



# ROLE OF DIET AND LIFE STYLE IN THE DEVELOPMENT OF PRAMEHA (T2DM)

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## ABSTRACT

Various etiological factors related to diet and life style have been described in Ayurveda for the development of prameha/Madhumeha, the features of which resembles Diabetes mellitus (DM) significantly. Modern science also advocates an exhaustive list of etiological factors for the development of DM. This paper aimsto critically evaluate the various etiological factors described in Ayurveda in the light of modern medical science and explore the various diets prevalent in the society for their diabetogenic effects.

**Key words:** prameha, madhumeha, diabetes mellitus, unhealthy diet & life style, trans fat, omega-6-fatty acids, fructose, refined flour.

## INTRODUCTION

Etiology for the development of all diseases is said to be vitiated *malas* (i.e. *dosha*, *dhatu* and *mala*) and cause for this is abnormal diet and behaviour. That's why understanding of *nidana* is very much essential to diagnose, prognosis and to plan therapy. Acharyas have described the all possible etiological factors and their role in the production of disease. *Charaka* has described a wide range of *Nidanas* of *Prameha*. He has described the specific food types, their specific combinations and specific habits responsible for genesis of *Prameha*.<sup>1</sup> *Sushruta* has described two types of *Prameha* as '*Sahaja*' (*juvenile*) and '*Apathyanimitaja*' (*acquired*), which gives quite clear idea about the causes of *Prameha*.<sup>2&13</sup> *Vagbhatacharya* has described the same fact that the food and behavior pattern responsible for genesis of *Meda*, *Mutra* and *Kapha* in evolution of *Prameha*.<sup>3</sup> All those persons who indulge in the day sleep and do not perform any type of physical works, eat more cold, fatty diet, use alcohol & liquid diet, they must have this *prameha* disease in near future.<sup>4</sup> Detail list of etiological factors for the development of prameha are described in Parameswarappa's *Ayurvediya Vikriti Vigyan & Roga Vigyan*<sup>13</sup>

*Charak*<sup>5</sup> narrated that indulgence of *Madhura rasa* by mother at the time of pregnancy causes *Madhumeha* and *Sthaulya*. Thus genetical predisposition and the over indulgence of etiological factors at the time of pregnancy by mother helps to precipitate the disease *madhumeha*, but the important thing is genetic predisposition. Also mentioned as the *Nidana* of the *Madhumeha* are *ahara* as - excessive intake of *guru* (food material, which heavy in digestion), *snigdha* (unctuous or fatty meal), *amla* (sour), *lavana* (salt), *navannapana* (freshly harvested food materials) and *vihara* as - excessive indulgence in *nidra* (oversleep), *asyasukha* (sedentary habits), *tyakta vyayama chinta* (lack of exercise and free from stress) & *sanshodhanakurvata* (avoid medicinal purification of body).<sup>6</sup> In modern science, also, the above factors are mentioned and genetic predisposition of the disease, auto immunity, and psychosomatic effect in the disease are established.

## PRAMEHA/ MADHUMEHA (T2DM)

Diabetes is first documented in Ayurveda as *Prameha (Madhumeha)* 5000 years ago. In *Ayurveda*, *madhumeha* is described under the subtype of *prameha*. *Prameha* is a disease of *Mutravaha Srotasa* [Urinary system] and can be defined on the basis of its common symptoms as frequent and copious micturation with turbidity. *Madhumeha* is a clinical entity in which patient passes large quantity of urine similar to *madhu*. In modern science, the term Diabetes Mellitus also explain the similar meaning as described by ayurveda that is the word *Diabētēs* comes from the Greek verb **diabainein**, meaning ‘to pass through’ and the word *Mellitus* comes from the classical Latin verb **mellite** meaning sweetened with honey or honey sweet.<sup>7</sup> *Thomas Willis (1675)* noticed the urine of a diabetic had a sweet taste (glycosuria). DM commonly referred to as diabetes was first identified as a disease associated with ‘sweet urine’. Elevated levels of blood sugar (hyperglycemia) lead to spillage of glucose into the urine, hence the term sweet urine.

## UNHEALTHY DIETS

Since turn of the 21<sup>st</sup> century, nothing has changed more fundamentally than the emphasis on dietary and life style intervention. Etiological factors which are commonly responsible for *Prameha* i.e. *Samanya Nidana of Prameha*;<sup>8</sup> *Dadhini* (overindulgence of various preparations of curds), *Gramya, audaka, anoopa rasa* (soups of meat of domesticated and aquatic animals belonging to marshy land), *Payansi* (excessive various milk preparations), *Navannapanam* (freshly harvested food articles, freshly prepared drinks), *Guda vaikritam* (various preparations of jaggery), *Medya sevinam* (overindulgence of fatty substances which are responsible for fat genesis in body), *Dravannasevinam* (excessive use of food in the form of liquid preparations), and all factors that are responsible for the aggravation of *Kapha* can cause *Prameha*.

In modern era, the above mentioned dietary products are ingested in a westernized form. **These** unhealthy diets can lead to levels of high blood cholesterol, excessive fatty tissues and triglycerides in a body. The three major dietary toxins (that is something capable of causing disease or damaging tissue when it enters the body) in today’s scenario, that trigger diabetes and obesity are –

**Cereal grains - especially refined flours** as - cereals, breads, pasta, white rice and crackers, made from grains that have been processed to remove the husk also removing most of the fiber, vitamins and minerals along with it, are more rapidly digested into glucose – causing blood sugar levels to rise. This stimulates insulin production, which signals the body to convert more of the excess energy into: body fat, fatty lipids that circulate in the blood and deposits of fat in the liver.<sup>9</sup>

**Omega-6 industrial seed oils (corn, cottonseed, safflower, soybean, etc.)**- A recent study showed that a diet with an omega-6:3 ratio of 28 (meaning 28 times more omega-6 than omega-3 fats) caused obesity that progressively increased over four generations of mice. It has also been shown to cause inflammation, insulin resistance and impaired leptin signalling, all of which directly contribute to diabetes.<sup>10</sup>

**Fructose (especially high-fructose corn syrup)** - Unlike glucose, which is rapidly absorbed into the bloodstream and taken up by the cells, fructose is shunted directly to the liver where it is converted to fat. Excess fructose consumption causes a condition called non-alcoholic fatty liver disease (NAFLD), which is directly linked to both diabetes and obesity.<sup>11</sup>

Some examples of food materials that increase the risk of diabetes are the food products which are rich in *saturated and trans fat* and good source of *simple carbohydrate* etc. The major contribution of *saturated fats* in our diet come from cheese, beef, milk, and baked items. *Trans fats* also contribute to the increase risk of heart disease. These fats are vegetable oils that are harder; are used in baking and frying.

List of *saturated and trans Fat* and *simple Carbohydrates* which are mainly found in the following food groups: Spreads (butter/ margarine), Package foods (cake mix/ bisquick), Soups (ramen noodles and soup cups), Fast foods (fries/ chicken/ deep fried food/ french fries), Frozen food (pot pies/ waffles/ pizzas/ breaded fish sticks), Baked goods (cookies/ cakes), Breakfast food (Kellogg’s oat/ toast), Potato chips and crackers, Chocolate bar and candies and gummies, Toppings and dips (non-dairy creamers and flavoured coffees/ whipped topping/ bean dips/ gravy mixes and salad dressings), Fructose and granulated sugar, Drink powders, Dried fruits (apple/ plums/ dates/ bananas), Jams and preserves, Sweet pickles and sauces etc

## UNHEALTHY LIFE STYLE

In ancient era, the etiological factors which are commonly responsible for *Prameha* as *Asyasukham* (interest in sedentary habits), and *Swapnasukham* (pleasure of sleep) etc. greatly exacerbate the kapha dosha, which is the primary dosha responsible for genesis of prameha. Imbalance between caloric intake and physical activity can lead to obesity, which causes insulin resistance and is one of major risk factor for the development of type 2 diabetes mellitus. Central obesity, in which a person has excess abdominal fat, is a major risk factor not only for insulin resistance and type 2 diabetes mellitus but also for heart and blood vessel disease, (also called cardiovascular disease (CVD)). This excess —belly fat— produces hormones and other substances that can cause harmful, chronic effects in the body suchs damage to blood vessels.<sup>12</sup>

## CONCLUSION

The etiological factors described for Prameha/Madhumeha in Ayurveda thousands of years back hold true even in today's scenario. A substance which enhances the kapha, meda and mutra are responsible for the causes of prameha and same factors bring abnormality in carbohydrate, fat and protein metabolism. The only significant change is in the forms they are being taken today. The diabetogenic causes today are confined more to the artificially refined products being used in the society as trans fats, refined flours, high fructose corn syrups, package foods, fast foods, frozen foods, sweet, murabba etc. Such kinds of products are so prevalent in society that even the small children are getting exposed to it unknowingly which can later increase the global burden of diabetes mellitus. So it may be hypothesized that erratic life style and unhealthy diet practices are the major factors along with genetic factors in the development of prameha.

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