF revealed that India has more diabetes than the US. India has rank second in the world in diabetes prevalence, just behind China.^[1]

Diabetes develops due to a diminished production of insulin (in type 1) or resistance to its effects (in type 2 and gestational). Both lead to hyperglycemia, which largely causes the acute signs of diabetes: excessive urine production, resulting compensatory thirst and increased fluid intake, blurred vision, unexplained weight loss, lethargy, and changes in energy metabolism.

Modern View

The word Diabetes is made of two greek words, Dia (Through) + bainein (To go) Means 'to run through a siphon' and the term 'Mellitus' means honey. Diabetes mellitus is a group of metabolic disorder characterized by high blood sugar (glucose) levels that result from defects in insulin secretion, or action, or both. Diabetes mellitus, commonly referred to as diabetes was first identified as a disease associated with "sweet urine," and excessive muscle loss in the ancient world.

Etiological Classification^[2]

1. Type 1 diabetes (β -cell destruction, usually leading to absolute insulin deficiency)
A. Immune-mediated B. Idiopathic
2. Type 2 diabetes (may range from predominantly insulin resistance with relative insulin deficiency to a predominantly insulin secretory defect with insulin resistance)
3. Other specific types of diabetes (Genetic defects of β -cell function, insulin action, Diseases of the exocrine pancreas, endocrinopathies, drug induced etc.)
4. Gestational Diabetes Mellitus

Ayurvedic Review

In Ayurveda *Madhumeha* (Diabetes Mellitus) is described among the 20 subtypes of *Prameha* and is predominantly a *Vatika* disease. According to *Samprapti* (pathogenesis) of the disease, *Medo dushti* is the main cause. When *Medo dushti* leads to vitiation of *Manas*, *Rakta*, *Kleda* and *Oja*. *Madhumeha* a subtype of *Vataj-Prameha* is the terminal stage of the diseases and said to be incurable due advancement of the disease and improper management. According to *Acharya Charak* the disease leads to *Ojodushti*, when rich carbohydrate diet is

consumed with lack of exercise, it leads to *Vitiation of Oja*.^[3] *Kshaudrameha* is also a synonym of *Madhumeha* and every type of *Prameha* change into *Madhumeha* if not treated properly. In Ayurvedic text the disease has been classified as^[4]-

Etiological classification (Based on *Nidan*)

(i) *Apathyanimitaja Prameha* – Non-Insulin Dependent Diabetes Mellitus (NIDDM)

(ii) *Sahaj Prameha* - Insulin Dependent Diabetes Mellitus (NIDDM)

Pathological classification (Based on *Dosh*)

(i) *Kaphaj Prameha*

(ii) *Pittaja Prameha*

(iii) *Vataja Prameha*

Therapeutic classification (Based on body constitution)

(i) *Sthula Pramehi*

(ii) *Krishna Pramehi*

Prognostic classification (Based on *Sadhyatha-asadhyata*)

(i) Easily treatable – *Apathyanimitaja, Sthula Pramehi, Kaphaj Pramehi*

(ii) Palliative – *Pittaja Prameha*

(iii) Untreatable – *Sahaja, Krishna, Vataja*

Diet Planning In Diabetes^[5]

Diet plays an important role in the management of diabetes. Proper diet plan should be followed along with hypoglycaemic drugs. The diet plan is based on age, weight, physical activity and nature of disease. Overweight patients should consume fewer calories than their daily requirement, so that extra deposits of visceral and subcutaneous fat are mobilized to bridge the gap between the required energy and that provided by the foodstuff. In this way the patient is able to shed extra weight and this help in improving insulin sensitivity of tissues.

Aims of dietary management

- To reduce overall blood glucose level and minimize fluctuation
- To abolish symptom of hyperglycaemia
- To achieve weight reduction in obese patient

- To reduce insulin resistance, hyperglycaemia and dyslipidaemia
- To avoid hypoglycaemia associated with therapeutic agent

Important points for diabetic diet plan

- Determining energy requirement
- Determining type of carbohydrate, fibre and food preparations
- Considering other complication such as hypertension, high cholesterol level etc.

In case of insulin dependent diabetes mellitus, the energy intake is based on needs for normal growth and development, physical activity and maintenance of desirable body weight. In case of non- insulin dependent diabetes mellitus the majority of patients are overweight or obese. Therefore, calorie restriction is required to achieve a desired weight. Here are some basic information on various food constituents. Recommend composition of diet for people with diabetes-

Dietary constituent	Percentage of energy intake
Carbohydrate	45-60%
Sucrose	Upto 10%
Fat (total)	<35%
-Monounsaturated	10-20%
-Saturated	<10%
Protein	10-15% (do not exceed 1g/kg body weight)
Fruit/vegetables	5 portion daily

Carbohydrate: Carbohydrate provide main source of energy. About 60-65% of energy is supplied by carbohydrates. More amount of carbohydrate should be administered in the form of complex starch as it breakdown more slowly to release glucose in blood. The presence of complex carbohydrate like grains, vegetables and other starches slows the glucose absorption.

Protein: Proteins are essential for growth and repair of wear and tear. About 15-20% of daily calories should be provided from proteins. Protein .8gm/kg of body weight is suggested for ideal body weight. Patient with diabetic nephropathy should restrict protein consumption.

Fat: Fats are important constituent of cell membrane and are storage centres for energy. 20% of daily energy requirement should be provided by fats. Fats consist of fatty acids and glycerids. Fat is classified into two types – Saturated fat (Animal fat, Milk products, Vanaspati etc.), Mono unsaturated fat (Groundnut oil, Mustard oil, Palm oil etc.) and Polyunsaturated fats (Safflower oil, Sunflower oil, Corn oil, Soy bean oil, cotton seed oil etc.)

Essential fatty acids: These are vital fatty acids which cannot be made by the body hence should be derived from food. Omega 6 [w6] and omega 3[w3] fatty acids belong to this class. The ideal w6/w3 ratio should be 4:1. Fish oil is a very rich source of w3 fatty acids. Those who are vegetarians may consume 1 to 3 capsules of fish oil daily. The normal weight diabetic should consume four teaspoonful of cooking oil daily. [.5kg per month].

Fibre: Fibre.

Vitamin and Minerals: Diabetics require vitamins and minerals in adequate quantity. Diabetics need a low-calorie diet so supplements of multivitamins are essential.

Sample Diet Chart

Meal	Menu
Early morning	Tea (preferably without sugar)
Breakfast	Dalia (salted), Apple, Tea(without sugar)
Lunch	2 Chapatti, Channa curry/or any other sabzi (avoid potatoes), curd/raita, salad
Evening snack	Tea(without sugar), salty biscuits, vegetable soup/chicken soup
Dinner	2 Chapatti/missi roti (combining wheat flour with chana flour and soya flour), palak paneer sabzi/ paneer bhurji, curd.

It is important to control the amount and time of food intake. Meals should not be missed. Consider the likes and dislikes of the patient. Craving for sweets can be substituted by taking some fruit.

Food to be avoided: Sugar, sweets, potatoes, sweet potatoes, jam, mango, grapes, bananas, alcoholic beverages, deep fried food items, rice, chocolate, cakes and candies.

Foods to be used freely: Green leafy vegetables, tomatoes, cucumber, radish, soups, buttermilk, tea and coffee without sugar.

Effective single drugs in diabetes^[6]

- Gurmar (*Gymnema sylvestre*)
- Bitter melon (*Momordica charantia*)
- Bel (*Aegle marmelos*)
- Fenugreek (*Trigonella foenum*)
- Turmeric (*Curcuma longa*)

- Neem (*Azardichta indica*)
- Sheelajit (*Asphaltum punjabinum*)
- Khadir (*Acacia catechu*)
- Devdaru (*Cedrus deodara*)

CONCLUSION

Meal planning is essential and primary step in the management of diabetes. Those who require insulin or oral pills to control blood glucose should never neglect meal planning, just because they are on blood glucose lowering medicine. Newly diagnosed cases of Type 2 diabetes patient can be easily cured by diet management and prudent exercise. It is essential to understand the concept of sensible eating against desired calories because in this way food can be consumed which is very near to our family's daily food and which does not require any special or separate preparation.

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