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Research Article

Yoga Therapy as Potential Treatment for Type II Diabetic Patients

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Abstract

Yoga is currently used for therapeutic purpose in variety of conditions. The main aim of this study was to see effects of yoga intervention on blood sugar levels (BSL) in persons diagnosed as having type II diabetes. The objective of study was to check fasting and post-prandial BSL before and after yoga therapy in the study groups. Thirty Patients with type II diabetes were selected for the present study. Patients were then divided in to the experimental group of people and control group of 15 people. Yoga therapy was administered for 6 days a week, for 4 weeks. Pre & post session BSL tests were carried out for both groups. The result showed no significant difference between pre Session & post session of fasting BSL (p =0.31) in experimental group. But there was significant difference in pre session & post session of post prandial BSL in experimental group (p= 0.0015). There was no significant difference between Session & post session of fasting BSL (p =0.38) in control group. The analysis showed no significant difference between pre Session & post session of postprandial BSL (p =0.22) in control group. In fasting BSL between experimental & control group significant (p= 0.08) difference was not found. Similarly no significant difference between experimental & control group post prandial BSL (p=0.000 (1.95E-05)) was noted.

Keywords: Yoga therapy; Blood sugar level (BSL); Type II Diabetes

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Consent: We confirm that the patients have given their informed consent for the case report to be published.

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Introduction

Yogic exercises are useful in integrating mind & body. It is useful to cope up with all stresses of day to days clock bound life [1]. Diabetes Mellitus (DM) is a disease arises from such incapable stresses of life [6,7]. There are many other causes of diabetes like secondary lifestyle, medical condition like obesity, elevated cholesterol etc. DM also has genetic predisposition [2,5,14,16]. DM represents cluster of metabolic diseases characterized by high levels of blood glucose (Hyperglycemia)[19] This may be due to reduce secretion of insulin which is secreted by beta cells of Islets of Langerhans which are situated in pancreas [2,5]. Diabetes is a metabolic disease. Yogasanas help to stimulate pancreas [3]. Pranayam helps to reduce the activity of sympathetic nervous system [3,20,12]. Yogasanas & pranayama have seemed to be beneficial in management of NIDDM, like yogasanas helps to stimulate pancreas, pranayam helps to reduce the activity of sympathetic nervous system [3,8]. Glucagon's secretion is enhanced by stress [5].Yoga effectively reduces by stress, thus reducing glucagon's & possibly improving insulin action. Blood pressure plays a great greater role in development of diabetic & related complications, which is proven to be benefited by yoga [3, 4, 5]. The same holds true for increased cholesterol levels many yogic postures do produce stretch on the pancreas, which is likely to stimulate the pancreatic function [6,11].

Hypothesis: Practicing Yogasanas and pranayama regularly would reduce fasting and post-prandial BSL in patients diagnosed with type II diabetes.

Aim: To observe effects of Yoga therapy on blood sugar levels (BSL) in patients diagnosed as type II diabetics.

Objective: To check fasting and post-prandial BSL before and after yoga therapy in study groups.

Materials & Methods

Study Design

Experimental control trial.

Inclusion criteria

Purposive sample of 30 patients with type II diabetes from the newly joining members at the center were taken. Those who gave the consent were being included in the study. Groups were divided into two as follows; experimental group of 15 and control group of 15. Patients were randomly assigned to experimental & control groups by chit method (30 chits were made 15 for each subgroup) who were on oral medication, aging between 40-70 years were selected for the study.

Exclusion criteria

Patients with musculoskeletal problems who were not permitted to attain full spine flexion, complex hip and knee positions for Yogasanas practice were excluded from the study.

Yoga therapy was administered for 6 days a week for 4 weeks. Total 24 supervised sessions of one hour including transition time was conducted. The study was carried out at "Yogamandir", Navi Peth, Pune, Maharashtra, India during period May, 2014 to Aug, 2014. Literature survey was performed from available Yoga books, journals. Program was formulated based on discussions with Yoga experts. Yoga therapy included:

1. Suryanamaskaras: 03
2. Yogasanas: 08

Pavanmuktasana, Bhujangasana, Halasana, Suptavirasana, Adhomukhvirasana, Janu -Shirasana,

Paschimottanasana.

3. Pranayam: Bhasrika, Anulom-Vilom, Bhramari, Deep breathing exercise.
4. Stress relaxation technique: Yognidra: 20 minutes.

Statistical analysis

For both group's pre & post session BSL tests were performed and statistical analysis of BSL were carried out using Microsoft excel.

1. Unpaired t-test used to find baseline parameters between experimental & control group.
2. Statistical analysis was performed by using paired t test for control group fasting & postprandial BSL of pretreatment & post treatment. Experimental group fasting & postprandial BSL of pretreatment & post treatment.
3. Statistical analysis was performed by using unpaired t test for fasting BSL between control group & experimental group & postprandial BSL between control group & experimental group.

Results

Table 1 Demographic data

Parameters	Control group	Experimental group
Age (Years)	Mean±SD 55.64±9.88	Mean±SD 52.14±8.22
Sex	Male- 8 Female-7	Male- 5 Female-10
Duration since diagnosis (In years)	Mean±SD 10.57±5.65	Mean±SD 8.50±5.30

Table 2 Statistical Analysis

	Pretreatment fasting BSL	Post treatment Fasting BSL	Pre-post Fasting BSL	Pretreatment postprandial BSL	Post treatment postprandial BSL	Pre-post postprandial BSL
Control group	Mean=140	Mean=157.92	P value=0.3833	Mean=199.85	Mean=249.35	P value=0.2279
Experimental group	Mean=127.86	Mean=115.46	P value=0.3131	Mean=192.57	Mean=143.85	P value=0.0030
Baseline values	P value=0.601	P value=0.039		P value=0.852	P value= 0.004	

Difference of fasting BSL between experimental & control group	Difference of postprandial BSL between experimental & control group
P value=0.0479	P value=0.0000(1.95E-05)

The mean age of participants was 55.64 years in control group & 52.14 years in experimental group. There were no significant differences in sex, duration of diabetes (in years) between the groups at baseline.

Limitations

Limitation of the study is small sample size. Maharashtra University Health Science, Nashik had provided a research grant for this project which was very limited to do the investigation purpose. The duration of the study was short since all session needed supervision by the researcher therapist.

Further scope

Recently diagnosed individuals, longer time for intervention and large sample size are potential elements to be included in future prospects of the current study. Yoga treatment was linking with insulin secretion, the concentration of blood insulin levels at pre & post yoga shall be measured. This is continued now but not within scope for analysis for this study. The HbA1c test (Glycosylated hemoglobin level) could be used as outcome measure.

Discussion

The effect of Yoga on BSL is studied. It was observed that baseline parameters of control & yoga therapy group were similar /matched (p=0.602) for fasting BSL & for postprandial BSL (p=0.852).

Within group analysis:

It was observed that in control group there was no change in in the fasting & postprandial values of BSL.

In experimental group, there was no statistically significant difference in fasting BSL (p=0.3131). But postprandial BSL showed statistically significant difference (p=0.0030).

Occurrence of Diabetes (Type II) patients is increasing day by day in the world. By 2017, the number of Indian Diabetic patients is expected to rise to 60 million from 30 million [13].

There are many other causes of diabetes like secondary lifestyle, medical condition like obesity, elevated cholesterol & many others, DM also has genetic predisposition [2,5,11]. DM represents cluster of metabolic diseases characterized by high levels of blood glucose (Hyperglycemia) [5,15]. High blood pressure plays a great greater role in development of diabetic & related complications, which is proven to be benefited by yoga [11,17,18].

The result is not in accordance to a study done by S. Chimkode et al in 2015 demonstrated yoga effectively reduced BSL in patients with type II Diabetes Mellitus after 3-6 month of yoga exercise which includes different set of exercise than current study[17]. Hence current study suggests that yoga therapy in type 2 DM patients of 4 weeks (short duration of yoga) is effective because of stress relaxation technique i.e. Yognidra for 20 minutes). Diabetes Mellitus is a disease arises from this incapable stresses of life [5,6,7]. Glucagon's secretion are enhanced by stress. Yoga effectively reduces by stress, thus reducing glucagon [17, 21], Yoga postures are slow rhythmic movements which emphasize the stimulation of the organs and glands by easy bending and extensions which do not over-stimulate muscles but concentrate on glandular stimulation [9,10, 22] and also induce a mild oxidative stress that stimulates the expression of certain antioxidant enzymes[22]. Effects of Yoga therapy in type II diabetic patients are long term dependent have to be studied.

Conclusion

The study suggests that experimental group showed superiority over control group in reducing Post prandial BSL & no effect on fasting BSL. Baseline parameter of both experimental & control groups were similar. Based on the outcome of the current research; it is observed that Yoga therapy helps to reduce post prandial BSL in type II diabetic patients within four weeks.

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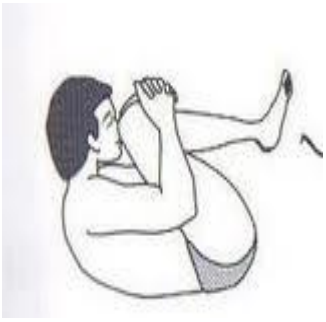
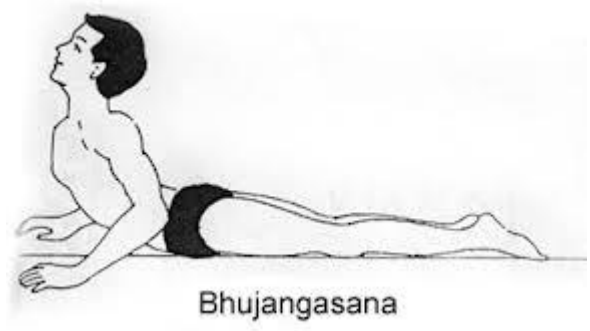
Appendix:

Pawanmuktasana.





Bhujangasana

Halasana

Supta Virasana

Janu Shirasana

Paschimottanasana

Evaluation Form

Name:

Age:

Sex:

Blood Sugar Level (BSL) Values:

Pre session values:	Post session values:
Fasting BSL -	Fasting BSL -
Post prandial BSL -	Post prandial BSL -