

# Effect of Kapalbhathi Pranayama in the blood sugar level in diabetic patients

Bharathi Raja<sup>1</sup>, S. Preetha<sup>2\*</sup>, Jothi Priya<sup>2</sup>

## ABSTRACT

**Aim:** The aim of the study was to find the effects of Kapalbhathi Pranayama on blood sugar level in diabetic patients. **Introduction:** Specific Yogasanas and Pranayama which can be used as a therapeutic measure in treating physical, psychological elements, endocrine, and physiological it is done for a long period of time. This has been proved by the earlier studies. Yoga is the holistic search for well-being and perfect health. This ancient heritage of India gave man the answers to his spiritual. Recently, among the general public as well as health professionals, there has been an interest in health and natural remedies and increased awareness. Managing psychosomatic and chronic degenerative disorders and overall health can be improved by yoga which is an effective and tested method. Nowadays, the life is full of stress, and stress-related disorders are common. Yoga is the panacea for modern stress discomfort. **Materials and Methods:** Random blood sugar level was measured in diabetic patients before and after the practice of Kapalbhathi Pranayama. Moreover, data were analyzed statistically. **Results:** The study showed that the mean of the random blood sugar level before the practice of yoga was 164.5 and after 1 month of practice of yoga was 157.8. Moreover, it was found that study was statistically significant. **Conclusion:** Effect of the Kapalbhathi Pranayama on the blood sugar level of borderline diabetic patients is significant. Moreover, the study concludes that regular practice of Kapalbhathi Pranayama by borderline diabetics can reduce the blood sugar level.

**KEY WORDS:** Diabetics, Insulin, Pranayama, Random blood sugar, Yoga

## INTRODUCTION

Type 2 diabetes mellitus is a serious and costly disease. The chronic complications of diabetes mellitus include accelerated development of cardiovascular diseases, end-stage renal disease, loss of visual acuity, and limb amputations. All of these complications contribute to the excess morbidity and mortality in individuals with diabetes mellitus. The past decades have seen a marked increase in the prevalence of diabetes, with most regions of the world affected by this global epidemic. Furthermore, there is an increasing proportion of young individuals being diagnosed with diabetes. Diabetes is associated with the development of a variety of microvascular complications including retinopathy, nephropathy, and neuropathy, but also macrovascular complications including coronary heart disease, stroke, and peripheral vascular disease.<sup>[1]</sup>

Central nervous system is affected by diabetes, which also includes damaging cranial nerves, spinal cord, brain, and autonomic neuropathy. The brain gets damaged either by demyelination, atrophy or accumulation of oxidative end products and it results in an alteration in metabolism of the brain. Specific Yogasanas and Pranayama which can be used as a therapeutic measure in treating physical, psychological elements, endocrine, and physiological it is done for a long period of time. This have been proved by the earlier studies.<sup>[2]</sup> Yoga is the holistic search for well-being and perfect health. This ancient heritage of India gave man the answers to his spiritual. Recently, among the general public as well as health professionals, there has been an interest in health and natural remedies and increased awareness. Managing psychosomatic and chronic degenerative disorders and overall health can be improved by yoga which is an effective and tested method. Both central (brain regulation done by autonomic nervous system) and peripheral (lung and heart physiology) can be improved. Nowadays, the life is full of stress, and stress-related disorders

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<sup>1</sup>Department of Physiology, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, Tamil Nadu, India, <sup>2</sup>Department of Physiology, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, Tamil Nadu, India

\*Corresponding author: S. Preetha, Department of Physiology, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, 162, Poonamallee High Road, Chennai - 600 077, Tamil Nadu, India. Phone: +91-8608566435. E-mail: [drpreeth.homeo@gmail.com](mailto:drpreeth.homeo@gmail.com)

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are common. Yoga is the panacea for modern stress discomfort.<sup>[3]</sup>

Both body and mind are benefited by yoga, and it is widely practiced for its benefits. Particularly in India, yoga therapeutics is a discipline which is increasingly appreciated. Influence of integral yoga practices on psychological and health variables is not assessed by many studies, but many possible benefits are established. India stands second in the highest number of diabetic patients, which is expected to increase to 101.2 million by the year 2030. In India, the diabetes is also starting to affect the people with young age and appear much earlier in life. This means that chronic long-term complications are becoming more common.<sup>[4-6]</sup>

There is a lacking of acceptance of the disease, resistance to changing the food habits, and the course of disease progression is affected by negative attitudes and leads to more complications. Among the many complications of diabetes such as neuropathy, retinopathy, nephropathy, and cardiovascular diseases, one of the major issues is the cognitive dysfunction, and it is to be investigated. Poor glucose control and diabetes mellitus were linked with worse cognitive function and suggesting that severity of diabetes mellitus is a greater decline and is likely to contribute to accelerated cognitive aging. Yogic practices in managing diabetes have been exclusively analyzed, and the evidence supports its play in achieving adequate glycemic control.<sup>[7-9]</sup> Yoga aims to incorporate the mind, body, and spirit to bring about mental, physical, and spiritual health. Although people who are healthy take to yoga to maintain their health, it is also often seen to be practiced as a therapy post-diagnosis of a chronic conditions such as hypertension, obesity, diabetes, and anxiety-related conditions. Yoga is considered as a cost-effective and safe intervention especially in the management of type 2 diabetes.<sup>[10,11]</sup> The aim of the study is to find out the effects of diabetic patients.

## MATERIALS AND METHODS

Patients were selected from the yoga center, and their blood sugar is measured and analyzed. 20 diabetic patients were selected from the yoga center.

### Inclusion Criteria

Individuals with the age group of 35–75 years were included in the study. Borderline diabetic patients were selected who were not under treatment and are

interested in lowering their sugar level by practicing yoga in a selected yoga center.

### Exclusion Criteria

Individuals with other systemic illness such as cardiovascular disease, renal failure, stroke, hypertension, increased blood pressure, and cholesterol were excluded from the study.

### Procedure

Random blood sugar level of the diabetic patients was measured. They are advised to do Kapalabhati Pranayama for 30 days. After 30 days again, their random blood sugar levels were checked and analyzed. The blood sugar level is measured using Accu-Chek glucose monitor. The finger is pricked with a lancet (a sharp and small needle), drop of blood is placed on a test strip, and then the strip placed into a meter that displays your blood sugar levels.

## RESULTS

The mean of the random blood sugar level before the practice of yoga was 164.5 and after 1 month of the practice of yoga was 157.8. *P* value obtained is 0.00, and it was statistically significant [Table 1 and Figure 1].

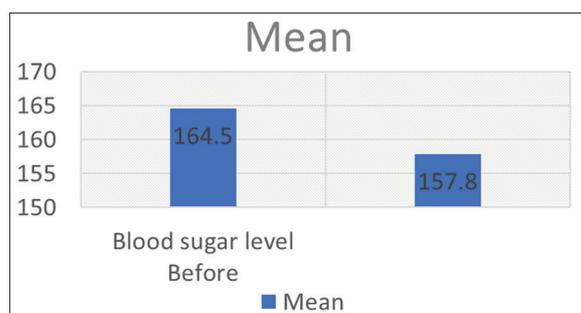
## DISCUSSION

Yoga techniques that are meant to develop through introspective awareness to calm down the mind, develop better mastery over the mind modifications, may have increased and higher level of confidence to make a resolve to change themselves and overcome their guilt, shame and the complexes which are related. The relaxation response gained after yoga may give the ability to face situations in a relaxed state of mind and perform with effortlessness and utter ease. This is described as one of the quoted definitions of yoga, “yogah karmasu kaushalam” by Sri Krsna in the Bhagavad Gita, which means “yoga is a special skill of action in relaxation”.<sup>[12,13]</sup>

Blood glucose levels decreased significantly in our subjects following the yoga therapy program. Yoga training results in a reduction in blood glucose levels and better glycemic control. Performance of asanas leads to an increased sensitivity of the beta cells of the pancreas to glucose signals. It is possible that a similar mechanism is responsible for the improvements in blood sugar levels of subjects.<sup>[14,15]</sup>

**Table 1: Mean value for random blood sugar level**

Content	Mean value of random blood sugar level		P value
	Before yoga	After yoga	
Blood sugar level	164.5	157.8	Significant



**Figure 1:** Graphical representation of mean random blood sugar level

Yoga practice results in a reduction of body fat and increase of lean body mass thereby helps in improving insulin sensitivity. Decrease in free fatty acid levels have a significant effect on beta-cell function, hence Yogasanas by preventing beta-cell exhaustion may prevent diabetes. Studies have confirmed the benefit of yoga in the control of diabetes mellitus. The fasting and post-prandial blood glucose values showed a significant fall within 3 months and continued to have a good and smooth control of diabetes during the period of the study as evidenced by a normal blood glucose levels and glycosylate hemoglobin and drug requirements were significantly reduced.<sup>[16,17]</sup>

Yoga is a kind of relaxation and meditation technique practiced in a semi-darkened room. Yoga-based practices may have significant beneficial effects on multiple factors important in glycemic control, insulin resistance, lipid profiles, body composition, and blood pressure. Yoga may also lower oxidative stress, decrease sympathetic activation, and improve nervous system function, enhance pulmonary performance, mood, sleep, and quality of life, and reduce medication use. Very few studies have examined the effects of yogic practices on psychological status and sleep.<sup>[18-20]</sup>

## CONCLUSION

The study shows that there is a significant reduction in blood sugar level of borderline diabetic patients. The study encourages the practice of Yogasanas not only for diabetes and but also for various health conditions.

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