

REVIEW ARTICLE

Role of *Ahara Evum Vihara* in NCDS w.s.r to Diabetes mellitus

Author: Nidhi Soni¹

Co Authors: Neetu Sharma² and Vijay Kumar Jatoliya³

¹P.G. Department of Rog Nidan evum Vikriti Vigyan, M.M.M. Govt Ayurvedic College and Hospital, Udaipur, Rajasthan, India

²P.G. Department of Kaya Chikitsa, PGIA, DR Sarvepalli Radhakrishnan, Rajasthan Ayurveda University, Jodhpur, Rajasthan, India

³Department of Ras Shastra and Bhaishajya Kalpana, Pt. Dr. Shivshakti Sharma Ayurveda Medical College & Hospital, Ratlam, M.P. , India

ABSTRACT

Non communicable diseases (NCDs) is a disease that is not transmissible directly from one person to another. It is the result of a combination of physiological, environmental, genetic, and behavioral factors. NCDs disproportionately affect people in low and middle-income countries, where more than three quarters of global NCD deaths (31.4 million) occur. It affect people of underdeveloped and developing countries. The main types of NCDs are Cancer, Chronic respiratory diseases Cardiovascular diseases, and Diabetes. India, making it the country capital of diabetes in the world. In case of Diabetes, account for most NCD deaths, 1.6 million people annually. So it is a prime concern of medical professionals to manage Diabetics properly and also prevent the prediabetics from suffering through proper medication and lifestyle modification. It is a heterogeneous metabolic disorder and may results dysfunction of the insulin production. The main etiologic factor is sedentary lifestyle with lack of exercise and food habits associated with over nutrition, obesity and alcoholism etc. In *Ayurveda* its clinical feature is similar to be *Madhumeha* which is described in *Vataja Prameha*, can be managed by exercise, diet and internal medication. In our traditional wealth number of herbs and other herbo-mineral preparations as well as seasonal regimen (*Ritucharya*) along with daily regimen (*Dincharya*) are described that can control diabetes if practiced properly.

Key Words *Life style, Madhumeha, Diabetes, Dincharya, Ritucharya*

Received 01st February 2024 Accepted 30th April 2024 Published 10th May 2024

INTRODUCTION

Non-communicable diseases (NCDs) are the leading cause of adult mortality and morbidity worldwide. NCDs are chronic diseases in nature which last for long period of time and progress slowly. Sometimes NCDs result in rapid death as

seen in certain autoimmune diseases like R.A., Heart diseases, Stroke, Diabetes, and others. Among them Diabetes Mellitus is one of the most important public health problem in the world. The prevalence of diabetes is predicted to double globally from 171 million in 2000 to 366 million

REVIEW ARTICLE

in the year 2030 with the maximum increase in India, making it the country capital of diabetes in the world.¹ In India the life style of people has underwent drastic change due to modernization which has resulted in various life style disorders among which diabetes has emerged as a major health issue. *Ayurveda* clearly emphasize the role of faulty diet and life style as causative factors of *Madhumeha* reverting which can be helpful in its management too, which can be manage by diet, exercise, yoga and internal medication. So now treating the disease with *Ayurveda* and adopting lifestyle which prevents the disease is the prime concern of *Ayurveda* doctors.

AIM

- Critical review of Role of diet and life style in the management of *Madhumeha*.

MATERIALS AND METHODS

- Data collection for the review of literature and its analysis was done from available literature like *Ayurvedic* texts, modern medical science, scholarly websites like Pubmed, Scopemed, etc.

REVIEW LITRETURE

MODERN LITRETURE

As per the WHO, Diabetes mellitus is defined as a heterogeneous metabolic disorder characterized by common feature of chronic hyperglycemia with disturbance of carbohydrate, fat and protein

metabolism may result in deficiency or dysfunction of the insulin production.

Types of Diabetes mellitus (as per American Diabetes Association 2007)

I. Type 1 Diabetes mellitus (10%) (Previously called insulin dependent, or juvenile onset diabetes)

II. Type 2 Diabetes mellitus (80%) (Previously called non insulin dependent, or maturity onset diabetes)

Ranges from those with predominant insulin resistance associated with relative insulin deficiency, to those with a predominantly insulin secretory defect with insulin resistance.

III. Other specific types (10%)

- a) Genetic defects of beta cell function due to mutations in various enzymes (earlier called maturity – onset diabetes of the young or MODY)
- b) Genetic defect in insulin action (e.g. Type A insulin resistance)
- c) Diseases of exocrine pancreas (e.g. chronic pancreatitis, pancreatic tumours, post pancreatectomy)
- d) Endocrinopathies (e.g. Acromegaly, Cushing's syndrome, pheocromocytoma)
- e) Drug – or chemical induced (e.g. steroids, thyroid hormone, thiazides, β – blockers etc)
- f) Infections (e.g. congenital rubella, cytomegalovirus)
- g) Uncommon forms of immune mediated DM (stiff man syndrome, anti – insulin receptor antibodies)

REVIEW ARTICLE

h) Other genetic syndromes (e.g. Down's syndrome, Klinefelter's syndrome, Turner's syndrome)

IV. Gestational Diabetes mellitus

Diabetes or Impaired glucose tolerance diagnosed in pregnancy also includes pre-existing diabetes.

AYURVEDIC REVIEW

Madhumeha is the *Ayurvedic* diagnosis that approximate compare to Diabetes Mellitus. According to *Ayurvedic* text there are 20 types of *Prameha* and they are further divided into 3 types - *Vataja*, *Pittaja* and *Kaphaja*. *Madhumeha* is the subtype of a *Vataj prameha*. There are two type of etiological factors mentioned *Sahaja* (congenital) and *Apathyanimitaja* (acquired).² *Sahaja prameha* is due to certain defects in *Stri* and *Pumbeeja* which is said to be *Matrupitru beejadoshakrita*. *Apathyanimitaja prameha* is due to *Apathyakar Ahar* and *Vihar* (Improper diet and activities). According to *Acharya Charak*, there are two types of Diabetic persons: *Sthula Pramehi* and *Krishna Pramehi*.

CAUSATIVE FACTOR:

➤ Factors related to Dietary:

- Excessive intake of milk and milk preparations, oil, ghee, new grains, grain cakes, sour substances, sweet drinks, puddings made of jaggery/sugar. Alcohols like *sauveera*, *sukta*, *maireya* and *sura* consumption, flesh of animals of domestic, aquatic and marshy places, water of rivers and tanks during rains and floods, and using more similar factors, which increase *Kapha Dosha* has a significant role in the etiology of *Madhumeha*³

- Beside it, it is said to be that excessive intake of *Ruksha* and *Laghu Ahara*, excessive use of pungent, cool items, excessive fasting etc. increases *Vata dosh* which also leads to cause of *Madhumeha*.⁴

➤ Factors related to life style:

Asayasukha (habituation to sitting for long periods) *Swapanasukha/Atinidra* (prolonged sleeping), *Divasvapna* (day sleeping), anxiety, anger, worry, grief, and similar other stress producing factors leads to the development of *Prameha* because of disturb of metabolic function of our body.

IMPORTANCE OF AHARA (DIET)

Ayurveda has given utmost emphasis for the maintenance of *Pathya Ahara*. It stated that if one takes wholesome diet and activities suitable to all *Dhatus* (tissues), he can never suffer from *Madhumeha*⁵. It is said that, like bird reaches its nest on the tree, in the same way *Prameha* reaches the person who eats more, unhygienic and lazy⁶. Quantity and quality of diet a person should be decided on the basis of *Agnibala* (digestive power).

ROLE OF VEGETABLES, FRUITS, SPICES AND SEEDS

These are micronutrient rich, influence various systems in the body with diverse metabolic and physiological functions, and enable elderly diabetics to be fit and active. They provide nutritional substances like dietary fiber, vitamins, minerals, phytonutrients such as flavonoids (antioxidants), saponins, polyphenols (antioxidants), carotenoids, isothiocyanates

REVIEW ARTICLE

(sulphur-containing compounds) which are essential to ensure a balanced diet.

Type 2 diabetics can take fruits except those containing high carbohydrate and sugar levels.

Avoid fruits with high Glycemic index like Banana, Cheekoo, Grapes, and Mango etc. but

Orange, Watermelon, and Apple, Guava etc. can be taken. Avoid fruit juices; instead opt for whole

fruits, as they contain more fiber. Fat-free or low

fat dressings on salads, as well as uncooked vegetables. Because they improve the insulin sensitivity and glucose utilization and relieve constipation.

Chromium is a critical cofactor in insulin action and its deficiency can lead to hyperglycemia.

Trivalent chromium is found in whole grains, seeds/nuts (almond, walnut), green beans, cereals etc.⁷⁻¹⁰ which control glucose level in diabetics.

Table 1 Some dietary Substance which can be use in diabetic person

Group	Name of Articles ¹¹
Grains¹⁴	<i>Yava</i> (barley) – <i>Hordeum vulgare</i> , <i>Kodrava</i> (grain variety), <i>Bajara</i>
Pulses	<i>Chanak</i> (Bengal gram) – <i>Cicerarietinum</i> , <i>Adhaki</i> (toor dal) – <i>Cajanus cajan</i> , <i>Mudga</i> (green gram)- <i>Phaseolus aureus</i> , <i>Kulattha</i> (horsegram) – <i>Dolichos biflorus</i>
Vegetables (bitter and astringent)	<i>Methika</i> (fenugreek)- <i>Trigonella foenum</i> , <i>Karvellaka</i> (bitter gourd)– <i>Momordica charantia</i> , <i>Vastukam</i> (Bathuva), <i>Rasona</i> (garlic)– <i>Alium sativum</i> ,
Fruit	<i>Kadali</i> (raw banana) – <i>Musa paradisisca</i> . <i>Jambu</i> , <i>Amalaki</i> – <i>Emblica officinalis</i> , <i>Kapittha</i> (monkeyfruit)– <i>Limonea acidissima</i> , <i>Dadima</i> (pomegranate) – <i>Punicagranatum</i> , <i>Tinduka</i> – <i>Disospyroa embrayoptesis</i> .
Seeds	<i>Methika</i> , <i>Kamala</i> – (<i>Nelumbo mucifera</i>), <i>Utpala</i> – (<i>Nymphoea stellate</i>)
Oils	<i>Sarshapa</i> (mustard), <i>Tila taila</i> , <i>Nikumbo</i> (<i>Danti</i> – <i>Baliospernum montanum</i>), <i>Ingudi</i> (<i>balanitis egyptica</i>), <i>Atasi</i> (<i>Linum usitatisimum</i>),
Fermented or Alcoholic liquids	<i>Madhveeka Sura</i> , <i>Madhvasava</i> (in <i>Kapha Pittaja Prameha</i>)
Flesh(fat free meat)	<i>Harina</i> (deer flesh), <i>Shashaka</i> (rabbit), Birds like <i>Kapota</i> (pigeon), <i>Titira</i> , <i>Lavaka</i> .
Other natural products	<i>Madhu</i> (Honey)
Others food articles and Spices	<i>Laja/Murmura</i> (puffed rice), <i>Maricha</i> – (<i>Piper nigrum</i>), <i>Saindhav</i> – (Rock salt), <i>Hingu</i> – (<i>Asafoetida</i>), <i>Haridra</i> – (<i>Turmeric</i>), <i>Ardraka</i> – (<i>Ginger</i>)

IMPORTANCE OF VIHAR (LIFESTYLE)

Supervised and structured exercise programmes may be of particular benefit to people with type 2 diabetes. Diabetic person should be advised to achieve a significant level of physical activity and to maintain this in the long term. It can be include activities such as walking, gardening, swimming and cycling etc.

Various guidelines exit for physical activity in the general population, those from the US Department of health and Human services (2008)

suggest the adults (18-24years) should build up to achieve a weekly minimum of 2.5 hours of moderate intensity exercise or 75 minute of vigorous – intensity exercise , or a combination.

Aerobic activity (moderate intensity) should be performed for at least 10 min each time and spread through the week, with at least 30 min on at least 5 days of the week and combination of both aerobic and resistance exercise may lead to greater improvements in Glycemic control.¹²

REVIEW ARTICLE

Older adult should also follow these guidelines as far as their abilities allow.

In type 1 diabetes, exercise can increase the risk of hypoglycaemia, so patients should seek specialist advice on taking extra carbohydrate.

Beside it, *Acharya Shushrut* has been prescribed some other hard, productive exercise are as under:

1. For poor class- The diabetic should walk for about 100 yojan (miles) i.e. (1 yojan is ~ 7.5 km), bare footed, not staying more than one night in the settled place, should only eat the things available by begging and keeping restraint on his sense organs.

2. For rich class- They should eat only *Shyamaka* (*Echinochloa frumentacea*), *Kodrava* (*Paspalumscrobiculatum*), *Amalaka* (*Embellica officinalum*), *Kapitha* (*Limoniaacidissima*) etc, and reside with the cattle. The food stuff for them should be *Ruksha* or they may stay with the cows and eat the above, which comes with the cow dung.

3. For others- Either farming or digging the well etc. In short for diabetics, exercise works on (1) fat utilizing and (2) metabolizing sugar, fat, carbohydrates and proteins.

Yoga, Asana & Pranayam: - All these things improves all sorts of metabolism in the body. So diabetics should perform different types of yoga and asanas like *Suryanamaskar*, *Dhanurasana*, *Sarvangasana*, *Halasana*, *Padmasan*, *Shalabhasan*, *Mayurasan*. *Gomukhasan* etc.

HERBS USE IN DIABETES

• Medicinal herbs are rich source of therapeutic agents for prevention of diseases. India is called as “Botanical Garden of the World”. Approximately 60 % of the population use herbal medicines to treat medical illnesses.¹³

• Some herbs are as under: Indian origin are Giloy (*Tinospora cordifolia*), Gurmar (*Gymnema sylvestre*), Garlic (*Allium sativum*), Methi (*Trigonella foenum-graecum*), Ghrita kumari (*Aloe vera*), Neem (*Azadirachta indica*), Tulsi (*Ocimum sanctum*), Jamun (*Syzygium cumini*), Karela (*Momordica charantia*), Bael (*Aegle marmelose*), Onion (*Allium cepa*), Banyan tree (*Ficus benghalensis*), etc. These herbs are having *katu*, *tikta* and *kashaya* rasa which improve the metabolic system of our body.

SOME FORMULATION WHICH CAN BE USED

1. Guduchi swarasa (*Tinospora cardifolia*) – 10 ml BD
2. Amalaki Curna (*Phyllanthus emblica*) – 6 gm BD.
3. Karavellaka Phala Churna (*Momordia charantia*) – 3 gm BD with water.
4. Medicated Ghee - Dhanvantara ghrita - 5 to 10 gm/day
Dadimadya ghrita - 5 to 10 gm/day
5. **Avaleha** –
 1. Saraleha - Decoction of Asana (*Pterocarpus marsupium*), Khadira, Babbula and Bakula (*Mimusops elengi*).
 2. Gokshuradyavaleha - Decoction of Gokshura, Trikatu, Nagakeshar, Cinnamon, Ela, Jatipatra and Vamshalochana.-

REVIEW ARTICLE

Dose: 3 to 5 mg/day.

NEED OF SOCIETY AWARENESS AND SELF CARE STRATEGIES

- ✓ Community awareness and self care strategies is required to improve knowledge and attitude about the role of physical activity, and healthy eating behavior in disease prevention.
- ✓ Yoga and Pranayam also provide an appropriate lifestyle intervention that would be greatly helpful in prevention.
- ✓ Significant physiological, psychological and endocrine changes have been reported by following various Yoga regimens (Asana, Pranayama etc) over a period of time.
- ✓ It is also postulated that rejuvenation of beta cells of pancreas may be taking place, which may increase utilization and metabolism of glucose in peripheral tissues, liver and adipose tissues through enzymatic processes.⁽¹⁴⁻¹⁶⁾

DISCUSSION

According to Ayurveda Madhumeha is considered in, a type of Vataj Prameha which can be correlated with diabetes mellitus. It has gained gigantic disgrace in recent times because of increases in the prevalence of a sedentary lifestyle and obesity. Here we observe role of Ahara Vihara and prakriti which is responsible for generation of disease. Madhumeha can be prevented through lifestyle modification, diet control, and control of overweight and obesity. The described Ayurvedic diet and modified lifestyle plan in the present study have all the

potential to maintain the glycaemic index of Madhumeha (DM) patients. Through appropriate use of Ayurvedic preventive measures such as Aharavidhi, Dincharya, Ritucharya and therapeutic measures Madhumeha can be prevented. The appropriate approach of diet, daily regimen, exercise, and medication can be well managed by Ayurveda.

Modes of Action on Aharaja Pathya

- Aharaja Pathya have the properties like lekhana (scraping), vatahar, medhagni vardana, balya etc. In Madhumeha, there are Bahu & Abaddha medas is one of the major factor contributing for samprapti. Hence some dravya which cause medhagni vridhi will help in overcoming bahu & abaddha medas are following –

- **High fiber diet-** Delay of gastric emptying. Delay absorption due to increase viscosity, relieves constipation.
- **Tikta Shaaka-** Karavellaka, Patola, Nimba, Parpata, Haridra, Kiratatikta, Musta, etc.
- Since in Madhumeha, it is the *Shithilatha* of the *deha* which provokes the samprapti, Tikta shaka does the *sthirikarana* of *deha* and also does the *Shoshana* of *dushya* in Prameha.

Modes of Action on Viharaja Pathya

- **Udvardhana-** Dosha vishesha- Kapha shaman, Dushya vishesha Pravilaayana medas, *Shareerasthreekarana*. The process of Udvardhana enhances circulation to skeletal muscles, does lysis of adipose tissue.

REVIEW ARTICLE

- **Vyayama** – Redistribution of blood to active muscles. Lipolysis of adipose tissue profound reduction of local vascular resistance increase in capillary blood.

CONCLUSION

Non communicable diseases are the leading killer disease of today's era. Diabetes is also one among such non communicable and lifestyle disorder. So the potential to prevent diabetes by lifestyle intervention is consider being of best and easy method. Lifestyle intervention mainly focused on the increased physical activity and dietary modification. It is consider as the comprehensive approach to prevent and treat Diabetes. Ayurveda consider Nidana parivarjana is the main line of treatment. In Swasthavritta also quote that if person daily indulge in *Pathya Ahara* and *Vihara* sevana one can avoid disease and can be swastha.

REVIEW ARTICLE

REFERENCES

1. www.ncbi.nlm.nih.gov. Global prevalence of diabetes: estimates for the year 2000 and projections for 2030
2. Astang Hridaya, Dr Ganesh Krushna Garde, Chikitsa sthan. 12/1, Anmol Prakashan, Pune 2, 2006.
3. Agnivesa. Caraka cikitsa sthana. In: Vaidya Bhagwan Das, editor. Caraka Samhita. Vol. 3. Varanasi: Choukhambha Sanskrit Series Publishers; 2008. p. 300(6/8); 298(6/4).
4. Acharya YT. Charaka Samhita, Nidana Sthana, ch. 4, ver. 36-52, Reprint edition, Chaukhambha Orientalia, Varanasi, pp 215, 2004.
5. Acharya YT. Charaka Samhita, Nidana Sthana, ch. 4, ver. 36-52, Reprint edition, Chaukhambha Orientalia, Varanasi, pp 215, 2004.
6. Acharya YT. Charaka Samhita, Nidana Sthana, ch. 4, ver. 36-52, Reprint edition, Chaukhambha Orientalia, Varanasi, pp 215, 2004.
7. Baldi A, Choudhary N, Kumar S. Nutraceuticals as therapeutic agents for holistic treatment of diabetes. *Int J Green Pharm* 7: 278-87, 2013.
8. Hari K, Baruah MM. Nutritional endocrine disorders. *J Med Nutr Nutraceut* 1: 5-8, 2012.
9. Asif M. The role of fruits, vegetables, and spices in diabetes. *Int J Nutr Pharmacol Neuro Disease* 1: 27-35, 2011.
10. Khan A, Safdar M. Role of Diet, Nutrients, Spices and Natural Products in Diabetes Mellitus. *Pak J Nutr* 2: 1-12, 2003.
11. Acharya YT. Charaka Samhita, Chikitsa Sthana, ch. 11, ver. 11-12, Reprint edition Chaukhambha Orientalia, Varanasi, pp 449, 2004
12. Davidson principle and practice of Medicine, 22nd edition, edited by Brian R. Walker et al. p 821.
13. Seth SD, Sharma B. Medicinal plants in India. *Indian Journal of Medicinal Research* 2004;120:9-11.
14. Malhotra V, Singh S, Singh KP, Sharma SB, Madhu SV, Gupta P. Effects of yoga asanas and pranayama in non-insulin dependent diabetes mellitus. *Ind J Trad Knowl* 3: 162-167, 2004.
15. Singh S, T, Singh KP, Tandon OP, Madhu SV. Influence of pranayamas and yoga-asanas on serum insulin, blood glucose and lipid profile in type 2 diabetes. *Ind J Clin Biochem* 23: 365-368, 2008.
16. Sahay BK. Yoga and Diabetes. *Proceedings of Noro Nordisk diabetes update*, Ed. Anil Kapur Health Care Communication, Bombay, pp 159-167, 1994.