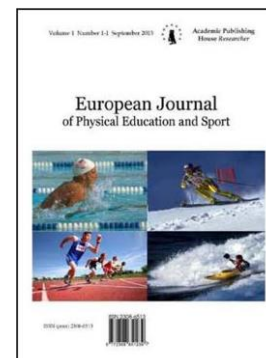


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## Integrated Approach Towards Diabetes Management

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### Abstract

The World Health Organization (WHO, 1995) estimated that there were 135 million diabetics in 1995 and this number would increase to 350 million by the year 2030 with India emerging as the diabetic capital in the world with around 40.9 million diabetics currently and expected to rise to 69.9 million by 2025. This research paper assessed the effects of combination of Yoga therapy along with Naturopathy to deliver cost effective mass health care means and methods to prevent & cure diabetes at both urban and rural primary health care level. The study was conducted on a purposive random sample of 90 Diabetic (Type 2) patients out of 270, aged 45-50 from Ananda Kendra Gwalior, who fully participated in all training sessions during eight weeks of the experimental training schedule. All participants were again randomly divided into 3 groups (i) Group-I – Yoga Therapy (N = 30) (ii) Group-II – Naturopathy (N = 30) and (iii) Group-III – Combination of Yoga and Naturopathy (N = 30). Further the data of three different treatment groups were analyzed by ANCOVA statistics and it was concluded that the group practicing the experimental training of Combination of Yoga and Naturopathy showed the most significant effect ( $p < 0.05$ ) in reducing the blood sugar level in comparison to other two groups.

**Keywords:** diabetes, naturopathy, yoga.

### 1. Introduction

Diabetes is one of the leading causes of death in any developed and developing countries and afflicts about 18 million people. The lack of secretion of insulin and insulin resistance leads to inadequate control of sugar level in blood. Lack of physical work and excess of mental stress are the basic causes of this disease. The worst drawback of this disease is that it draws numerous other diseases like diabetic nephropathy, diabetic neuropathy, diabetic retinopathy etc. It cannot be cured completely but very well managed. Diabetes, being a nutritional disorder, characterize by an uncharacteristically elevated level of blood sugar and excretion of excess glucose through urine. It results from lack of insulin which leads to abnormalities in carbohydrate metabolism as well as metabolism of protein and fat that leads to Type 1 diabetes and Type 2 diabetes. Nature cure has the supremacy to control diabetes at the earliest. According to Yoga and Naturopathy, it is a usual syndrome of digestive system and may be brought under control within 6 weeks with the help of regular yogic practices, nature cure treatments and combined practices of yoga and naturopathy (Central Council for Research in Yoga and Naturopathy, 1999). The yoga practices are thought to act in two distinct ways to overcome diabetes. Firstly seems that the cells of the islets of Langerhans, the secretory portions of the pancreas which have been prematurely exhausted due to over secretion of insulin, are rejuvenated. This would mean that insulin production is stimulated

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and that its release is better timed so as to be appropriate to the level of sugar in the blood. This occurs gradually as depleted levels of pranic energy in the mid-digestive tract are restored (Karmananda, 2003).

The practice of Kunjal, Vastra Dhauti, and Shankha Prakshalan (once in a month) has proved to be highly beneficial. Along with the practice of Udara and Kati Shakti Vikasaka Exercises described in Yogic Sukshma Vyama the practice of Kati Chakrasana, Urdhva Hastottasana, Pada Hastasana, Konasana, Supta Bajarasana, Supta Pavamuktasana, Chakrasana, Sarvangasana, Bhujangasana, Dhanurasana, Vajrasana, Ardh-Matsyendrasana, Ushtrasana, Paschimottanasana, Mandukasana, Mayurasana, Matsyasana etc. are beneficial. Regular practice of Surya Namaskara end engine race work like a panacea in this disease. In Naturopathy, Mud pack over the abdomen, Enema, Cold Hip Bath, Hot and Cold hip bath and Abdomen and Gastro-hepatic packs also helps a diabetic in an effective manner (Central Council for Research in Yoga and Naturopathy, 1999). As it is already established after going through various research articles and reviews that Yoga and Naturopathy have significant effect in controlling Type 1 and Type 2 diabetes (Chimkode, 2015), the researcher developed an interest in finding a quicker solution and a more cost effective program in controlling blood sugar level and hence implemented the combination of Yoga and Naturopathy to see how much effective it is in comparison to the other two treatment program.

**2. Methods**

The study was conducted on a purposive random sample of 90 Diabetic (Type 2) patients out of 270, aged 45-50 from Ananda Kendra Gwalior who fully participated in all training sessions during eight weeks (each session in the early morning not lasting more than 60 to 80 mins) of the experimental training schedule of Yoga, Naturopathy and combination of Yoga and Naturopathy respectively. During this practice they did not take any other treatment. All participants were further randomly divided into 3 groups (i) Group-I – Yoga therapy (N=30) (ii) Group-II – Naturopathy (N=30) and (iii) Group-III – Combination of Yoga and Naturopathy (N=30). They were trained under expert’s guidance. The Blood Sugar levels of all these patients were assessed before starting the program and after the completion of 8 weeks of training program.

2.1. Training Schedule

**Table 1.** Training Schedule

Weeks	Yoga	Naturopathy	Yoga And Naturopathy
1	Suryanamaskar (11 rounds), Asanas (beginners) and Pranayama	Mud pack	Mud pack, Sukshma Vyama and Surya Namaskara (6 rounds)
2	Suryanamaskar (11 rounds) and Asanas (intermediate)	Mud pack and Hydrotherapy	Mud pack and Surya Namaskara (11 rounds)
3	Chakrasana Sarvangasana Bhujangasana Dhanurasana Vajrasana Ardh-Matsyendrasana Ushtrasana Paschimottanasana Mandukasana Mayurasana Matsyasana and Kunjal	Gastro-hepatic and Hydro therapy	Hydro therapy, Kati Chakrasana, Urdhva Hastottasana, Pada Hastasana, Konasana, Supta Bajarasana, Supta Pavamuktasana, Chakrasana, Sarvangasana, Halasana and Kriya
4	Ardh Kati Chakrasana Urdhva Hastottasana Pada Hastasana Konasana Supta Bajarasana Supta Pavamuktasana Chakrasana Sarvangasana Halasana and Kriya	Fasting and Mud Pack	Fasting and Suryanamaskar (6 rounds)

5	Suryanamaskar, Chakrasana, Halasana, Janusirasana, Supta Bajrasana, Bandhapadmasana, Pawanmuktasana and Dhanurasana	Cold Hip Bath	Cold Hip Bath and Pranayama and Series of cultural Asanas
6	Suryanamaskar (11 Rounds) and Pranayama	Cold and Hot Bath and Mud pack	Cold and Hot Bath, Chakrasana, Halasana, Janusirasana, Supta Bajrasana, Bandhapadmasana, Pawanmuktasana, Dhanurasana and Kunjal
7	Chakrasana, Sarvangasana, Bhujangasana, Dhanurasana, Vajrasana, Ushtrasana Ardh-Matsyendrasana Paschimottanasana, Mandukasana, Mayurasana, Matsyasana and Kunjal	Enema and Fasting	Enema, Sukshma vyama And Meditation
8	Ardh Kati Chakrasana, Urdhva Hastottasana, Pada Hastasana, Konasana, Supta Bajarasana, Supta Pavanmuktasana, Chakrasana, Sarvangasana, Halasana and Kriya	Mud Pack, Hot Bath and Wet Packs	Mud Pack, Suryanamaskar (11 rounds) and Series of intermediate cultural Asanas

The eight week program of different intervention of yoga, Naturopathy and combination of both for diabetes management has been planned and implemented with the guidance of yogic and naturopathy experts and as per the availability and feasibility of the resources and time.

### 2.2. Data Analysis

The data gathered from the subjects by the blood sugar test done (fasting) before and after the training program (treatment), were analyzed by Descriptive statistics. Further the three different treatment groups were analyzed by ANCOVA Statistics and it was concluded that the group practicing combination of Yoga and Naturopathy showed the most significant effect ( $p < 0.05$ ) in reducing the blood sugar level in comparison to other two groups.

### 3. Results

**Table 2.** Mean and standard deviation of different groups measured in post testing

Treatment Groups	Mean	Std. Deviation	N
Yoga	240.7333	68.50871	30
Naturopathy	222.0000	58.70147	30
Yoga & Naturopathy	168.5333	47.40779	30
Total	210.4222	65.80888	90

**Table 3.** Adjusted mean and standard error of different groups in post testing

Treatment Groups	Mean	Std. Error	95 % Confidence Interval	
			Lower Bound	Upper Bound
Yoga	245.242 <sup>a</sup>	4.890	235.522	254.962
Naturopathy	213.320 <sup>a</sup>	4.906	203.567	223.074
Yoga & Naturopathy	172.704 <sup>a</sup>	4.889	162.986	182.423

Covariates appearing in the model are evaluated at the following values: pre = 278.4111

**Table 4.** ANCOVA table for the post-test data on blood sugar

Source	Type I Sum Of Squares	df	Mean Square	F	Sig.
Pre_blood sugar	244615.019	1	244615.019	341.918	.000
Treatment_grp	79300.744	2	39650.372	55.422	.000
Error	61526.192	86	715.421	Error	61526.192
Corrected Total	385441.956	89			

**Table 5.** Post-hoc comparison of means of data on blood sugar obtained in Post-measurement

(A) Treatment Groups	(B) Treatment Groups	Mean Difference (A-B)	Sig. <sup>b</sup>
Yoga	Naturopathy	31.922 <sup>*</sup>	.000
	Yoga and Naturopathy	72.537 <sup>*</sup>	.000
Naturopathy	Yoga	-31.922 <sup>*</sup>	.000
	Yoga and Naturopathy	40.616 <sup>*</sup>	.000
Yoga & Naturopathy	Yoga	-72.537 <sup>*</sup>	.000
	Naturopathy	-40.616 <sup>*</sup>	.000

Based on estimated marginal means

\*. The mean difference is significant at the 0.05 level

#### 4. Discussion

The [Table 4](#) shows the F value for comparing the adjusted means of the three treatment groups (Yoga, Naturopathy and combination of Yoga and Naturopathy) during post-testing. Since p-value for the F-statistics is 0.00 which is less than 0.05, it is significant. Since F-statistics is significant, post hoc comparison has been made for the adjusted means of the three treatment groups which is shown in [Table 5](#). All the three p-values are less than 0.05 and hence they are significant at 5 % level. Similar study was conducted by ([Nair, 2016](#)), where it was proved that combined therapy of Naturopathy and Allopathy with diet control has a tremendous effect on improving body mass index. A significant reduction in the Body Weight and BMI was recorded in the interventional group. Body Mass Index provides a simple numeric measure of a person's "fatness" or "thinness", allowing health professionals to discuss over- and underweight problems more objectively with their patients. Excessive body weight is associated with various diseases, particularly cardiovascular diseases, Type 2 Diabetes mellitus, Obstructive sleep apnea, certain

types of cancer, and osteoarthritis (Baltag, 2009). Naturopathy is a healing system using the power of nature and it is considered an art, science and philosophy. The foundation of naturopathic medicine is based on the philosophy of “vis medicatrix naturae, the healing power of nature”. The concept of holistic health or treating the body as a whole (using tools like water, earth, fire, air and weather) is given prime importance various drugless complementary medical sciences such as hydrotherapy, massage therapy, mud therapy, fasting therapy, nutrition and dietetics, chromo therapy, magneto therapy, yoga therapy, acupressure, acupuncture, chiropractics, osteopathy, aromatherapy, psychotherapy, physiotherapy, exercise therapy, Reiki and pranic healing are used (Smith, Logan, 2002; Shankar, Liao, 2004; Standish et al., 2006; Barnes et al, 2008; Herman et al., 2008; Myers, 2009). Apart from decreasing the dosage of oral hypoglycemic drugs/insulin, yoga can also delay the progression of disease process (Singh et al., 2008).

Hence it can be inferred that the combination of Yoga and Naturopathy proved to be the best remedy for reducing the blood sugar level and thus contributing to a better health and wellness. Yoga therapy when combined with Naturopathy proved to be faster and cheaper than solely relying on Naturopathic treatment alone in management of non-communicable diseases like Diabetes. Treatment of diabetes mellitus through Naturopathy modalities (Bradley, 2012) like hydrotherapy, mud therapy, massage therapy, diet therapy is aimed to improve circulation to the cells with increased activation of venous and lymphatic system. These modalities work by increasing contraction and then relaxation of muscles and blood vessels to provide sufficient blood supply along with nutrients and oxygen, required for normal vital activity of the cells. The venous circulation and lymphatic system are very important in the process of elimination of waste products from the body. Increased activation of these eliminatory channels through nature cure modalities enhances the transport of waste materials to the heart and then eliminative sites of the body like kidney and skin. This process of increased recycling may therefore promote re-establishing homeostasis resulting in the normal integrity and functioning of the cells and organs with increased synthesis of insulin receptors and reduced insulin receptor blunting. This enhanced homeostatic condition may further lead to increase sensitivity of the cells to respond to normal insulin action (increased insulin sensitivity) with glycemic control (increased glucose tolerance). Besides reestablishing homeostasis, this system of nature cure medicine, at the same time, may strengthen even other body organs to perform their normal functioning in a better manner (Central Council of Naturopathy and Yoga, 2005).

## 5. Conclusion

From the present research derived the following conclusions:

The combination of Yoga and Naturopathy proved to be the best remedy for reducing the blood sugar level and thus contributing to a better health and wellness than the intervention of Yoga and Naturopathy separately.

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