Role of Yoga in regulating Diabetes Mellitus

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Abstract

Diabetes mellitus has gained enormous disgrace in recent times as it is becoming the world’s largest silent killer. The problem of diabetes has grown enormously in the last two decades. In 2014, around 387 million people had diabetes with a prevalence of 8.3%; by 2035 this will rise to 592 million. India has been projected by WHO as the country with the fastest growing population of Diabetic patients. It is estimated that between 1995 to 2025 diabetic patients in India will increase by 195%. Diabetes mellitus is a chronic progressive metabolic disorder characterized by hyperglycemia mainly due to absolute or relative deficiency of insulin hormone. The ancient Indian physicians had a sound knowledge of Diabetes. They described the clinical features and complications of diabetes as Madhumēha.

Yoga has been suggested as a complementary and alternative treatment for diabetes. Numbers of people with diabetes are turning to yoga in an effort to keep their condition under control, to delay the complications of diabetes and to improve overall quality of life. The present study is taken to show that how yoga can play a major role in prevention and control of diabetes.

Keywords: Hyperglycemia, insulin, Madhumeha, Yoga.

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INTRODUCTION

Diabetes mellitus (DM) is a chronic progressive metabolic disorder characterized by hyperglycemia mainly due to absolute (Type 1 DM) or relative (Type 2 DM) deficiency of insulin hormone. The World Health Organization (WHO) has commented there is ‘An apparent epidemic of diabetes, which is strongly related to lifestyle and economic change’. Over the next decade the projected number will exceed 200 million. The extraordinary economic development and rapid urbanization in India has led to a shift in health problems from communicable to non-communicable diseases. Of all the non-communicable diseases, diabetes and cardiovascular diseases lead the list.

In Ayurveda, diabetes is described as Madhumēha. Pramēha comprises 20 sub varieties and is further classified into three groups like Kaphaja pramēha (10), Pittaja pramēha (6) and Vātaja pramēha (4). Madhumēha is a subtype of Vātaja pramēha. Madhumēha (Madhu means “honey” and Mēha means “urine”). Madhumēha is classified as a Āsthamahāroga (Major Diseases).

There are different approaches to yoga including spiritual, therapeutic, and developmental. However, the underlying premise of mind-body exercise modalities like yoga is that the physiological state of the body can affect emotions, thoughts, and attitudes, which in turn have a reciprocal effect on the body. Yoga has been suggested as a complementary and alternative treatment for diabetes. Numbers of people with diabetes are turning to yoga in an effort to keep their condition under control, to delay the complications of diabetes and to improve overall quality of life.

MATERIAL AND METHODS

References related to proposed title are collected from classical texts of Ayurveda. Various publications, internet, books, research papers and proceedings of seminars related to the topic are collected.

Yoga

Yoga is an ancient art on a harmonizing system of development for the body, mind and spirit. According to Patanjali, yoga is a stage in which all the activities of mind get stabilized. According to Bhag vad Gita, ‘Yogah karmasu kaushalam’ means Yoga is a skilled performance and ‘Samatvam Yogamuchyte means state of balance between body and mind is Yoga. Patanjali’s āshtāṅga yoga consists of eight limbs or portions-Yama, niyama, āsana, prāṇāyāma, pratyāhāra, dhārana, dhyāna and Samādhi.

The first two limbs of Āstāṅga yoga are Yama and Niyama which are ethical code and personal discipline for the growth of our moral, spiritual and social aspects. Third and fourth limbs are Āsana and Prāṇāyāma which help in physical development and enhancement of physiological functions. Fifth and sixth limbs are Pratyāhāra and Dhārana for controlling senses and making the mind calm, concentrated and alert. The final two limbs Dhyāna and Samādhi result in inner peace, higher level of consciousness and the ultimate union of our individual consciousness with the Universal consciousness.

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Role of Yoga in diabetes

Yoga has been applied in the field of therapeutics in modern times. Significant physical, physiological, psychological and endocrinical changes have been reported by following various Yogic regimes over a period of time. Yoga thus has aroused a hope for the diabetic patients to have complication free life with relatively less medications. Following regimens may be useful in diabetes.

Sūryanamskāra

It is very good exercise for people suffering from diabetes, it increases the blood supply to various parts of the body, improving insulin administration in the body, it gives all the benefits of exercise if practiced at 3-6 rounds. One round of Sūryanamskāra consists of twelve postures. It helps to burn out the excessive calorie. If practiced at slow speed, it offers the benefits of āsana.

Āsanas

Āsanas are beneficial in the treatment of diabetes. Important aspect of Āsanas is stability and comfort experienced in the position. After attaining the position, one needs to relax all the muscles and try to maintain the positions for long. Due to various twists, stretches and strains in the body, the internal organs are stretched and subjected to strain. This increases the blood supply, oxygen supply to the organs, increasing the efficiency and functioning of the organ. Stretching of various glands, results in increased efficiency of the endocrine system.

Standing Āsana - Tadāsana, Ardhañkatichrāsana, and Trikonāsana.

Sitting Āsana - Tadāsana, Vajrāsana, Bad-
dhakonāsana, Paschimottanāsana, Ustrasana, gomukhasana, Ardha matsyendrāsana, Janu Sirsāsana, Mandukāsana

Prone - Mandukāsana, Bhujarāgāsana, Salabhāsana, Dhanurāsana,

Supine - Matsyāsana, Suptaveerāsana, Sarvāngleśana, Halāsana, Sāvasana.
These Āsanas have positive effect on pancreas and also insulin functioning. But to get this result, one needs to maintain the Āsana for a longer duration while relaxing the muscles. The Āsanas have a variety of effects, including:

- Relaxation, strengthening and balancing of muscles
- Mobilization of joints
- Improvement of posture
- Action on pressure points
- Improvement of breathing
- Calming of nervous system
- Promotion of homoeostasis in cardiovascular, digestive, endocrine and other systems.

Āsanas relax muscles through holding them in gently stretched positions. Mental relaxation techniques promote relaxation at all levels (muscles, autonomic system and mind), through body awareness, visualizations, etc.

Prānāyāma
Prānāyāma harmonizes and links the mind and body. Breathing is controlled by both conscious and unconscious neural pathways, bridging the mind and body. Improving the breathing pattern promotes health and can help in the management of many chronic ailments. One of the basic preparations for Prānāyāma is Nādi Shodhan Prānāyāma or alternate nostril breathing; this type is found useful in diabetes as alternate nostril breathing has a calming effect on the nervous system, which reduces stress levels, helping in diabetes treatment. Also, research has shown that Bhramari and Bhrāmari help in diabetes. Bhramari has calming effect on mind, brain and nervous system. Bhrāmari is revitalizing Prānāyāma, which increases oxygen levels and reduces carbon dioxide levels in the blood. In Bhrāmari, the abdominal muscles and diaphragm are used which puts pressure on the internal organs.

Dhyāna or Meditation
Meditation is an important part of yoga practice. As much as stretching and moving help the body, rest and rejuvenate meditation is a healing balm for brain chemistry, helping to bring the mind to a state of awakened calm. Meditation and breath techniques are being studied by scientists to discover how they work in helping people relax and lift their spirits. Relaxed and Concentrated state of mind is the aim of any form of meditation which creates a calming effect on the nervous system, brings balance between Sympathetic and Parasympathetic nervous systems. Especially for diabetes, concentration on pancreas during the meditation practice has shown positive effects on sugar levels.

DISCUSSION
Abdominal stretching during yoga exercise causes rejuvenation/regeneration of cells of pancreas increasing the utilization and metabolism of glucose in peripheral tissues, liver, and adipose tissues through enzymatic process. Improved blood supply to the muscles and muscular relaxation along with its development enhances insulin receptor expression causing increased glucose uptake and thus reducing blood sugar. The improvement in the lipid levels after yoga could be due to increased hepatic lipase and lipoprotein lipase at cellular level, which affects the metabolism of lipoprotein and thus increase uptake of triglycerides by adipose tissues. Yoga postures can lead to improvement in the sensitivity of the β-Cells of pancreas to glucose signal and also the improvement in insulin secretion. Prānāyāma modifies various inflating and deflating lung reflexes and interact with central neural element to bring new homeostasis in the body.

CONCLUSION
On the physical level yoga āsana (any posture which is steady and comfortable) are designed to tone, strengthen and align the body. These postures are performed to make the spine supple and healthy and to promote blood flow to all the organs, glands and tissue keeping all bodily systems healthy. On the mental level yoga uses breathing technique Prānāyāma (control of Prāna, i.e. source of energy) and Meditation (Dhyāna) to quiet, purify and discipline the mind. So Yoga is not a religion but a way of living with sound health and peace of mind.

Yoga Āsanas and Prānāyāma may be used as an adjunct to medical therapy to optimize the biochemical parameters. Yoga therapy also improves the status of diabetics in terms of reduction of drug doses, physical and mental alertness and prevention of complications.
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