ABSTRACT

**Key words:** Yoga, Music Therapy, Type II DM, Standard care

**Background:** India is diabetic capital of world. India being a developing nation can not expend as required and this raises the need to explore effect of non pharmacologic approaches like yoga in Type II Diabetes Mellitus (Type II DM). Age range of 45-64 years comprises maximum diabetics in Indian population as compared to ≥ 65 yrs in USA. It implies that productive population of developing nations like India is falling prey to Type II DM and this trend is increasing in urban India.

It has been found that subjects show greater compliance to medications and lower compliance to exercise and lifestyle modifications. This will be first study to evaluate whether yoga practice helps to improve motivation of subjects in engaging active life style and exercise programs by improving exercise self efficacy in these subjects.

Most of previous experimental studies which have reported beneficial effects of yoga in Type II DM are limited by several issues like unclear methodology, interventions and program structure, Quasi experimental, lack of control group, confounding variables and smaller sample sizes. Some studies have even presented few data or too many confounders which make study difficult to generalize.

This study aims to evaluate effect of including yoga and music therapy intervention along with standard diabetes care over glycemic control, lipid profile, weight, BMI, anxiety, depression, exercise self efficacy and quality of life after 6 months program.

**Methods:** Randomized Controlled Trial (RCT) study of parallel design comprising of Type II DM subjects above 20 years and diagnosed as per American Diabetes Association (ADA) criteria for atleast a year and stabilized on oral hypoglycaemic agents (OHA) for atleast 3 weeks with no prior exposure to yoga or music therapy or involved in a structured exercise
program. Out of 902 subjects, 112 were recruited in yoga, 110 in music and 115 in control group while others were excluded.

**Results:** Mean glycated haemoglobin (HbA1c) was 8.6, 7.6 and 7.7 in yoga, music and control group respectively. Fasting blood sugar (FBS) was 319.4±102.8 in yoga group, 303.9±95.0 in music group and 283.8±102.3 in control group where as post prandial blood sugar (PPBS) were 434.1±108.2, 411.5±107.4, 386.6±84.5 respectively as fore mentioned groups.

Total cholesterol was 182.5±29.6, 180.9±35.2, 172.6±34.1, triglyceride level was 208.1±6.0, 220.4±6.3, 226.2±6.1 and low density lipoproteins (LDL) was 136.9±10.4, 145.5±9.7, 145.1±9.4, where as high density lipoproteins (HDL) was 35.8±9.0, 35.1±9.6, 43.1±9.6 in Yoga, Music and Control group respectively.

State anxiety, trait anxiety and total anxiety were 37.5±6.7, 32.4±6.5, 69.9±8.2 in yoga group, 35.4±8.3, 26.7±9.8, 62.1±12.6 in music group and 32.0±10.2, 24.7±8.2, 56.7±12.8 in control group as per the order mentioned.

Level of depression measured by Beck Depression Inventory was 23.2±4.3 in yoga group, 23.7±3.6 in music group and 24.8±4.8 in control group.

Self efficacy level of exercise was 31.1±9.9, 37.3±9.9, 35.2±9.6 in yoga, music and control group respectively. Quality of life (QOL) was measured by diabetes quality of life scale (D-QOL) developed for diabetes subjects of Indian population specifically and mean of all three groups were 46.9±5.4, 50.2±9.1 and 48.5±8.2.

**Conclusion:** This is first study of its kind to have adhered to CONSORT and reported that Yoga shows beneficial effects of clinical importance in glycemic control, reducing anxiety and depression, reducing weight and body mass index (BMI), and QOL. Interestingly, yoga
improves exercise self efficacy by improving their motivation to engage in physically active
and exercise based programs. Music shows important benefits in reducing anxiety and
depression which are important co-morbidities in diabetics. Yoga can be used as a cost
effective adjuvant to standard care in Type II DM without side effects and self administered
program which may show promising effects in prevention and management of Type II DM if
launched as Community health care program.