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# A Critical Review of Inter-Relationship between *Sthaulya* and *Prameha* in Light of Ayurvedic Literature

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## ABSTRACT

Health is the homeostasis of *Dosha, Dhatu, malas, agni, and ojas* and disturbances in the homeostasis result in the condition known as Disease. There are various factors responsible for disturbance of this homeostasis. Diet is the major factor for maintaining homeostasis of all *Dhatus* and consequently all physiological phenomena. There are other factors also which affect our health like physical activity, infectious agents, various abnormal environmental conditions and our genetic material. Both *sthaulya* and Diabetes are due to the abnormal and excessive diet, lack of physical exercise and genetic material also play an important role in the manifestation of the disease. In *sthaulya*, according to Ayurveda, *dushya* is *meda dhatu* while in Diabetes *drava roopa kapha* is main *dosha* and there are 10 *dushya*(*rasa, rakta, mansa, meda, majja, shukra, ojas, kleda vasa, lasika*) which participate in the pathogenesis. In this article, the relationship between *sthaulya* and *prameha* will be reviewed and analysed.

**Key Words** *Sthaulya, Prameha, Ayurveda, Diabetes, Santarpana*

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## INTRODUCTION

AYURVEDA, the Indian system of Medicine comprises knowledge about life, art of living, the science of health and its aspects, and philosophy of life. Knowledge of any science is never fixed; new theories and ideas are always replacing the older one; but interestingly it is not applicable with *Ayurveda*. The knowledge about health, disease and their treatment explored by our Acharyas thousands of years back are true and

applicable in today's era too. *Ayurveda* has its own unique principles about the pathophysiology of disease, diagnostic criteria, and treatment modalities. *Ayurveda* is the science of life because one can live a healthy life by following *Ayurvedic* protocols. These protocols regarding *Aahara* include special dietetic modules, wholesome, and unwholesome diets. The body, according to *Ayurveda*, is the result or outcome of the nutrition we consume. Diseases, on the

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other hand, are the result of mal or impaired nutrition. The difference between health and illness is the difference between the use of wholesome and unhealthy diets. *Vihara* includes *Dinacharya*, *Ritucharya*, *Yoga* act which helps to gain physical and mental wellbeing of the individual. In *Ayurveda Chikitsa Siddhanta* (principle of treatment) is aimed to break the *samprapti* (pathophysiology) of disease and destroy it from root; rather providing symptomatic relief.

Diabetes is a growing public health problem in both developed and developing countries. Diabetes mellitus is a clinical syndrome characterized by an increase in plasma blood glucose level (hyperglycemia). It is a metabolic disorder of multiple aetiologies characterized by chronic hyperglycemia with disturbance of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action or both. Type 1 diabetes is generally considered to result from autoimmune destruction of insulin producing cells ( $\beta$  cells) in the pancreas, leading to marked insulin deficiency, whereas type 2 diabetes is characterised by reduced sensitivity to the action of insulin and an inability to produce sufficient insulin to overcome the “insulin resistance”. Hyperglycemia causes both acute and long-term problems. In *Ayurvedic* Sciences, a separate disease named ‘*Prameha*’ has been described which has characteristics common with hyperglycemia. *Prameha* aetiology contributes

mainly to two factors one is *Ahitakara Aahara* (non-wholesome diet) and the second is the abnormal lifestyle. *Prameha* and diabetes both are the metabolic diseases described in two paths of medical science in different ways and generally correlated with each other. *Prameha* is *kapha* dominated *tridoshaj* disease. It comprises a number of diseases with various physical and chemical changes in urine. The manifestation of the disease is described as frequent and copious urine with turbidity. *Sthaulya* can be included under *santarpana janya vyadhi* as “*Medo roga*”. It is a condition caused by derangement of *agni*, leading to formation of *amarasa*, which results into *medodhatvagnimandya* leading to formation of abnormal *medo dhatu* in excess,

**INCIDENCE:** - The incidence of diabetes is rising. Globally, it is estimated that 415 million people had diabetes in 2015 (10% of the world adult population), and this figure is expected to reach 642 million by 2040. This global pandemic principally involves type 2 diabetes, prevalence varies considerably around the world, which is associated with differences in genetic factors of the population, as well as environmental ones such as greater longevity, obesity, unsatisfactory diet, sedentary lifestyle, increasing urbanisation and economic development. The incidence of type 1 diabetes is also increasing: between 1960 and 1996, 3% more children were diagnosed worldwide each year.

**MATERIALS AND METHODS:** -To collect material over Diabetes and *prameha*, all

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ayurvedic classical textbooks like Charaka Samhita, Sushruta Samhita and various modern textbooks have been looked upon. Other research papers related to this topic have also been consulted for expertise over the topic. The whole material is compiled and analysed for extracting the essence of the subject.

**LITERATURE REVIEW:** -*Prameha* is a syndrome described in the ancient Ayurvedic texts that includes wider aspects of clinical conditions like obesity, prediabetes, diabetes mellitus, and metabolic syndrome. Even though *Prameha* is a *Tridoshaja Vyadhi*<sup>1</sup> (a disease involving all three of the psychophysiological principles known as *Doshas* [i.e., *Vata*, *Pitta*, and *Kapha*]), it is basically a disease with *Kapha* predominance. The 20 types of *prameha*<sup>2</sup> described in *Charak Samhita* are as follows: - Vataj-4 types; Pittaj-6 types; Kaphaj-10 types. Amongst them *madhumeha* is a *vatika* subtype of *prameha* that is most close to Diabetes mellitus. According to *Acharya Sushruta*<sup>3</sup>, there are mainly 2 types of *prameha*-

1. *Sahaja*-which is due to *beeja* disorder (genetic disorder).
2. *Apathyanimattaja*-which is due to vitiated dietary habits and lifestyle.

Amongst them, the person who has *sahaja prameha* is generally lean and thin while *apathyanimattaja pramehi* is obese. According to *Charaka* liquefied *kapha* dosha is the primary causative factor.

While describing *nidana* of *Prameha*, *acharya Charak* has mentioned that the individual who admires a lavish lifestyle by not getting involved in any kind of physical work and sleeps day and night happily, consumes milk and its products, flesh of aquatic and *gramya* food, newly harvested crops, products of jaggery and all *kapha* aggravating food habits, such person easily falls for the development of *prameha roga*. A beautiful example has been quoted here by *Charakacharya* that, as the birds are attracted towards the trees where their nests lie, similarly, *prameha* affects people who are voracious eaters and who have aversion to bath and physical exercise.

During explaining *purva rupa* of *Prameha*, *acharya* has mentioned these characters- excessive sweating with foetid odour, flabbiness of body, inclination to lie down, sedentary habits, excessive mucosal discharge, obesity and flabbiness, rapid growth of hairs and nails, thirst, sweetness of mouth, burning sensation in hands and feet, swarming of ants on the urine.

When all the *Dhatu*s in the body are at their optimum levels, they contribute towards the optimum health condition of the body. But when there is *vikruti* in any of the *Dhatu*s, either is *Pramanataha* or *Gunataha* then it is going to affect both the body and the mind. *Sthaulya* is one of the best examples of disease caused due to *pramanataha* of the *meda dhatu*. This is commonly known as *Sthaulya*. As per *Ayurveda*, *Agnimandya* is the main causative factor for

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development of any disease whether it may be “*Jathragni, Dhatvagni or Panch Bhutagni*” *mandya*. In the same continuation *sthaulya* is been considered to be caused due to *Dhatwagni mandya*. Derangement of *Agni* or digestive power leads to development of *Ama*, which disturbs cellular *Agni* of fatty tissues and further blocks the proper formation of all the tissues in the body. Improperly formed fatty tissue accumulates in the body causing *sthulta*. This results into *vata vaigunya* which increases appetite since *vata* is responsible for ignition of *agni*(digestive fire). Therefore, the individual takes more and more food which gets converted into improper fatty tissue resulting in *sthulta*.

In *Charak Samhita, Sutrasthana*<sup>4</sup>, chapter 21, verse 4, *acharya Charak* has mentioned 8 different causes of developing *sthaulya* i.e., obesity. They are-

1. Taking excessive food as required;
2. Consuming *guru*(heavy), *Madhur*(sweet), *sheet*(cold) and *snigdha*(unctuous) food in excess quantity;
3. Not practising exercises and physical work;
4. Not involved in intercourse;
5. Sleeping down during day time;
6. Always cheerful;
7. Not bothering about anything i.e., *achintana*;
8. Beeja *swabhav* i.e genetic predisposition.

In addition to this, *Acharya Charak*<sup>4</sup> also has explained 8 major problems related to obesity which are-

1. Decaying age;
2. Loss of enthusiasm in doing activities;
3. Difficulty in sexual intercourse;
4. Excessive weakness;
5. Bad odour from body;
6. Excessive sweating;
7. Excess hunger;
8. Excess thirst.

According to *Ayurveda*<sup>4</sup>, it has been mentioned that there is excess accumulation of *meda dhatu* in the body due to which other dhatus are debilitating and therefore the life span of the individual decreases. Since the body metabolism gets slowed down, and due to *guru* property of *meda*, the obese person is unable to complete his work with full energy. *Meda* is going to obstruct all the *shrotas*(minute channels of body) resulting in depletion of *shukra dhatu*, so the person feels difficulty in sexual intercourse. Due to excess formation of *meda dhatu* and debilitated *asthi, majja and shukra dhatu*, the obese person is emaciated or his body is weak. As *meda dhatu* is vitiated and also due to natural attributes of *meda*, the person experiences excessive sweating and bad odour from his body. Since his digestive fire gets aggravated and presence of *Vata* in *kostha*, the obese individual experiences excessive hunger and thirst.

*Prameha* has been described as *santarpan janya vyadhi*<sup>5</sup> in *charaka samhita Sutrasthana* chapter 23. Diseases born of excessive impletion is due to consumption of excess quantity of unctuous, sweet, heavy and viscous substances. He that

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implies himself in taking fresh foods and wines, flesh of wetland and aquatic animals, with cow's milk and its products and the products of *gura*, and with articles prepared of flour, or he that dislikes movement and is given to day-sleeping to over indulgence in lounging and lying-in soft beds, gets afflicted with the diseases arising from excessive impletion, unless he is promptly treated with counter measures.

### MODERN REVIEW-

Type 2 Diabetes Pathology<sup>6</sup>- Type 2 Diabetes is a diagnosis of exclusion i.e., it is made when type 1 diabetes and other types of diabetes are ruled out; it is highly heterogeneous. Initially insulin resistance leads to elevated insulin secretion in order to maintain normal blood glucose levels. However, in susceptible individuals, the pancreatic  $\beta$  cells are unable to sustain the increased demand for insulin and a slowly progressive insulin deficiency develops. Some patients develop diabetes at a young age, usually driven by insulin resistance due to obesity and ethnicity.

The primary cause of insulin resistance remains unclear; it is likely that there are multiple defects in insulin signalling, affecting several tissues. One theory is centred around the adipocyte, this is particularly appealing, as obesity is a major cause of increased insulin resistance. Intra-abdominal 'central' adipose tissue is metabolically active and releases large quantities of free fatty acid, which may induce insulin resistance because they compete with glucose as

a fuel supply for oxidation in peripheral tissues such as muscle. In addition, adipose tissue releases a number of hormones (including a variety of peptides, called 'adipokines' because they are structurally similar to immunological 'cytokines') that act on specific receptors to influence sensitivity to insulin in other tissues. Because the venous drainage of visceral adipose tissue is into the portal vein, central obesity may have a particularly potent influence on insulin sensitivity in the liver, and thereby adversely affect gluconeogenesis and hepatic lipid metabolism.

Physical activity is another important determinant of insulin sensitivity. Inactivity is associated with down regulation of insulin sensitive kinases and may promote accumulation of free fatty acids (FFAs) within skeletal muscle. Sedentary people are therefore more insulin resistant than active people with the same degree of obesity. Moreover, physical activity allows non-insulin dependent glucose uptake into muscle reducing the demand on the pancreatic  $\beta$  cells to produce insulin.

Deposition of fat in the liver is a common association with central obesity and is exacerbated by insulin resistance and/or deficiency. Many people with type 2 diabetes have evidence of fatty infiltration of the liver (non-alcoholic fatty liver disease, NAFLD).

Genetic factors are important in type 2 diabetes, as shown by marked differences in susceptibility in different ethnic groups and by studies in

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monozygotic twins where concordance rates for type 2 diabetes approach 100%. Genome wide association studies have identified over 70 genes or gene regions that are associated with type 2 diabetes, each exerting a small effect. Most of the genes known to contribute to risk of type 2 diabetes are involved in  $\beta$  cell function or in regulation of cell cycling and turnover, suggesting that altered regulation of  $\beta$  cell mass is a key factor. The largest population genetic effect described to date is seen with variation in TCF7L2; the 10% of the population with two copies of risk variant for this gene have a nearby two-fold increase in risk of developing type 2 diabetes.

Epidemiological studies show that type 2 diabetes is associated with overeating, especially when combined with obesity and under activity. Middle aged people with diabetes eat significantly more and are fatter and less active than their non-diabetic siblings. The risk of developing type 2 diabetes increases 10-fold in people with a body mass index (BMI) of more than 30kg/m<sup>2</sup>.

The main symptoms of hyperglycemia<sup>7</sup> are-

- Thirst, dry mouth
- Polyuria, nocturia,
- Tiredness, fatigue, lethargy
- Change in weight (usually weight loss)
- Hyperphagia; predilection for sweet foods
- Loss of libido may be present as a result of poorly managed diabetes.

**DISCUSSION-** *Prameha* is a metabolic disease in which various metabolic errors in *Dhatu*s occur due to deficiency of certain *Dhatwagnis*. The description of *Dhatwagnis* appears to be a sum of total biochemical reactions taking place in the individual body, and each type of *Dhatwagni* includes many groups of reaction-specific enzymes. *Apathyanimittaja Prameha* is increasing more rapidly than *Sahaja Prameha* due to increasing obesity and less active lifestyles in today's era. *Sthaulya* is the major cause of *Apathyanimittaja Prameha*, and following Ayurvedic principles and *siddhanta* can definitely prevent development of *Sthaulya*.

With regard to Diabetes mellitus, *Sahaja Prameha* and *Jatah Pramehi* correlate with type 1 diabetes; *Apathyanimittaja Prameha* correlates with type 2 diabetes. *Madhumeha* is a subtype of *Vataja Prameha* (*Prameha* with *Vata* predominance) that can occur as the terminal stage of type 2 diabetes (in which insulin is required), or as type 1 diabetes beginning in early childhood. The latter is also defined as *Jatah Pramehi Madhumehino* in *Charaka Samhita*.

During explanation of *hetus* for developing *sthaulya*, **Acharya Charak** has mentioned that **due to intake of excessive guru, madhur and snigdha ahar, it will lead to sthulta of the body** and on the other side these *rasa pradhana* food increases the *kapha dosha* which is stated in the *nidana* of *prameha*. Practicing sedentary habits is the common causative factor for development of both *sthaulya* and *prameha*. Sleeping during day

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time is involved in the pathogenesis of both *sthaulya* and indirectly in *prameha*. Genetic predisposition is involved in the development of *sthaulya* and *acharya Charak* has also agreed to the role of genes in *prameha* by stating *jata pramehi*.

While describing the main problems arising due to excessive *sthulta*, *acharya* has put the first character as decaying age which stands true for *prameha*. As a person gets affected by *prameha* disease his/her age will eventually get shortened due to its complications. During *sthaulya* second character which has been described is loss of enthusiasm which can be seen in the symptoms of diabetes as tiredness and lethargy. Excessive hunger and thirst are the other problems which arise due to *sthulta* which can be easily understood in the symptoms of diabetes as polyphagia and polydipsia. Excessive weakness described in *sthulta* is the same as in the symptoms that arise during late diabetes due to weight loss. One of the distinctive features described in *sthaulya* is difficulty in sexual intercourse that can be correlated to the loss of libido which can arise in the poorly managed case of diabetes mellitus.

**CONCLUSION-** One can say that the features and characters mentioned in *sthaulya* description shares similarity to that with characters of *prameha* and diabetes mellitus. In both the ayurvedic view and modern view we can clearly observe the strands which connect these two diseases. Hence, we can say that these two

conditions are closely interlinked with each other. Also, there are higher chances of developing *prameha* in an obese individual. According to modern view also the pathology has been described behind development of diabetes in an obese individual. So, one can check the possibilities of developing *prameha* by knowing the interrelationship between these two diseases.

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