



## PRANAYAMA AND MEDITATION BRINGS GOOD CONTROL IN TYPE 2 DIABETES MELLITUS

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**Abstract:** The aim of this study is to find out the impact of Pranayam and Meditation on fasting Blood glucose among the Type 2 Diabetic Patients. One twenty days study intervention was conducted using a single center of serial Diabetic camps conducted by Dialectological Association, Amravati Branch of India. The blood samples were collected from T2DM Patients and tested for Blood glucose, by GOD-POD (Glucose Oxidase -peroxidase) method. After initial testing for Blood glucose, Patients was instructed to do all types of pranayam and meditation as per table No. I for 120 days. That patients were again tested for Blood glucose. (pranayam and Meditation) blood glucose results were poaked separately and statistically analyzed by paired “t” test .Equal numbers of healthy controls was included in the study. Pranayama and mediation shown to have significant impact on blood glucose in T2DM patients.

**Keywords:** Pranayam , Meditation, Diabetes, Type 2 Diabetes Mellitus

### Introduction:

Pranayam is derived from two Sanskrit words, prana, which means vital force of life energy, ayama means to prolong [1]. Asan, Pranayama and meditation are three main techniques of yoga practice in India over thousands of years to attained functional harmony between the body and mind [4].

Breath is dynamic bridge between the body and mind hence, life experiences can distort breathing pattern. Pranayam is the art of prolongation and control of breath helps in bringing conscious awareness to breathing and reshaping of breathing habits and patterns [2,11]. Meditation is a yogic process of providing deep rest to the system by allowing the mind to calm down to its basal states. It is often looked upon as a relaxation technique to be used for treating stress relate illnesses [6,9]. Different types of pranayama produce different physiological cardiovascular response in normal young individuals. During right nostril pranayam and alternate nostril pranayama, the heart rate increased [8]. Where during left nostril pranayama is a technique of controlling and modulating breath and meditation, a process through which one attains meditation a state of deep rest yet active state of mind [4]. Anulom vilom on a regular basis can relieve the symptoms and reverse conditions like diabetes, heart disease and high cholesterol levels [8]. Diabetes, often referred by

doctors as diabetes mellitus, describe a group of metabolic disease in which the person has high blood glucose, either because insulin production is inadequate or because the body's cell do not respond properly to insulin both patient with high blood sugar will typically experience polyuria, they will become increasingly thirsty and hungry [3]. In type 2 diabetes, the pancreas makes some insulin but it is not produced in the amount body needs and it does not work effectively [3].

Mediation help to relax and give the fresh tools for dealing with stress. Life stress is a big issue for all. For those who have Diabetes, stress presents the problems as the direct effect of stress raises the blood glucose levels and under the stress person have the behavior that are not good for health as irregular eating more carbohydrate rich food or laziness.

Type 2 Diabetes result from a combination of genetic and environmental factors, although there is strong genetic predisposition the risk is greatly increased when associated with life style factors such as high blood pressure, obesity, insufficient physical activity, poor diet and the ‘Apple Shape’ body where extra weight is carried around waist [3].

### Material and Methods:

Total 30 Patients selected from serial diabetic camps conducted by diabetic association, Amravati branch of India. The

fasting Blood samples were collected from the people involved in before and after study and equal numbers of healthy controls age matched. Both pre-and post-experiment the blood glucose tested by GOD-POD (Glucose Oxidase Peroxidase) colorimetric method and confirmed by automatic analyzer in the pathological laboratory[12]. The data was tabulated, statistically analyzed for paired “t” test and graph plotted accordingly.

**Result:-**

The Results are shown in table II and graph plotted. The data collected from T2DM patients were Statistically analyzed by paired ‘t’ test, The mean ‘t’ test value indicated the significant mean difference (66.963) between pre and post test of diabetic T2DM patients, the calculated ‘t’ value was tested for significant difference at 0.05 level. The patients with regular pranayam and meditation were shown to have decrease blood glucose level table II indicted that calculate ‘t’ ratio 7.6317 is higher than the table value. Hence it is significant and the null hypothesis was rejected. This indicated that there is a significant difference in fasting blood glucose.

Table-1. Name and Duration of Various Pranayama & Meditation

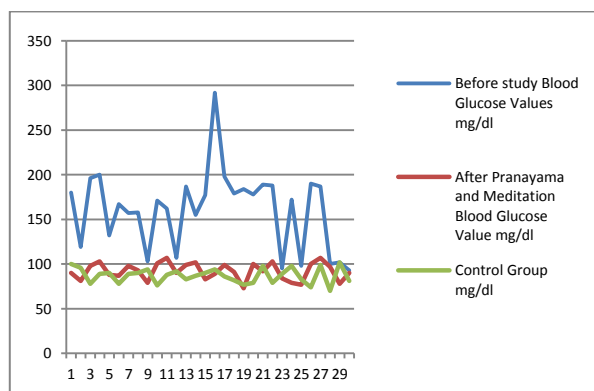
Sr. No.	Name	Duration
1	Bhastrika	3-5 min. per day
2	Kapal- Bhati	5-7 min par day
3	Anulom- viloma	5-10 min par day
4	Bharmari	5 time a day
5	Meditation	10-20 min. per day
6	Udgit.om uccharan	5 time a day

Table-2. Blood Glucose values during the pranayama and meditation

No. of Persons involve in study	Before study Blood Glucose Values mg/dl	After Pranayama and Meditation Blood Glucose Value mg/dl	Control Group mg/dl
1	180	90	100
2	119	81	96
3	196	98	78
4	200	93	89
5	132	88	90
6	167	87	78

7	157	98	89
8	158	93	90
9	103	79	94
10	171	78	76
11	162	100	88
12	107	90	92
13	187	99	83
14	155	96	87
15	177	83	90
16	292	89	94
17	198	99	86
18	179	91	82
19	184	73	77
20	178	100	79
21	189	92	98
22	188	99	79
23	95	84	89
24	172	79	98
25	98	77	83
26	190	100	74
27	187	107	99
28	100	97	70
29	102	78	102
30	93	90	81

Graph- Blood glucose level of diabetes mellitus patients during the pre and post study of pranayam and meditation..



**Discussion :-**

Over all findings of these studies suggested that pranayam and meditation based practices may have significant beneficial effects on blood glucose and other parameters in T2DM management and prevention. The similar results as in the studies of other investigators and focuses on our similar study. Depression and/or anxiety are risk factors for the development of diabetes [15]and vice versa [16,17]. This may occur due to genetic, epigenetic or environmental conditions. Regular practice of yoga has been shown to be beneficial in reducing depression and anxiety [18,19] and therefore may affect diabetes in an indirect manner.

Yoga has been useful in geriatric type 2 diabetes where vigorous exercise may not be

acceptable[20]. Randomized controlled trial showed that in a 6-month period, practice of comprehensive yogic breathing had beneficial effects on cardiac autonomic functions in patients with diabetes who followed the comprehensive yogic breathing program compared to those who were on standard therapy alone [21]. Since cardiac dysfunction has been implicated in sudden cardiac death in diabetes, this finding may translate to practice of yogic breathing program being useful in delaying sudden cardiac death. Any chronic disease like diabetes leads to a decrease in quality of life. Poor quality of life may affect compliance with treatment. A randomized controlled trial has shown that practice of comprehensive yogic breathing program significantly improves physical, psychological, and social domains, and total quality of life [22]. Other studies have also shown increased feeling of well-being with practice of yoga.[14,23].

Pranayam modified various inflatory and deflatory lung reflexes and interact with central neural element to bring new homeostasis in the body[10]. Long term yogic meditation practice experienced better quality of life and functional health life than the general population[7]. Bhastrika is a type of pranayam, breath training shows an increased in parasympathetic activity, that is reduced basal heart rate increase in valsava ratio and deep breathing differences in heart rate and reduction in fall of systolic blood pressure on posture variation[13]. The anatomical correlates of long term meditation, research found significantly large gray matter volumes in mediators in the right orbito frontal cortex, right thalamus and left inferior temporal gyrus [6]. A few minutes of regular meditation practice acts as an excellent stress buster for the mind and body while stress is the major cause of diabetes, the condition in turn result in patients getting highly stressed about it, which farther aggravates the problem [5].

#### **Conclusion:**

Yogic practice such as pranayam, meditation was associated with significant reduction in blood glucose and brings good control in Type 2 Diabetes Mellitus.

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