



AYURVEDA BASED LIFESTYLE MODIFICATION IN PRE-DIABETES A SHORT REVIEW

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ABSTRACT

1. Objectives- Ayurveda, a science of well-being has been dealing with a holistic approach towards every disease since time immemorial. Diabetes mellitus has been described in Ayurveda as *Prameha*. Pre-diabetes, which is usually considered as *purvarupa avastha* (prodromal stage) of *Prameha* (Diabetes mellitus) is also viewed in the same manner. An effort has been made to compile all the non-pharmacological therapies that can have a therapeutic effect on Pre-diabetes.
2. Methodology- Detailed literary review was done by reviewing various Ayurvedic classical texts & databases.
3. Results- Various references were found in Ayurveda for non-pharmacological management of Pre-diabetes, which demarcates the importance rendered to lifestyle modification in today's era.
4. Conclusion- Along with the various treatment modalities, *pathya- apathya* (wholesome- unwholesome foods), *vyayama* (exercise) & changes in the lifestyle has been well explained in the classical texts of Ayurveda. In today's accelerating world, the basic concepts & practices of *Dinacharya* (day wise social conducts) & *Rutucharya* (season wise social conducts) are easily ignored due to lack of time & laziness. Also, the dietetics rules

and methods, fibre rich & quality food has been replaced with fast food, fattening & sweetened foods. Also, Yoga, a precious gift to the Indian subcontinent remains less explored by the citizens of the country where this ancient science has had deep seated roots. A cultural shift from rural to urban has changed the food & lifestyle habits of the population as a whole. Also, the attitude of individuals has changed, from finding solace & satisfaction to being driven to the highest ambitions. All these factors are equally responsible for disrupting the metabolism of the individual & causing various non-communicable diseases. Pre-diabetes is one such disease that can only be corrected with a modification in the lifestyle.

Keywords: Pre-diabetes, Ayurveda, pathya, yoga

INTRODUCTION

Pre-diabetes, usually addressed as Borderline Diabetes, is a disease that predominantly occurs due to faulty eating habits & a sedentary lifestyle. The HbA1c levels in a Pre-diabetic are usually in between 5.7-6.4%. The prevalence of pre-diabetes in adults, globally and in India is about 7.3% i.e 352 million people and 14.0%^{1,2}. The rising amount of lifestyle disorders in the present era are a clear demarcation of the need of lifestyle modification in these diseases. A disease like Pre-diabetes can be controlled & Type 2 Diabetes mellitus can be prevented by a sole change in the lifestyle. Hence lifestyle modification has been given importance. Diet, yoga, different exercises both aerobic & anaerobic, meditation and other therapies that act as stress- busters can be brought into practice. The consistent efforts can help in controlling the blood sugar levels & reversing the pathology. Detailed explanation on each of these modifications is dealt in this article. An Ayurvedic view on diet and exercise for Pre-diabetes has been presented here.

METHODS

All the literary material was collected from relevant classical Ayurvedic texts. Also, relevant research articles from reliable sources like PubMed, Google Scholar etc. were utilized for this review.

PRE-DIABETES

Prediabetes is defined as a state of abnormal glucose homeostasis where blood glucose levels are elevated above those considered normal, but not as high as those required for a diagnosis of Diabetes³. This stage is commonly referred to as the borderline Diabetes stage. According to Ayurveda, *Prameha* is defined as “*prabhuta aavila mutrata*” i.e the state of the body

when it excretes increased amounts of denser urine, with or without other metabolites⁴. The *purvarupa* or prodromal symptoms of *Prameha* (Diabetes mellitus) can be considered the stage of Pre-diabetes.

CAUSES

Amongst the *rasas* (tastes), increased consumption of sweet, salty & sour foods is usually considered as the cause of increased blood sugar levels. Foods that have properties of creating unctuousness, heaviness, slimyness and that of cooling nature are the causes. Also, excessive intake of fluids can also cause *Prameha* (Diabetes mellitus). Freshly harvested foods like cereals, legumes, alcohols etc. are also considered a suitable cause as they contain a high amount of moisture that can increase the fluid content in the body. In cereals, *sugandhika*, a variety of fragrant rice is mentioned as a possible cause, provided it is consumed in the fresh state & in a repeated fashion (habituated). Amongst the legumes, fresh green peas or black gram soups eaten with ghee is a cause for *Prameha* as per the classical text of Charaka. Meats of all sorts, milk preparations, flour preparations & sugarcane preparations are considered as the causes. Also, lack of exercise, decreased maintenance of hygiene, day-sleep & reduced activity is a potential cause for increasing the central obesity and further on increasing the blood sugar levels^{5,6}.

PATHOGENESIS

In Ayurveda, the probable cause of *Prameha* has been described as “*bahu drava shleshma*”, which is increased quantity of *kapha* (the cooling entity in the body) that has increased in its liquidy state. And there are 10 *dushya*'s (vitiations) that are explained. They

are- *bahu-abaddha meda & mamsa* (fat & muscle tissue- that has lost its compactness), *shariraja kleda* (fluid content of the body), *shukra* (semen), *shonita* (blood), *vasa* (fat layer), *majja* (bone marrow), *lasika* (lymph) & *oja* (essence of the body- pranic force). Once the causes mentioned above are put into repeated practice, there is *shaithilya* (laxity) that sets in the body, due to which the increased *kapha* (the cooling entity in the body) can easily spread in the entire body. Due to the same qualities, it vitiates the *meda* (fat tissue), which further vitiates the *mamsa* (muscle tissue) & *shariraja kleda* (fluid content of the body). This excessive *kleda* in the body gets converted to *mutra* (urine) & this condition is further named as *Prameha*, due to the increased frequency of urination⁷. Pre-diabetes can be viewed in two ways. One is when the relation between the *nidana* (cause), *dosha* (body elements) & *dushya* (vitiations) gets established over a long period of time. The disease then takes a longer time to get completely manifested. The second is when the strength of this above relation is weak. In this case, the disease that gets manifested is a milder form or there is no complete clinical presentation seen of the disease. Both these scenarios indicate the stage of pre-diabetes⁸.

SIGNS & SYMPTOMS

Sweetening of the mouth, numbness or burning sensation felt in the soles of feet or palm of hands, dryness of oral cavity- palate- throat, increased thirst (polydipsia) etc. are some of the presenting symptoms. Also, certain external features can be observed like coating felt on the body parts, foul body odor & repeated accumulation of dirt in the external orifices like nose, ears, genitals etc. which further gives way to clinical presentations like pruritis & fungal infections etc. Some personality changes can also be observed in such patients like increased laziness, procrastination & preferring sleep throughout the day. All these features demarcate the increased amount of *kleda* (fluid content) in the body⁹.

LIFESTYLE MODIFICATIONS

An integral part of healing a pre-diabetic patient is bringing a vital change in his/her faulty lifestyle, as these are the core causes of the disease. If this stage is

not arrested in time, the patient can enter into full blown Type 2 DM, which is practically irreversible. Hence the following lifestyle modification can be implemented.

DIET

Millets like foxtail millet, proso millet, barnyard millet, finger millet, pearl millet & sorghum are a very good replacement for other cereals. Various preparations like upma, dosa, idli, roti, porridge, pulao or plain steaming of these millets also is possible. Also, *purana shaali* i.e 1 year old rice & barley preparations can be consumed. In legumes, chickpeas, pigeon pea, green gram & horse gram has been indicated in Ayurveda. Amongst vegetables, *tikta shaaka* (bitter vegetables) are indicated¹⁰. Hence vegetables like bitter melon, snake melon, ivy melon, ridged melon, moringa leaves, dill leaves, amaranth, radish, raw banana etc can be encouraged. *Jambu* (Black plum) is the only fruit that has been indicated in Ayurveda. Condiments like turmeric, fenugreek, cinnamon, cloves, black pepper, garlic, coriander seeds, cumin seeds etc can be used in cooking. Also, the intake of flaxseeds has been mentioned in Ayurveda. Flaxseeds can be dry roasted & consumed once or twice per day. Timely intake of meals can help in maintaining blood sugar levels.

YOGA

A yoga schedule can be prepared commencing with a set of loosening exercises for all the major joints and body parts, followed by a series of asanas in standing, sitting, prone and supine positions. This can be followed with a couple of Suryanamaskara & Pranayama. The session can end with omkara chanting. Standing asanas like Trikonasana, Parivrutta trikonasana, Padahasthasana, Veerbhadrhasana can be easily brought into practice. Sitting asanas like Vakrasana, Ardhamatsyendrasana, Gomukhasana, Vajrasana, Ushtrasana can be practiced. Prone asanas like Bhujangasana, Shalabhasana, Dhanurasana & supine asanas like Vipareeta karani, Pavanamuktasana, Naukasana can be implemented into practice¹¹. After attaining the posture, one has to hold the asana for minimum of 10 counts, to get better & faster results.

CALISTHENICS

These are a set of vigorous exercises that do not require external resistance or weight. These exercises are against gravity & can be performed by obese & overweight people. Planks, crunches, squats, push-ups etc. can be performed according to one's capacity. These not only help in reducing the weight of the individual, but also gives a chiselled look that makes the physique appealing. These exercises also increase muscle strength & endurance of the body, which further increases the capacity of the individual to exercise¹².

MEDITATION

Different types of meditation like cyclic meditation, MSRT (Mind Sound Resonance Technique), DRT (Deep Relaxation Technique), QRT (Quick Relaxation Technique) etc. can be practiced for a sound mind. As stress is also considered as a major cause for Diabetes, its onset can be delayed by indulging in such relaxation techniques. During meditation there is a decrease in the rate of metabolism & activity of the sympathetic nervous system. Due to lesser energy needs the body requires lesser fuel in the form of glucose. Hence it can decrease the blood sugar levels¹³.

OTHER THERAPIES

Though not mentioned in the classical texts of Ayurveda, other therapies like Laughing therapy and Music therapy can be brought into practice. These practices help in reducing the negative emotions like stress, anxiety & also helps in indulging the unstable mind, usually in the elderly population. Also getting involved in religious practices & faith in the Almighty has proved to be a better healer of all times. These therapies can genuinely help patients with emotional breakdowns & in trauma affected patients.

RESULTS

Acharya Charaka, while concluding the *Nidana sthana* chapter on *Prameha* quotes, one who has unhealthy food desires & who avoids bathing and movement of any sort, *Prameha* returns to such a person just like a bird returns to a tree that has a built nest¹⁴. This significantly shows the importance given to lifestyle modification over medications. These

modifications are the need of the hour in the present scenario. These changes may not yield immediate results, but over a matter of time, the consistent efforts put by the patient can help in bringing major changes in the HbA1c levels & the overall metabolism of the individual.

DISCUSSION

The diet mentioned is a low carb, high protein, high fibre diet. Millets have a low Glycemic Index & are considered as resistant starch. This property delays the absorption of this carbohydrate, which helps in preventing the instant rise in blood sugar levels. Pulses on the whole, contain soluble fibers that reduces the post prandial blood glucose levels. Yogasanas that mainly work on reducing central obesity and which increase the metabolism of the patient should be encouraged. The above asanas are a perfect match for pre-diabetic patients. Also, it takes care of other minor health issues like indigestion, constipation, anorexia, muscle spasms etc. The rationality of starting the yoga series with loosening exercises is preparing the body for the irregular stretches of the asanas & preventing muscle cramps & spasms due to the sudden jerks. Once habituated, loosening exercises can be reduced gradually. Thus, it can be concluded that Pre-diabetes can be therapeutically managed by non-pharmacological therapies.

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