



Review Article

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A REVIEW ON THE ROLE OF DIABETIC SELF-MANAGEMENT EDUCATION IN MADHUMEHA

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ABSTRACT

A sedentary lifestyle, improper eating patterns and stressful mental conditions in the present scenario have invited many distressing diseases. Diabetes is among them and is gaining the status of a potential epidemic in India. WHO declares India to be the Diabetic capital of the world by 2025. Diabetes self-care management plays a vital role by making several considerations and choices that patients must make daily. It includes knowledge and awareness about Diabetes causes, control, diet and lifestyle changes to survive the complex nature of this disease. Diabetes Self-Management Education is a critical element with seven self-care behaviours aimed at caring for all people with diabetes to prevent complications and those at risk of developing the disease. Our science aims to rejuvenate the body by balancing the glycaemia level and ensuring that there won't be any further complications. Acharya Charaka mentions about three steps in treating *Madhumeha* (Diabetes Mellitus), like *Nidana parivarjana* (Avoiding causative factors), *Vihara* (Lifestyle changes) and *Aushadha* (Treatment).

Keywords: Madhumeha (Diabetes Mellitus), Diabetes, Diabetes Self-Management Education

INTRODUCTION

At present, it's the era of a sedentary lifestyle, westernized foods and stress, which has led to a cluster of diseases called lifestyle diseases. Diabetes mellitus is a progressive metabolic disorder characterized by hallmark signs such as hyperglycaemia with disturbance of CHO, proteins and fat metabolism resulting from a defect in insulin secretion, insulin action or both¹. The global diabetes prevalence is predicted to be increased to 10.9% (700 million) in 2045 from 9.3% (463 million) in 2019². In *Madhumeha* (Diabetes Mellitus) from *Nidana* (Aetiology) to *Arishtha Lakshana* (Complications), many features correlate with type 2 Diabetes. *Madhumeha* (Diabetes Mellitus) is a type of *Vataja Prameha*; indulgence in aetiological factors ends up in vitiation of *Vata Kapha Pradhana Tridosha* getting associated with *Medas, Ojas* etc. *Dhatu* is reaching *Mootra Vaha Srotas* resulting in illness³.

A glimpse of Diabetic Self-Management Education (DSME)

DSME is an ongoing process of facilitating the knowledge, skill and ability necessary for Diabetes self-care. It helps people to navigate daily self-management decisions and perform the complex activity. It is the position of the American Diabetes Association that all individual with diabetes receives DSME at diagnosis and as needed⁴.

Benefits of DSME

DSME has shown to be cost-effective in reducing hospital admissions and readmissions, reducing health care costs related to a lower risk for complications. It improves the HbA1c (Haemoglobin A1C) level by as much as 1% in people with type 2 Diabetes. It positively affects other clinical, psychosocial, and behavioural aspects of Diabetes and reduces the onset and advancement of Diabetes complications. It improves the quality

of life and lifestyle behaviours, such as having a healthy eating pattern and engaging in regular physical activity, to enhance self-efficacy and empowerment. It assists in increasing healthy coping activities and decreasing the presence of Diabetes-related distress and Depression⁵.

Keys of DSME

DSME aims to reduce the onset of Diabetes, achieve reasonable glycaemic control, reduce complications and improve quality of life. DSME involves 7 Keys: Eating Well, Being Physically Active, Monitoring Blood Sugar, regular adherence to Medication, Good Problem-Solving Skills, Healthy Coping Skills and Risk Reduction Behaviours⁴.

Eating well

Eating well includes replacing refined carbohydrates with whole grain foods, increasing intake of high dietary fibre food, reducing the amount of saturated fat, intake of antioxidants, intake of vitamins and intake of low Glycaemic Index food. Glycaemic Index (GI) is based on the quality of carbohydrate, not the quantity, i.e. how the carbohydrate breakdown occurs during digestion. The food consumed by people with diabetes is based on the glycaemic index range, that is, intake of a low glycaemic diet⁶. The low Glycaemic Index range involves 55 or less, which means carbohydrate breaks down slowly and releases glucose gradually into the bloodstream, intermediate 56- 69 and high involves 70 and more where there is a rapid breakdown of glucose.

Acharya Charaka has emphasized *Nidana Parivarjana* (avoiding the causative factors) as an essential step in the treatment of *Madhumeha* (Diabetes Mellitus), which involves following *Pathya Ahara* (wholesome Diet) along with the mode of food preparation and food combination.

Table 1: Pathya Ahara in Madhumeha (Diabetes Mellitus)⁷⁻¹⁴

Shooka (Cereals)	Dhanya	Shali (Rice), Shashtika (Rice That Matures in 60 Days), Yava (Barley), Godhuma (Wheat), Kodrava (Kodo-Millet), Uddalaka (Wild Kodo Millet), Shyamaka (Barnyard Millet)
Shimbi (pulses)	Dhanya	Chanaka (Bengal Gram), Adhaki (Pigeon Pea), Kulattha (Horse Gram), Mudga (Green Gram), Masura (Lentils)
Shaaka (vegetables)		Tikta Shaaka (Bitter Vegetables) like Methika (Fenugreek Leaves), Karavellaka (Bitter gourd), Vastuka (Wild Spinach), Patola (Pointed Gourd), Shigru (Drumstick), Lashuna (Garlic)
Phala (Fruits)		Jambu (Jamun), Dadima (Pomegranate), Amalaki (Indian Gooseberry)
Preparations		Mudga Yusha (Green Gram Soup), Purana Shali Odana (Cooked Rice prepared from Old Rice), Shastika Anna (Rice Cooked from Shastika variety of Rice), Trna Dhanya Anna (Porridge prepared from Millets), Yava Bhakshya (Various Barley Preparations), Venu Yava Bhakshya (Bamboo Rice Preparations), Vatya and Apupa (puri), Hingu+Saindhava Yusha (Soup prepared from Asafoetida and Rock Salt), Kalaka a sour eatable substance prepared from a combination of Residue of Tila (Sesame) and Sarshapa (Mustard), Raga-shadava (Sweet dish /Syrup/Chutney prepared from Wood Apple, Java plum and Indian Persimmon), Shuska Bhakshya (Dry Eatables) and Saku (Parched Grain Flour), Shoolya Mamsa (Roasted meat) Parishushka Mamsa (A meat preparation where Meat is cooked soft and added with ghee and Cumin Seeds).
Sneha(Oils and Ghee)		Danti Taila (Wild castor oil), Ingudi Taila (Dessert date oil), Atasi Taila (Linseed oil), SharshapaTaila (Mustard oil) and Griitha (Ghee)
Mamsa(meat)		Vishkira Mamsa (Meat of birds which scratch the land), Pratuda Mamsa (Meat of birds with a sharp beak), Jangala Mamsa (Meat of animals of dry land forests), Vihanga Mamsa (flesh of birds)
Other Food Article		Hingu (Asafoetida), Haridra (Turmeric), Laja (Parched Paddy), Ardhraka (Ginger), Maricha (Pepper), Madhu (Honey).

The *Apathya Ahara* (Unwholesome food) to be avoided are *Guru* (Heavy), *Snigdha* (Unctuous), *Medhya* (Fatty) Ahara (food articles), Meats of animals like *Gramya Mamsa* (Domesticated animals), *Anupa Mamsa* (Marshy land animals) and *Audaka Mamsa* (Aquatic animals), Food articles like *Harenu* (Green peas), *Masha* (Urad Dal), *Pistanna* (flours), Milk and Milk products, Sugarcane and its products, the practice of *Adhyashana* (Excessive eating), Intake of fermented preparations like *Sauviraka* (Fermented preparation made from de-husked grains of Barley), *Tushodaka* (Fermented preparation made from raw Barley along with the husk), *Shukta* (Fermented preparation prepared from fermenting roots, rhizomes, fruits in water along with fats and salts), *Sura* (the fermented liquid made from pastes of various varieties of rice)¹⁵, bakery and fast foods, sweetened drinks and reheated food. Prolonged consumption of these foods, which have low fibre contents and high glycaemic index, hampers the Carbohydrate, protein and fat metabolism and finally burdens the beta cells.

Being physically active is a modifiable risk factor in various lifestyle disorders, including Diabetes Mellitus. Individuals with type 2 Diabetes Mellitus should take a minimum of 150 min/week of moderate-intensity or 75 min of high-intensity exercise per week¹⁶. The moderate-intensity exercise involves brisk walking, cycling on relatively flat terrain, water aerobics, hiking, rollerblading and using a manual lawnmower. The high-intensity exercise includes jogging, swimming, cycling rapidly or over steep terrain, football, gymnastics and skipping. Physical activity increases the glucose in active muscles, improves systemic insulin action, reduces Fasting Blood Sugar, and helps in weight loss, a risk factor for Diabetes.

Ayurveda emphasises the role of *Viharaja Nidana* (Lifestyle Aetiology) in the manifestation of Madhumeha (Diabetes Mellitus) like *Ayayama* (lack of physical Exercise), *Alasya* (excessive laziness), *Diwaswapna* (sleeping at daytime), *Asya* and *Swapna Sukha* (more inclination towards staying at bed), *Eka Sthana Asana* (staying lazy at single place), *Srama* (excessive activities) and *Atiyoga* (excessive indulgence) of *Shodhana* (purification therapy)¹⁷⁻¹⁹. Following some of the practices opposite to it will surely make a way in breaking the chain of transmission of the disease, which is achieved by following *Vividha Vyayama Prayoga* (the practice of various forms of

exercises) like *Niyuddha* (Fighting), *Gada* (Form of martial arts), *Asra* and *Upsra Abhyasa* (Fighting with weapons), *Padaticharya* (Walking), *Ruksha Udhwartana* (Dry or powder massage), 100 *Yojana Pada Yatra* (100 miles barefoot walk), *Kreedaa* (Games), *Nishi Jagarana* (staying awake at night), *Gaja* and *Turaga Ratha* (Elephant/Horse/cart riding), *Jala Parisheka* (Swimming), *Snana* (Bathing) and *Chankramana* (Roaming around the house)²⁰⁻²³.

Monitoring blood sugars

The two indicators of control of Diabetes are blood glucose and glycated haemoglobin, which can be tested at home and later needs the health worker. Regular glucose check also helps the Diabetic decide on food, exercise and physical activity. It is a tool for managing treatment plans and preventing long-term complications. This involves examining his urine, using a glucometer at home that is self-monitoring for day-to-day care, and checking A1C twice a year to know the average glucose for the past 2 or 3 months.

Adherence to medicine

The prompt adherence to medicine will normalize the blood glucose levels as well as help in the prevention of complications. This involves the extent to which a person's behaviour in taking medication, following a diet or executing lifestyle changes corresponds with agreed recommendations from a health care provider. Initially, the treatment plan involves diet and exercise later on to oral hypoglycaemic agent than insulin to prevent its grave complication, leading to increased morbidity and premature mortality. Here the education is also given regarding the actions, side effects, timings and frequency of medication administration, how to provide himself with insulin, and how to store and travel with medicine.

Problem-solving skills

It is a prerequisite for Diabetic patients to make decisions that ensure consistent engagement in healthy behaviours, which will help them to achieve adequate diabetes control in the context of the many competing demands of living. It involves Disease-specific knowledge like recognition of symptoms associated with

glycosuria and hypoglycaemia, self-management behaviours like eating and exercise and Biological patterns like AIC and lipids.

Healthy coping skills

It involves Recruiting available resources to increase the probability of a favourable outcome in the future²⁴. Diabetes care is greatly influenced by psychosocial factors when they hinder a person's ability to self-manage the disease and achieve metabolic control. It emphasizes the health worker to motivate the behaviour of diabetic, helping to set behavioural goals, guiding the patients through healing obstacles, learning what they can control and offering ways to cope with what they cannot control. Acharya has explained the role of psychological factors in the manifestation of Madhumeha like *Shrama* (Fatigue), *Chinta* (Worries)etc. Healthy coping skills involve cognitive-behavioural therapy, *Satvaavajaya Chikitsa* (Psychotherapy), *Sadvritta* (Moral Conducts) and medications.

Risk reduction behaviours

Diabetes mellitus involves both modifiable as well as non-modifiable risk factors. The non-modifiable risk factors involve age, gender, ethnicity and genetics, whereas modifiable risk factors involve obesity, physical inactivity, unhealthy diet, hyperglycaemia, stress and chronic inflammation²⁵. The risk reduction behaviours can be achieved at four levels of prevention

At the primordial level, the risk of achieving Diabetes Mellitus can be prevented by maintaining healthy body weight through adopting healthy nutritional habits and physical exercise from childhood. Practising physical activity for at least 2.5hour/week can help prevent the onset of type 2 Diabetes¹⁷.

At the primary level stopping smoking, avoiding intake of alcohol, reduced intake of saturated fat intake, high dietary fibre intake, avoidance of sweets, avoidance of Diabetogenic drugs like oral contraceptives, the practice of intake of *Nitya Sevaniya Ahara* (wholesome food recommended for daily intake) like *Shali* (Rice), *Shastika Shali* (Rice that matures in 60 days), *Amalaki* (Indian Gooseberry), *Yava* (Barley)etc²⁶daily, Regular practice of *Dinacharya* (Daily regimens) which involves the practice of *Brahma Muhurta Jagarana* (waking up early in the morning), *Udvartana* (Powder Massage), *Snana* (Bathing), *Vyayama* (exercise) etc. by which one can break the risk factor or delay the manifestation of *Madhumeha* (*Diabetes Mellitus*). Acharya Sushruta has quoted that a person who follows proper *Rutucharya* (Seasonal regimen) won't be afflicted with any diseases²⁷, *Hita Ahara Sevana* (Wholesome food intake), consumption of food according to Kala (Time), adhering to proper *Nidra* (Sleep), following *Brahmacharya* (abstinence from excessive sexual pleasures), by non-controlling the non-controllable urges and controlling of the controllable urges, following *Acharya Rasayana*(Lifestyle conducts) and *Sadvritta* (Moral conducts)

At the secondary level, by strictly adhering to the diet, physical activity, treatment, maintenance of blood glucose levels as close to or within the normal limits, regular check-ups of blood sugar, urine check-up for protein and ketones, blood pressure, visual acuity, foot care as fear for diabetic neuropathy, regular eye check-ups and weight check-up. It also involves a check-up of glycated haemoglobin twice a year²⁸.

At tertiary levels, by organizing specialized clinics and units capable of providing diagnostic and management skills of a high order to combat the load of complications like Retinal detachment, Renal failure, coronary thrombosis, and gangrene of lower extremities²⁸.

CONCLUSION

DSME can be a powerful behavioural intervention to reduce symptoms of ongoing health problems. Such an education programme can act at all levels of prevention of diabetes. Lifestyle modification in terms of controlling modifiable risk factors, including nutrition, is the fundamental aspect of DSME. Ayurveda also plays a crucial role in educating the patients regarding the role of Pathya (wholesome), *Ahara* (Diet) and *Vihara* (Lifestyle) for those who are on the verge of developing *Madhumeha* (Diabetes Mellitus) and also those who have already been affected with it.

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