



Suryanamaskar : a lifestyle modification in prediabetes

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ABSTRACT:

With rapid economic development and increasing westernization of lifestyle in the past few decades, prevalence of the life style disorders has reached alarming proportions among Indians in the recent years. In 2011, in India there were 62.4 million people with diabetes and 77.2 million people with prediabetes.

Prediabetes should be viewed in the natural history of disordered glucose metabolism rather than as a distinctive clinical entity. Prediabetes is the precursor stage to DM .It is metabolic disease associated with insulin resistance.

As it is metabolic disorder it needs to be corrected with lifestyle modification. *Suryanamaskar* is such lifestyle modification therapy. *Suryanamaskar* exerts positive and long-term effect on prediabetes it delays and prevents the disease progress. However, this effects of *Suryanamaskar* therapy in prediabetes management remain

unclear and a matter of debate and research. This article offers a scientific review on positive effect of *Suryanamaskar* in prediabetes.

KEY WORDS: *suryanamaskar*, prediabetes , lifestyle disorders.

INTRODUCTION-

Due to the influence of sedentary life style and influence of westernized food habits and stress, we are leading towards various heterogeneous group of diseases, prediabetes is one among them. In 2011, in India there were 62.4 million people with diabetes and 77.2 million people with prediabetes.¹ Prevalence of prediabetes is increasing worldwide and according to experts more than 470 million people may suffer from prediabetes by 2030 .²

Prediabetes- Prediabetes is a high-risk state for diabetes that is defined by glycaemic variables that are higher than normal, but

lower than diabetes thresholds. Prediabetes is associated with the simultaneous presence of insulin resistance and β -cell dysfunction. For prediabetic individuals, lifestyle modification is the cornerstone of diabetes prevention, with evidence of a 40–70% relative-risk reduction.³

In the prediabetic stage level of sugar present in the blood is above the normal. Here, fasting glucose level (taken 12 hours after food) will be between 101 to 125 or between 140 to 200 taken 2 hours after food. If the value obtained is either any one of these, it is called a prediabetic stage. This category of individual is prone to acquire Type 2 diabetes. Apart from genetic reasons, a leisurely lifestyle and excess fat in the body contribute to the prediabetic stage. Most often, there would be no conspicuous symptoms but those mentioned in the category below are risk factors.

1. Obese people [Whose body mass index is above 25].
2. Those who are above 40 years of age.
3. Those who are hereditarily prone to Type 2 diabetes.
4. Those who have Gestational diabetes [Diabetes during pregnancy].
5. Those who have polycystic ovary syndrome [a hormonal disorder]
6. Those who have excess cholesterol [mainly those who have HDL < 35]
7. Those who have Triglyceride level above 250.
8. Those who do not sleep more than 6 hours & 9 hours respectively.⁴

It would indeed be the very fortunate and vigilant few who know that they are at a

prediabetes stage. If diagnosed, they can either choose a healthy lifestyle and defend diabetes fully or lead an undisciplined lifestyle and slowly become a diabetic patient, accusing heredity and unfavorable life situations. Prediabetes patients are thus symbolically at a cross road – the road they choose to tread will determine their quality of life in the future.

Suryanamaskar- *Suryanamaskar* is an ancient *yogic* method to worship Sun. In *Sanskrit* literature *surya* means sun, and the word *namaskara* means salutation. Therefore, this practice is known as the *Suryanamaskar* or 'salutation to the sun'. This specific postural and breathing protocols was developed in Indian subcontinent thousands of years ago by a great sage Patanjali and their disciples.⁵ They advised all human beings to practice these *yogic* methods in front of the sun in their daily life for good health, illumination, mental and physical stability. *Suryanamaskar* is a series of *asanas* with strict breathing pattern. Its revitalizes each and every cell of the body, gives physical strength, flexibility, and mental calmness. *Suryanamaskar* includes a series of *asanas* which are- *Pranamasan*, *hastautthanasan*, *padahastasan*, *ashwasanchalanasan*, *parvatasan*, *ashtanganamasakar* and *bhujangasan*.⁶ While doing each *asana* a specific *mantra* should be chanted to worship the sun. The present literature review was aimed to assess the positive effect of *suryanamaskar* in prediabetes.

Studies supporting role of *suryanamaskar* on prediabetes-

Effect of *Suryanamaskar* on Mind:

Yoga is a psycho-somatic-spiritual regulation for attaining union and synchronization between our mind, body and soul and definitive union of our individual realization and universal realization.⁷ *Yoga* forms an essential part of mind/body strategies to encourage excellent physical condition and well being, which take an account of relaxation procedures.^{8, 9}

It energises neuroglandular and neuromuscular system of body and ensures balanced supply of oxygenated blood, thus strengthening entire psychosomatic system of human body *Suryanamaskar* and *Pranayama* increases nerve conduction velocity, reverse decline in cognitive brain function, release stress and mental fatigue hence reduction in the glucagon and cortisol secretion thereby reduction in insulin resistance.¹¹ Hence *Asanas* which reduces stress also recommended in prediabetes.

Effect of *Suryanamaskar* on pancreas:

Rejuvenation/regeneration of cells of pancreas due to abdominal stretching during *Yoga* exercise, may increase utilization and metabolism of glucose in peripheral tissues, liver, and adipose tissues through enzymatic process.¹² Regeneration of pancreatic beta cells could occur by *Yoga* exercises that promote blood circulation in the region of the pancreas.¹³ *Suryanamaskar* improves sensitivity of β -cells to the glucose signal, hence improvement in the insulin sensitivity result in better glucose uptake.

Effect of *Suryanamaskar* on abdominal muscles:

All these posture of *Suryanamaskar* stretches and twists in lower thoracic and upper lumbar region where pancreas is

located. It increases the blood supply to the pancreas, massage the organs, and activate its cells to increase in secretion of insulin and increase in glucose uptake.

Effect of *Suryanamaskar* on weight / B.M.I:

Yoga also improves the lipid profile in diabetic patients which plays supportive role in its complications. This results in reduction of weight, BMI and waist hip ratio.¹⁴ *Yogic* practices significantly reduces complication by improving BMI, waist hip ratio.¹⁵

Physiological effect:

The metabolic effect of the practices of *Asana*, *Pranayama* and meditation synergize with other physical effects and contribute to physical fitness and sense of well-being. When it practiced over a period of time, it considerably reduces the metabolic rate due to decreased sympathetic nervous system activity.

Yoga has developed as a holistic approach to combat work-related stress, anxiety and depression. stress activates the oxidation process at membrane lipid level, disrupting the membrane, and causing release of oxygen at tissue level to relieve hypoxia. This tissue hypoxia plays an important role in pathogenesis of cardiovascular disease and diabetes.¹⁶ High level of stress leads to increased cortisol level, which causes mobilization of fatty acids from fat stores, leading to higher level of abdominal fat.¹⁷ In anxiety disorders, the increase in thalamic GABA levels observed after *Yoga* practice explains the improvement in anxiety disorder and depression where lower GABA levels were found.¹⁸ Physical and mental stress causes rise in BP and increase capillary hydrostatic pressure, facilitating

flow of plasma from vascular compartment to the interstitial compartment thus rising blood viscosity in capillaries, which is cardiovascular risk.¹⁹ *Pranayama* alleviate stress and decrease cardiovascular risk in DM. *Yoga* practices over prolonged period causes significant drop in levels of blood sugar level, glycated haemoglobin and a rise in haemoglobin²⁰, improves posture, circulation, BMI and contributes to sense of well being.

Discussion –

This review focused the beneficial effect of *Suryanamaskar* in prediabetes. *Suryanamaskar* is a combination of *yogasana* and *pranayam* which involves maximum stretch of all the muscles of body. Insulin resistance is the key metabolic defect involved in the manifestation of prediabetes. Specialized causes include stress and lack of sleep due to various lifestyle modifications. Obesity is one of the causes of prediabetes because accumulated peripheral adipose cell causes the insulin resistance. *Suryanamaskar* which reduces the abdominal obesity can be adopted which increases the insulin acceptance among the cells and reduces the peripheral fat accumulation with increased utilization of glucose in muscles, liver and adipose tissues. By imparting the massaging effect over the pancreas may help to secrete the hormone by initiating the β -cell. Twisting movement helps in proper secretion of insulin.

Suryanamaskar and *Pranayama* increases nerve conduction velocity, reverse decline in cognitive brain function, release stress and mental fatigue hence reduction in the glucagoan and cortisol secretion thereby reduction in insulin resistance.

It shows marked improvement in following criteria:

Metabolic effect: decreases blood glucose, lipids, cholesterol level.

Physiological: increase vital capacity, decrease respiration and pulse rate, weight becomes appropriate, chest circumference increases, abdomen circumference decreases, maintain stress fright conditions by increasing Adrenal cortex functions.

Psychological: mentally fit and stable, decrease mental fatigue and stress. Balance between Sympathetic &Parasympathetic N.S. thereby health and immunity increases.

Conclusion-

Suryanamaskar is an ancient and sacred *yogic* science of India which positively modulates body and mind of a person. Regular *Suryanamaskar* practice helps in reduction of weight, BMI, waist hip ratio, blood sugar and lipid level and ultimately reduces the burden of prediabetes and diabetes. *Suryanamaskar* can be considered as very safe, cost effective and natural alternative therapy to prevent prediabetes. Thus *Suryanamaskar* should be added to the daily life style to prevent prediabetes and adjuvant therapy for the diabetic patients. So it will reduce the medicine load from the country also strengthen nations economy for the better future of mankind. So a definite recommendation is needed to encourage to practice *Suryanamaskar*.

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Conflict of Interest: Non

Source of funding: Nil

Cite this article:

"Suryanamaskar : a lifestyle modification in prediabetes."

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Ayurlog: National Journal of Research in Ayurved Science- 2021; (09) (01):01- 06