

## ABSTRACT

**Background:** Type 2 diabetes mellitus (T2DM) is a highly prevalent public health problem for significant cause of morbidity and mortality across the globe, characterized by disruption in glucose homeostasis, systemic homeostasis, inflammation and genetic expressions. *Yoga* is a mind body medicine shown to have several health benefiting effects. There is lack evidence for efficacy of *Yoga* in improving systemic homeostasis and molecular level in patients with T2DM.

**Objectives:** Present study is intended to assess efficacy of *Yoga* on glucose homeostasis through short-term *Yoga* intervention and multi-centric randomized controlled study and assessed the role of *Yoga* in improving systemic homeostasis and epigenetic modification through a cross-sectional study.

**Methods:** This study included three different studies 1) Multi-centric study on 251 T2DM patients who were randomized into a *Yoga* group (n=137) and a control group (n=114). Participants in the *Yoga* group received 3-month *Yoga* intervention and control group followed daily routine. Fasting blood glucose and postprandial blood glucose were assessed at the baseline and after 3-month, 2) A retrospective study assessed the impact of 2-weeks residential *Yoga* program on FBS and PPBS on 568 patients with T2DM, FBS and PPBS were assessed at the baseline and after 15 day, 3) Long term impact of *Yoga* on a molecular level, inflammation, systemic homeostasis was measured on 22 patients with T2DM who were long term *Yoga* practitioners and they were compared and matched with group of 22 non- *Yoga* patients. Data were analyzed in SPSS version 16.

**Results:** There was a significant decrease in FBS and PPBS in both multi-centric trial and retrospective study. In the long term-cross sectional study *Yoga* practitioners had a better homeostasis status compared to non-practitioners. The number of patients in the *Yoga* group had better organ functions, positive changes in gene expression and lesser complications when compared to T2DM patients of non- *Yoga* group.

**Conclusion:** *Yoga* practice helps not only in glycemic control; it also helps improving systemic homeostasis and modifying positive changes at the genetic level. However, further randomized controlled trial needs to be continued.