



Effect of comprehensive yogic practices on body mass index of type -II diabetese mellitus patients in urban adults

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Abstract

The aim of the study to examine the effect of Comprehensive Yogic Practices on Type-2 Diabetes Mellitus on Urban Adults. This study has been conducted in Delhi NCR. 20 participants were selected through purposive sampling from Navadha Yoga Health Care Institute. Pre-Post control research design has been used in this study. The duration of Yogic Intervention was three months (except Sunday and government holidays). The result revealed that the effect of Comprehensive Yogic Practices have significant effect on Type-2 Diabetes Mellitus of Urban Adults.

Key words: *Comprehensive Yogic Practices, Body Mass Index, Type-II Diabetes, Urban Adults.*

Introduction

Yoga is a traditional medicine of the body and mind that was born five thousand years ago in India and has a history known to manage diabetes condition (Bali, 2013). Diabetes mellitus is a global epidemic affecting 150 million people worldwide. Therefore, the different conventional and alternative treatment options are studied in detail. In this sense, it has been shown that yoga practice offers better glycemic control to the people concerned and a corrective influence on the various disorders observed in these patients. Currently, India is experiencing a growing epidemic of diabetes, a lifestyle and a stress disorder. It occupies 19% of the world's diabetic population and ranks second for prediabetes, an asymptomatic disease that occurs even earlier. , the emergence of clinically established diabetes and the estimated global prevalence of diabetes of 381.8 million adults in 2013, estimated at 591.9 million adults in 2035. Diabetes affects mainly the elderly population of developed countries, but in developing countries like India, young adults are affected and threaten their quality of life, their professional way of life and their health. In the Asian population, factors such as psychological stress, anxiety, depression and reduced sleep time have become commonplace. It has been observed that yoga, in particular,

prevents and treats diabetes by taking a healthy diet and lifestyle that balances the endocrine system, massages and tones the abdominal organs, stimulates the nervous and circulatory systems and reduces stress. They often feel challenged by the disease, by their important requirements and the daily management. In modern times, the most common causes of diabetes and prediabetes are stress, sedentary lifestyle, weight gain and urbanization. A review of scientific studies on the effectiveness of yoga in diabetes has shown that although yoga is considered effective in reducing weight, blood pressure, glucose levels and high cholesterol, virtually no studies have been conducted. It examined the long-term adherence to yoga, an important parameter that influences the outcome parameters. Yoga therapy includes Asana, Pranayama, relaxation and meditation. Rapid urbanization, demographic transition and lifestyle changes are the main causes of the increase in diabetes driving forces. According to data from the World Health Organization, the number of diabetics in India is expected to reach 79.4 million by 2030. According to one of the major health journals, Lancet, India is among the top three countries. (Sreedevi *et al.*, 2017). Studied there was a tendency to reduce fasting blood glucose in the peer group and yoga, and in glycosylated haemoglobin (HbA1c) only in the yoga group, although this was not significant. In the yoga group, a significant reduction in diastolic blood pressure and hip

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circumference and reduction in BMI. (Innes and Selfe, 2016). studied “Yoga for Adults with Type 2 Diabetes: A Systematic Review of Controlled Trials” and found that yogic practices may promote significant improvements in several indices of importance in DM2 management, including glycaemic control, lipid levels, and body composition in adults with DM2 (Kumar *et al.*, 2016). Studied a meta-analysis to understand the role and effectiveness of yoga in the treatment of type 2 diabetes mellitus and found that electronic database that was searched in PubMed / Medline, ProQuest, PsycINFO, IndMED, CENTRAL, Cochrane Library, CamQuest and CamBase until December 17, 2014. Eligible results were fasting blood glucose (FBS), postprandial blood glucose (PPBS), glycosylated haemoglobin (HBA1C) and body mass index (BMI), randomized controlled trials and controlled studies were eligible. On this available evidence, yoga can be considered as an additional intervention for diabetes control (Mohan *et al.*, 2015). Conducted a study on 30 patients with type 2 diabetes (DM2) for 1 to 5 years and found that the 60-day yoga regimen resulted in a significant reduction in weight, HbA1c and a marked improvement in cognitive status after yoga in patients with DM2 (Thangasami *et al.*, 2015). Yoga brings balance in Glucose level, BMI and the reduction of stress and improves physical, mental, emotional and spiritual dimensions of the individual (Chimkode *et al.*, 2015). Studied “Effect of yoga on blood glucose levels in patients with type 2 diabetes mellitus” and found that yoga is effective in reducing the blood glucose levels and physical fitness in patients with T2DM. Shantakumari and Sequeira (2013), Studied that the effectiveness of yoga practices has improved the dyslipidaemic state associated with diabetes. Yoga resulted improvement in lipid profiles, low body mass index and macro-vascular complications in diabetes. Manchanda *et al.* (2013), studied a randomized controlled trial, and conclude that addition of yoga to the conventional therapy in patients with MetS resulted in a significant reduction of early atherosclerosis as assessed by cIMT. In addition, yoga has additional significant effect on lipids, BMI and blood pressure. Hegde *et al.* (2012), studied “Effect of 3-month yoga on oxidative stress in type 2 diabetes with or without complications: a controlled clinical trial” and found

that, Yoga can be used as an effective therapy in reducing oxidative stress in type 2 diabetes. Yoga in addition to standard care helps reduce BMI and improve glycemic control in type 2 diabetic patients.

Moliver *et al.* (2011), Studied and discovered that the practice of long-term yoga was associated with little or no obesity in a non-probabilistic sample of women over 45 years. The reports showed a dose-response effect, with greater yoga experience that involves a lower body mass index and reduced drugs use. Kosuri and Sridhar (2009), studied “Yoga practice in diabetes improves physical and psychological outcomes” At the end of the study they found participation of subjects with T2DM in yoga practice for 40 days resulted in reduced BMI, improved well-being, and reduced anxiety. Singh *et al.* (2008), Studied on sixty patients with uncomplicated type 2 diabetes for 45 days and result showed a significant improvement, such as weight reduction and a significant reduction in body mass index in T2 DM patients.

Material and Methods

Variables and Description

Dependent Variables

Body Mass Index

The body mass index (BMI) is a measure of a person's weight compared to her/his height. It is more an indicator than a direct measure of a person's total body fat. Most BMI is related to total body fat. This means that as the BMI score increases, a person's total body fat also increases. The WHO defines an adult as overweight with a BMI between 25 and 29.9, an adult with a BMI of 30 or more is considered obese and BMI below 18.5 is considered underweight. The BMI between 18.5 and 24.9 a healthy weight. The BMI in an individual is calculated by using a mathematical formula, that is $BMI = \frac{\text{Weight in kilograms}}{\text{Height in meters}^2}$.

Type II Diabetes Mellitus

Type II Diabetes (Non-Insulin Dependent) is characterized by insulin resistance and/or abnormal insulin secretion, either of which may predominate. The Diabetes epidemic relates particularly to type II Diabetes, and is taking place both in developed and developing nations predominantly due to the changing demography and increased longevity. In



developing countries, demographic changes leading to type II Diabetes include decreasing birth rates and lower mortality from infectious causes. Type II Diabetes accounts for over 90% of cases globally. The proposed research study was focused mainly on BMI of Type II Diabetes in Urban Adults.

Independent variables

- Shatkarma
- Asana
- Pranayama
- Yoganidra
- Fasting (once a week)

Shatkarma, Asana and Pranayama:

Shodhankriyas are very effective in internal cleansing of body and improve Digestion. It is beneficial in maintaining Plasma Blood sugar level in human body. Whereas Surya namaskar and Asana's keep balance human body muscles activity and fat ratio. Pranayama's play a vital role in the gaseous exchange in the body.

Yoganidra: According to Swami Satyanand Saraswati, people feel relaxed when they collapse in an armchair with a drink or a cigarette and read a newspaper or turn on the television. But this, in reality, is simply sensory entertainment; True relaxation is an experience that goes far beyond all this. For complete relaxation, you need to be careful. This is Yoga Nidra, the state of dynamic sleep. It includes many applications of this versatile technique that has been used for deep relaxation, for educational purposes and to harmonize the deeper unconscious.

Fasting: Fasting is a very powerful rituals of Indian culture that improves autophagy in human body. Autophagic dysfunction is associated with obesity and type II diabetes. However, the mechanisms underlying the cause of the autophagic defect in metabolic disorders remain elusive but its role found vital in diabetic care and management of modern days lifestyle caused diseases.

Spiritual Counseling: Spiritual counseling is a contemporary form of therapy that integrates spirituality into its treatment. While therapy and spirituality have remained separate in the past, therapists are beginning to see the value that spiritual beliefs play important role in the healing process. This type of therapy can help you find a sense of meaning in your life and explore your spiritual beliefs. While traditional therapy is

generally limited by science, spiritual counseling includes the belief in superior power in its approach.

Hypothesis: On the basis of literature of review, directional hypotheses has been used in the proposed research work.

- There is a significant difference of Body Mass Index between Type-II Diabetic participants performing Yogic practices and who do not performing Yogic practices.

Research Design

Pre-test Post-test Experimental Control group research design has been used in the study.

Sample and Sampling

40 participants with age group of (35-55 years) were selected through purposive sampling. Sample were divided into two groups- Experimental and Control. 20 participants were in Experimental group and 20 participants were in Control group.

Inclusion Criterion

Aged between 35-55years male and female.

Those who were willing to join the program for the proposed time period.

Participants who were regular for the proposed time period of Yogic intervention.

Exclusion Criterion

Participants who were suffering from type-I diabetes.

Handicapped persons who cannot practice Yogic intervention.

Participant who were not able to follow the proposed Yogic intervention.

Pregnant females.

Subjects suffering from disorders like: Liver disease, Pulmonary Tuberculosis, Malabsorption, Thyrotoxicosis, severe cardiac problems, Retinopathy etc. were excluded from the study

Tools

Weighing Scale: to measure weight in kg

Stadiometer: to measure height in meter²

Intervention Time Duration: 60 minutes

1. Prayer

2. Shatkarma: 10 minutes

- Kunjal - twice a week
- Vatkram Kapalbhathi- 3 rounds (60 strokes in each round)
- Agnisar- 3 rounds (5-10 times in each round)



3. Asana: 25 minutes

- Suryanamaskar (2 round)
- Ushtrasana
- Paschimottanasana
- Ardhamatsyendrasana
- Mandukasana
- Bhujangasana
- Pawanamuktasana
- Shavasana

4. Pranayama: 10 minutes

- Nadisodhan Pranayama
- Bahyavritti Pranayama, (Nishshesharechaka)

5. Yoganidra: 10 minutes

6. Spiritual Counseling: 5 minutes

7. Shanti Patha

Dietary Advice

All the participants were advised to keep fast once a week.

All the participants were advised to take vegetarian diet only.

Participants were firmly advised to avoid smoking and alcohol consumption.

Procedure

We contacted the participants personally and after developing a good rapport we introduced our

research and its purpose and after taking proper consent, we collected the pre-intervention data of body mass index of experimental group and control group. After that, we gave yogic intervention to the experimental group participants for 12 weeks and control group participants being observed without yogic intervention. All the Yogic practices were taught during the first 2 weeks and followed up by remaining 10 weeks. Daily Yogic intervention was given to the group for 60 minutes per day in morning time (except Sunday and government holidays). After completion of time period of 12 weeks, we collected the post test of body mass index of both groups all participants. Lastly, we compare the results of pre-intervention data and post-intervention data of experimental group and control group and analysed further.

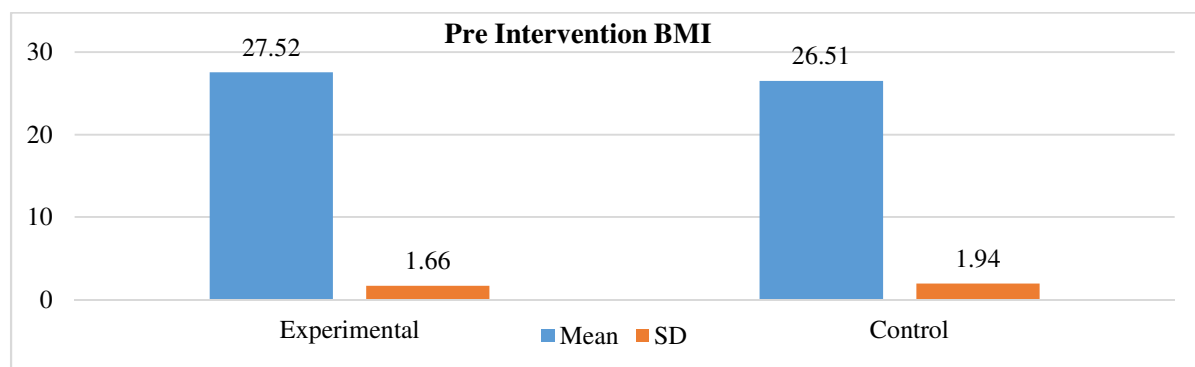
Result and Discussion

Table 1 and Graph 1, indicates that there is no significant difference of Pre intervention of Body Mass Index in the Experimental group, pre-test mean value (M=27.52) and Control group pre-test mean value (M=26.51) at the both 0.01 and 0.05 level of confidence (t=1.76). Thus, our pre samples of both groups were identical and ideal.

Table 1: Comparison between Pre intervention of Body Mass Index of experimental group and control group (Mean, SD and 't' value).

| Group | N | Mean | SD | 't' |
|--------------|----|-------|------|-----------|
| Experimental | 20 | 27.52 | 1.66 | 1.76 (NS) |
| Control | 20 | 26.51 | 1.94 | |

(NS - Non Significant at any level)



Graph 1: Represents comparison between Pre intervention of Body Mass Index of experimental and control group, (Mean and SD value).

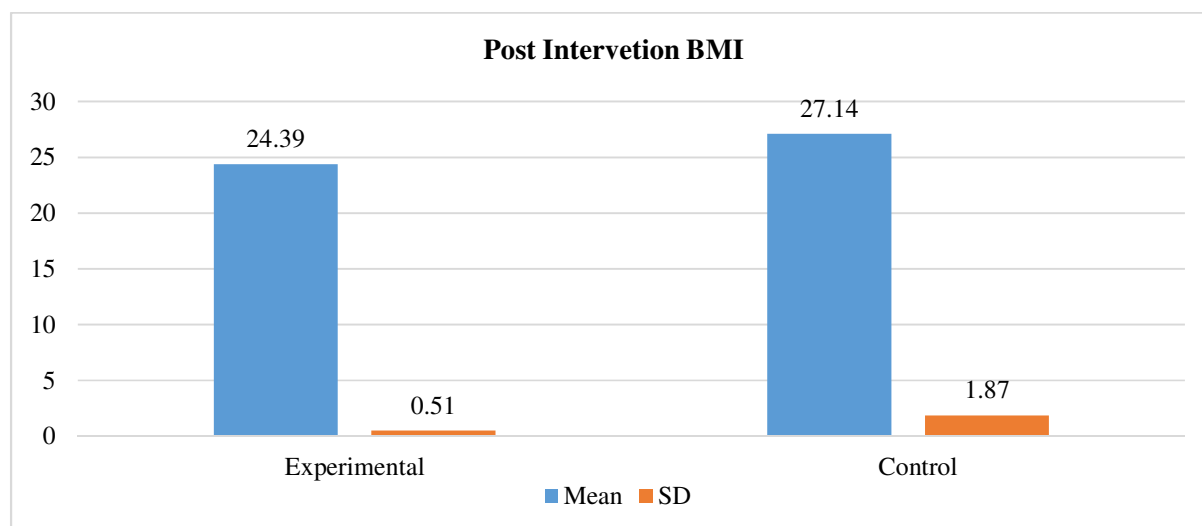


Effect of comprehensive yogic practices on body mass index

Table 2: Comparison between Post intervention of Body Mass Index of experimental group and control group (Mean, SD and 't' value).

| Group | N | Mean | SD | 't' |
|--------------|----|-------|------|--------|
| Experimental | 20 | 24.39 | 0.51 | 6.33** |
| Control | 20 | 27.14 | 1.87 | |

(** - Significant at 0.01 level)



Graph 2: Represents comparison between Post intervention Body Mass Index of experimental and control group, (Mean and SD value).

Table 2 and Graph 2, indicates that there is significant difference of Body Mass Index in the experimental group. In the favour of experimental group where the level of Body Mass Index in experimental group is lower than the control group. The mean value of experimental group (M=24.39) and Control group mean value (M=27.14) found significantly at 0.01 level of confidence (t=6.33), (p<0.01). Thus our hypothesis accepted positively.

Conclusion

According to our results, there is a 2.75 point decrease in the body mass index in the experimental group, while the 0.63 point increase in the control group. To conclude, it has been discovered that 12 weeks of complete yogic practice, including Shatkarma, Asana, Pranayama, relaxation and proper nutrition, have been very effective in reducing and controlling the body mass index in participants in the experimental diabetes group. Type II Diabetes Mellitus Therefore, it is suggested to encourage and integrate yoga into our daily life, so that it can control diabetes and]

promote better health for diabetic patients, as well as the health of normal people.

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