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Mini Review

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Potential role of yoga in secondary prevention of type 2 diabetes: a mini review

Abstract

Diabetes is the leading cause of death and disability in developed as well as developing countries. Due to the chronic nature of diabetes and potential threat to the quality of life, many people are turning towards complementary therapies to control type 2 diabetes mellitus. Yoga in particular, is increasingly being used in clinical settings in the management of type 2 diabetes and other non-communicable diseases (NCDs). This review aims at exploring the potential role of yoga in the management of type2 diabetes, especially in relation to the prevention of the complications of diabetes.

Keywords: yoga, type 2 diabetes mellitus, diabetes complications, prevention

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Background

Diabetes is a global public health crisis affecting more than 415million people across the globe.[1] Once a disease of the affluent, type 2 diabetes is now increasingly common amongst the poor as well.[2] The complications of diabetes remain as the leading cause of non-traumatic limb amputation, blindness and renal failure. The use of Complementary and Alternative Medicine (CAM) therapies in the management of type 2 diabetes mellitus has increased significantly in the recent past. There are growing evidences that supports the efficacy of one such CAM therapy, Yoga, which offers a safe and cost-effective intervention in the management of diabetes.[3]

Nerve conduction velocity

Reduction in nerve conduction velocity is one of the earliest signs of diabetic neuropathy. A controlled trial has reported that yoga a positive effect in the management of diabetic neuropathy, by increasing nerve conduction velocity. A statistically significant increase in the yoga group was reported when compared to the control group.[4] The number of non-traumatic limb amputations due to diabetic neuropathy is on the increase and yoga could be utilised as an effective complementary therapy in the management and prevention of diabetic neuropathy.

Cognition

Decline in cognition is often attributed to the hyperglycaemic state observed in diabetes. Event related evoked potential (ERP) is an objective measurement of cognitive ability.[5] Diabetic patients also exhibit longer latencies in P300 when compared to normal healthy. And, yoga studies have shown to significantly improve ERP and also P300 preserving cognitive functions[6,7] in type 2 diabetes mellitus.

Microvascular complications

Blood pressure and blood glucose levels are the major contributors in the pathogenesis of microvascular complications of diabetes. The efficacy of yoga in reducing glucose levels and blood pressure has been shown consistently in the research studies of the past. Reduction is observed not only in fasting blood sugar (FBS) and postprandial blood sugar (PPBS), but most importantly reduction in HbA1C has been reported consistently which is a measure of glycaemic control.[8] The very first yoga study to measure changes in HbA1C was conducted way back in 1992,[9] which showed a significant reduction in HbA1C when compared to the control group. Yoga practices have shown to decrease sympathetic response including systolic pressure, diastolic pressure, mean pressure, heart rate and rate pressure product (RPP) after experimental stressors.[10,11] Further, yoga is found to be more beneficial than exercise in improving baroreflex sensitivity and heart rate variability (HRV)[12] which are indicators of Cardiac Autonomic Neuropathy.

Conclusion

While diet and exercise play a significant role in controlling type 2 diabetes the level of exercise needed to lower plasma glucose is 50-70% of maximum aerobic capacity lasting 30minutes a day which might not be feasible in many patients because of age, obesity or cardiovascular diseases.[4] Yoga could be an effective replacement for exercise in treating type 2 diabetes as a complementary therapy due to the moderate intensity and maximised benefits. The positive changes observed with yoga is attributed to the to the interplay of various pathways providing the aforementioned benefits *viz.* the Hypothalamic Pituitary Adrenal (HPA) axis, AMP kinase pathway, reduction in oxidative stress and pro-inflammatory markers and enhanced parasympathetic activity.[13–16] No adverse effects were reported in any of the previous studies involving type 2 diabetes patients, ensuring yoga to be a safe and effective complementary therapy in the management and prevention of complications of diabetes.

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Conflict of interest

Author declares that there is no conflict of interest.

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