

Ayurvedic Concept of Obesity, Metabolic Syndrome, and Diabetes Mellitus

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Abstract

Obesity, metabolic syndrome, and diabetes mellitus are increasing to epidemic proportions globally. There are 400 million clinically obese adults worldwide and there are more than 220 million people who have diabetes. The global impact of these disorders is immense in terms of human suffering and economic burden. There is an urgent need for a more effective understanding of these disease processes and their management, including the use of natural strategies that are affordable and efficacious. The health care system known as Ayurveda has much to offer in this regard. Ayurveda describes a set of complex clinical disorders, collectively called *Prameha*, that are characterized by frequent abnormal micturition. The clinical conditions associated with *Prameha* correlate in many ways with obesity, metabolic syndrome, and diabetes mellitus. The etiology, classification, pathogenesis, and management of *Prameha* are discussed at length and in detail in the Ayurvedic texts. The theoretical background and comprehensive set of strategies Ayurveda utilizes to treat *Prameha* may be valuable in managing obesity, metabolic syndrome, and diabetes mellitus in an efficacious and cost-effective manner.

Introduction

OBESITY, METABOLIC SYNDROME, AND DIABETES MELLITUS are increasing to epidemic proportions globally. There are more than 1.5 billion overweight adults worldwide, of which 400 million are clinically obese. Once considered an affliction of affluent societies, overweight and obesity are now dramatically on the rise in low- and middle-income countries, especially in urban areas. In these developing countries it is not unusual to find obesity coexisting with undernutrition.¹ It is estimated that 25% of the world's adults have metabolic syndrome,² and there are more than 220 million people worldwide who have diabetes.³ Nearly 3 million people die annually from diabetes,⁴ with almost 80% of the deaths occurring in low- and middle-income countries.³

The global impact of these disorders is immense in terms of human suffering and economic burden. Obesity is a major contributor to the global burden of chronic disease and disability.⁵ Diabetes and its complications have a significant economic impact on patients and their families, as well as the health care systems and countries involved.³ The total cost of diabetes in the United States in 2007 (including direct medical costs, disability, work loss, and premature mortality) was \$218 billion.⁶ There is an urgent need for a more effective understanding of these disease processes and their management, including the use of natural strategies that are

affordable and efficacious. The healthcare system known as *Ayurveda* has much to offer in this regard.

Ayurveda

Ayurveda, which translates as the "Science of Life," is a comprehensive, holistic health care system that originated in the ancient Vedic times of India. Ayurveda's primary emphasis is on prevention of disease and preservation and promotion of health; this system also provides treatment for disease. According to Ayurveda, the human body is composed of five *Mahabhutas* (basic elements that have the properties of space, air, fire, water, and earth) that combine to form *Vata*, *Pitta*, and *Kapha*, the three psychophysiological principles known as *Doshas* (Table 1). The body is regulated by the three *Doshas* and the three qualities of mind known as the *Gunas* (*Sattva*, *Rajas*, and *Tamas*).

The *Doshas* regulate various functions in the body. *Vata* governs functions associated with movement and communication (e.g. blood flow, nerve conduction, intestinal motility, etc.) *Pitta* governs functions associated with metabolism, digestion, and transformation (e.g. appetite, endocrine functions, etc.) *Kapha* governs the structure and cohesion of the body (e.g. strength, stability, weight, etc.).⁷ The *Gunas* are mental qualities. *Sattva* is the creative influence associated with intelligence, purity, and balance. *Rajas* is

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TABLE 1. COMBINATIONS OF MAHABHUTAS THAT FORM THE DOSHAS

Mahabhutas	Doshas
Space	Vata
Air	
Fire	Pitta
Water	
Water	Kapha
Earth	

the spur to activity. *Tamas* is the influence of inertia, which results in stability.⁸

Prakriti is the individual's psychophysiologic constitution and is determined at the time of birth by the individual's *Dosha* proportions. Each individual has a certain ratio of *Vata*, *Pitta*, and *Kapha* that is unique to him/her. Individuals with a *Vata*-predominant *Prakriti* have a light, thin build; perform activity quickly; have a tendency toward dry skin and constipation; have an aversion to cold weather; have a tendency to worry; and sleep lightly. Individuals with a *Pitta*-predominant *Prakriti* are moderate in build; perform activity with medium speed; have an aversion to hot weather; have sharp hunger and digestion; prefer cold foods and drinks; have a tendency toward irritability and short temper; and are excellent speakers. Individuals with a *Kapha*-predominant *Prakriti* have a solid build and great strength and endurance; are slow and methodical in activity; have oily, smooth skin; have a steady and tranquil personality; sleep long and heavily; have slow digestion and mild hunger; and have a tendency toward greed.⁹ Current research in the fields of genomics and pharmacogenomics is revealing the possibility of utilizing *Prakriti* to correlate phenotypes with genotypes in the human population. This would have a significant impact on the field of personalized, predictive medicine.¹⁰⁻¹³

In the body there are also seven *Dhatus*, which are fundamental principles that support the various bodily tissues; these are *Rasa* (plasma), *Rakta* (blood), *Mamsa* (muscle), *Meda* (fat), *Asthi* (bone), *Majja* (bone marrow), and *Shukra* (sperm or ovum). There are three metabolic waste products known as *Malas*, which are *Mutra* (urine), *Purisha* (feces), and *Sweda* (sweat). Energy flow and communication take place through various channels of organization known as *Srotas*. The spectrum of health and disease depends on the functioning of these various constituents. A state of equilibrium in their functioning results in health and disequilibrium leads to disease.

Prameha

Ayurveda describes a set of complex clinical disorders, collectively called *Prameha*, that are characterized by frequent abnormal micturition.¹⁴ The generalized causes of *Prameha* include long periods of physical inactivity, laziness, sleeping for long hours, and consumption of dairy products, aquatic and marshy animals, sugar/jaggery preparations (jaggery is an unrefined form of cane sugar), fresh grains, and similar foods that increase *Kapha*. *Prameha*, though a *Tridoshaja Vyadhi* (a disease involving all three of the *Doshas* [i.e. *Vata*, *Pitta*, and *Kapha*]), is basically a disease with *Kapha* pre-

dominance. Also affected are the *Dhatus*, *Vasa* (fat), *Udak* (fluid), *Lasika* (lymph), and *Ojas* (the subtlest material substance in the body; the essence of the body; *Ojas* maintains the body's immunity and vitality). Low *Agni* (digestive and metabolic process) also leads to accumulation of *Ama* (buildup of toxins from improperly digested food and metabolic products). All these factors combine to produce the disorders known as *Prameha*.

Prameha may be hereditary or acquired. It may have *Kapha*, *Pitta*, or *Vata* as the predominant *Dosha* in the disease process. Patients with *Prameha* may be obese or asthenic. There are 20 subtypes of *Prameha* resulting from the interaction of the three *Doshas* and ten *Dushyas* (disturbed functioning of the principles that support the various bodily tissues). These subtypes include ten *Kapha*-predominant types, six *Pitta*-predominant types, and four *Vata*-predominant types. The clinical conditions associated with these subtypes of *Prameha* have much in common with disorders described in allopathic medicine that are associated with obesity, metabolic syndrome, and diabetes mellitus.

Obesity, Metabolic Syndrome, and Diabetes Mellitus

Obesity is a state of increased body weight, resulting from adipose tissue accumulation, that is of sufficient magnitude to produce adverse health effects. The body weight is expressed in relation to height as body-mass index (BMI). $BMI = (\text{weight in kg}) / (\text{height in meters}^2)$ (Table 2). BMI is closely related to accumulation of body fat. Central or visceral obesity is associated with a much higher risk for several disorders and diseases, including diabetes, hypertension, hypertriglyceridemia, decreased high-density lipoprotein (HDL) cholesterol, proteinuria, osteoarthritis, pancreatitis, gallstones, fatty changes in the liver, nonalcoholic steatohepatitis (NASH), hypoventilation syndrome, and increased risk of stroke and venous thrombosis.^{15,16}

The major features of metabolic syndrome, also known as "Syndrome X," are central obesity, high cholesterol, high triglycerides, low HDL cholesterol, hypertension, insulin resistance, and hyperglycemia. Disorders and diseases associated with metabolic syndrome are cardiovascular disease; type 2 diabetes mellitus; increases in apolipoprotein B, uric acid, prothrombin factors, homocysteine, white blood cell counts, and proinflammatory cytokines; microalbuminuria; fatty liver; NASH; polycystic ovarian disease; and obstructive apnea.¹⁷

Diabetes mellitus is a chronic disorder of carbohydrate, fat, and protein metabolism, with a relative or absolute deficiency in insulin secretory response resulting in

TABLE 2. WEIGHT CLASSIFICATIONS ACCORDING TO BODY MASS-INDEX (BMI)

	BMI (weight in kg/height in meters ²)
Underweight	< 18.5
Normal	18.5–24.9
Overweight	25–29.9
Obesity I	30–34.9
Obesity II	35–39.9
Extreme obesity	≥ 40

Source: Ref. 17.

hyperglycemia. Insulin resistance is a major factor in the development of type 2 diabetes, which is seen in obese patients. Complications of diabetes include microangiopathy, retinopathy, nephropathy, neuropathy, and accelerated atherosclerosis.¹⁵

Obesity, metabolic syndrome, and diabetes mellitus have much in common with *Prameha*. The Ayurvedic description of the *Kapha*-predominant and *Vata*-predominant types of *Prameha* include features of diabetes mellitus. Description of the *Pitta*-predominant type of *Prameha* corresponds more closely to inflammatory, hepatic, and gallbladder complications seen with obesity and metabolic syndrome.

***Prameha* as a “Lifestyle” Disorder**

The etiology, classification, pathogenesis, and management of *Prameha* are discussed at length and in detail in the Ayurvedic texts. There are three major classical texts of Ayurveda, known as *Charaka Samhita*, *Sushruta Samhita*, and *Ashtanga Hridaya of Vagbhata*; and three minor texts, known as *Sarngadhara Samhita*, *Bhavaprakash Samhita*, and *Madhava Nidanam*. According to Ayurveda, *Prameha* is one of the significant pathologic conditions brought on by unhealthy diet and lifestyle. Ayurveda places emphasis on dietary and lifestyle recommendations as part of a comprehensive strategy for the prevention and treatment of disease. This strategy extends back to the point of conception, which ideally should be undertaken by parents who are healthy themselves. Ayurveda has recommendations for the course of pregnancy, the care of the newborn child during the lactation period, and from thereon throughout the course of life. The ingestion of a nourishing, balanced diet and optimum physical exercise according to the individual's *Prakriti* (psychophysiologic constitution) are considered essential for maintaining physical and mental well-being. When one starts to deviate from this natural way of living, he/she becomes susceptible to the “lifestyle” disorders, such as *Prameha*. Ayurveda has classified *Prameha* according to several parameters, including etiology, *Dosha* predominance, physique of the individual, and prognosis.

Management of *Prameha*

The management of *Prameha* emphasizes dietary and lifestyle recommendations and herbal preparations, in accordance with the psychophysiologic constitution of the patient and the specific etiopathology.¹⁸ Ayurveda also addresses the management of psychologic factors that contribute to the development of *Prameha*. If the patient is physically strong and has acquired *Prameha*, biopurification is considered the ideal option. For physically weak patients, pacification of the *Doshas* is recommended. Measures that minimize the morbid *Kapha* and *Meda* (fat) will improve the health of the patient. The foods recommended for *Prameha* in the classical Ayurvedic texts should be included in the patient's diet. Balanced nutrition, appropriate physical exercise, and administration of herbal supplements will help manage *Prameha*.

Ayurvedic herbal supplements are being utilized globally, because they are effective for managing many chronic disorders, are cost-effective, and lack the toxic side-effects associated with many chemically synthesized drugs. For the treatment of *Prameha* there are more than 100 medicinal

plants Ayurveda utilizes, singly or, more often, in combination. Selection of the herbal treatment is based on the stage and type of disease, as well as disturbances in the psychophysiologic constitution of the patient. Research has shown that many of these herbs have antioxidant properties, an antidiabetic effect, and a beneficial effect on the lipid profile.^{19–22}

Conclusions

Obesity, metabolic syndrome, and diabetes mellitus are rampant and increasing to epidemic proportions globally. These disorders take an immense toll on the patients who have them, and have a significant economic impact on patients and their families, as well as the health care systems and countries involved. A new approach to the understanding and management of these disorders is available from the comprehensive, holistic health care system known as Ayurveda. The complex set of disorders identified as *Prameha* in Ayurveda correlates in many ways with obesity, metabolic syndrome, and diabetes mellitus. The theoretical background and comprehensive set of strategies Ayurveda utilizes to manage *Prameha* may be valuable in treating these disorders in an efficacious and cost-effective manner.

For further elaboration on the Ayurvedic concept of *Prameha*, see Sharma H, Chandola HM. “*Prameha* in Ayurveda—Correlation with Obesity, Metabolic Syndrome, and Diabetes Mellitus: Part 1—Etiology, Classification, Pathogenesis,” in this issue. Part 2 will be in a following issue.

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