

Effect of Naturopathy on Glycemic Status and Clinical Symptoms of Type 2 Diabetic Patients

Rukamani Nair*, Deepali Saxena, Naorem Jiteswori Devi***,
Ranjna Chawla****, & V. R. Sood*******

**Medical Superintendent, Babu Nature Cure Hospital & Yogashram, MayurVihar-I, Delhi-91, India*

***Senior Research Fellow, Babu Nature Cure Hospital & Yogashram, MayurVihar-I, Delhi-91, India*

****Research Officer, Babu Nature Cure Hospital & Yogashram, MayurVihar-I, Delhi-91, India*

*****Scientist C, GIPMER, New Delhi, India*

******Physician, MayurVihar Phase-2 clinic, MayurVihar-II, Delhi-91, India*

ABSTRACT

Type 2 Diabetes mellitus is fast gaining the status of a potential epidemic in India and other countries which is bound to increase further due to rapid urbanization and lifestyle changes. The aim of the study is to evaluate the effect of Naturopathy on the Fasting blood glucose (FBG), postprandial blood glucose (PPBG) levels, Body Mass Index (BMI), Blood Pressure (BP) and clinical symptoms in patients with Type 2 Diabetes Mellitus. This study was conducted in 64 type 2 Diabetes mellitus patients who were randomized into two Groups. Group I (Intervention group) were on both naturopathy and allopathic medication with diet control and Group II (control group) was on allopathic medication and diet control. Duration of the treatment period was 2 months following in which each patient has received 32 sittings. Data collection and data analysis were conducted concurrently. The study parameters were assessed at baseline and after two months of intervention. The result suggested significant improvement in Glycemic status and other vital parameters in patients receiving naturopathic care.

Keywords: Type 2 Diabetes mellitus, Naturopathy, Fasting blood glucose (FBG), Post prandial blood glucose (PPBG), Body Mass Index (BMI)

INTRODUCTION

Type 2 Diabetes Mellitus is a chronic debilitating condition that occurs when the pancreas does not produce enough insulin, or alternatively, when the body cannot effectively use the insulin it produces(1). It constitutes more than 95% of all the diabetic populations, and has an insidious onset with a long, latent, asymptomatic phase(2). Diabetes is associated with a high risk of developing vascular, renal, retinal, neuropathy, Ischemic heart disease and cerebrovascular complications that leads to premature disability and death(3).

According to international diabetes institute in Australia, India has been estimated to have 32.7 million people with diabetes. The prevalence was 31 millions in India during 2000 which is expected to reach 79 Million by 2030 (4). In developing countries like India, unprecedented economic development with increased consumption of high caloric diet, obesity, family history of diabetes, impaired glucose tolerance, physical inactivity and

increased stressful situation appears to contribute to the development and progression of diabetes(5).

Naturopathy is way of life than a system of treatment. It is a system of healing by stimulating the body's inherent power to regain health with the help of nature-earth, water, air, fire and ether. It treats physical, mental and spiritual aspects of human being thereby having a holistic approach towards disease. It strongly affirms the benevolence of life and recommends simple life style measures to meet the reality of health problems(6).Treatment of type 2 diabetes mellitus through Naturopathy modalities like hydrotherapy, mud therapy, massage therapy, diet therapy improves circulation of the cells with increased physiological and reflex activities of the body. 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(7).

There is no absolute cure for Type 2 Diabetes mellitus and the treatments provided by various systems have side effects (8). Naturopathy therapies offer the best hope of arresting diabetic conditions and reversing to normal physical and mental health with the prevention of disability, morbidity and mortality due to epidemic of type 2 diabetes.

MATERIALS

Participant recruitment procedures

In this clinical trial, patients were recruited through advertisements (wall posters, newspaper, banners) and organizing camps in nearby localities of the Hospital. The study was approved by the Ministry of Ayush, Govt. of India. This trial was conducted at Bapu Nature Cure Hospital &Yogashram. Written informed consent was obtained from each patient. Information on the patients background characteristics, family history of disease, existing knowledge of their disease and therapy was obtained. All patients were in the age range of 30-60 years. Adequate counselling was carried out for the disease awareness, benefits of naturopathy treatments as well as about the study trial before intervention.

Overview of Study Design

This randomised control study was conducted for two months enrolling sixty four patients suffering with type 2 diabetes mellitus in accordance with the guidelines of the American Diabetes Association (ADA). Participants were randomized into two groups. Randomization was done by picking up a chit randomly from a box containing equal chits of both the groups. Each patient received 32 visits of adjunctive naturopathic care (ANC). Our outcome measures included System score (B.P, weight, height, BMI & W/H ratio), Symptoms score (urination, blurred vision, fatigue, drowsiness, hunger and thirst) and blood sugar (fasting and post prandial).These parameters were evaluated at baseline and after 2 months of naturopathy treatments.

Study Population

The study groups were as follows: Group 1 (32 subjects) were given both naturopathy and allopathic treatment along with diet control and Group 2 (32 subjects) received only allopathic treatment with diet control. The total number of visits by a patient in 2 months

intervention was 32. Naturopathy treatments were provided to the intervention group five times in a week for the first month and thrice in a week for the second month. The therapies were given in the morning or in the evening on empty stomach or 3 hrs after meal. Diet chart was provided to both the groups and patients were advised to follow it strictly which was monitored by maintaining a diary. The dose of Medication to the patients of both the groups was monitored by the concerned allopathic doctor.

TREATMENT TECHNIQUES

Mud Therapy:

Mud pack was applied to the patients of interventional group for 20 minutes over the abdominal region at empty stomach by the use of clay pack which is free from contamination. It helps to correct the imbalance of the digestive and endocrinal organs, which remain under - active in diabetic patients resulting in accumulation of toxins. Mud pack on abdomen absorbs heat and produces soothing and cooling effect. It also improves blood circulation, removes congestion and tones up the tissues and organs (9), (10), (11).

Massage Therapy:

Sesame oil was smeared on the abdomen and spine to the patients of interventional group for 20 minutes which enhances not only blood circulation but also tones up the muscles while improving structural and functional status and hence insulin sensitivity. Massage also generates heat with increased circulation of blood bringing down all the impurities to the channel and expelling through sweat or urine. It is thus highly beneficial in the treatment of diabetes (12).

Cold Hip Bath

(32°C to 36°C) was given to the patients for 20 minutes which produces profound effect upon all bodily functions especially of the abdomen. It excites contraction of the muscular structures of visceral and thus helps to stimulate the functions of abdominal and pelvic organs including pancreas, liver, bladder etc. and structures involved with act of defecation.

RESULTS

The data obtained from the study were analyzed using SPSS 16 and paired t test was done to compare within the groups.

The socio-demographic information of patients in both the groups is presented in **Table-1**. Finding shows that majority (62.5%) in group 1 and (50%) in group 2 of the diabetic patients were in the age group of 50-60 years; 59.3% of them were male in group 1 and 53.1% in group 2. Most of them received High school/Intermediate education. Regarding their occupation 34.3% of them were doing household jobs. 59.3% were vegetarians. Most respondents in the intervention group had underlying hypertension (25 percent) followed by thyroid disorders (15.62 percent), osteoarthritis (9.37 percent), and obesity (6.25 percent).

Data on glycemic status and other vital parameters of both the groups are shown in **Table-2**. Fasting blood sugar was improved significantly from a mean 153.81 ± 65.29 at baseline to 130.81 ± 35.88 at 8th week ($p=0.043$) in group1. However in group 2 there was no

significant improvement ($p=0.179$). Post prandial blood sugar had shown significant improvement in both the groups [Group1 ($p=0.000$), Group 2 ($p=0.009$)]. In Group 1 the systolic blood pressure came down from mean of 128.3 to 126.2 though not significant. Whereas diastolic blood pressure shows significant improvement as it reduces from 83.1 to 80.5 ($p=0.042$). At the same time favourable effect was also seen in other variables like weight only in group 1 patients ($p=0.030$) taking combined therapy of naturopathy and allopathic medicines as compared to control group patients ($p=0.362$) taking only allopathic medicines. Waist hip ratio (W/H) did not change at all in both the groups.

Data on the clinical symptoms of respondents with diabetes in both the groups are shown in **Table 3**. In group 1 patients better improvement in urination was observed as (6.3%) patients were found in severe category at 2nd month as compared to (37.5%) at baseline whereas, in group 2 (12.5 %) patients were found in severe category as compared to (46.9%) at baseline. On comparing blurred vision in both the groups, no improvement was observed after two months of intervention. In case of fatigue, reduction was observed in both the groups as (6.3%) patients were found in severe category at 2nd month as compared to (37.5%) at baseline in group 1 and (9.4%) patients were found in severe category at 2nd month as compared to (28.1%) in group 2. Drowsiness was shown improvement in both the groups. On comparing hunger symptom, no improvement was observed as severity remains same in group 1 (3.1%) and in group 2 severity increases after 2 months follow up (34.4%) as compared to (15.6%) at baseline. Thirst was shown better improvement in intervention group as (12.5%) patients were found in severe category at 2nd month as compared to (43.8%) at baseline whereas in control group (9.4%) patients were found in severe category at 2nd month as compared to (37.5%) at baseline.

Table 1: Percentage of Demographic variables of Diabetic respondents

CHARACTERISTICS	Group-1 (Intervention) (%)	Group-2 (Control) (%)
Gender		
Male	59.37	53.12
Female	40.62	46.87
Age in Years		
30-40	15.62	9.37
40-50	21.87	40.62
50-60	62.5	50
Occupation		
Service	21.87	37.5
Business	25	12.5
Household jobs	34.37	34.37
Others	9.37	6.25
None/ Retired	9.37	9.37
Educational Status		
Illiterate	3.12	9.37
Primary/middle	12.5	25

High school/intermediate	56.25	53.12
Graduate and above	28.12	12.5
Socioeconomic Status		
Below poverty line	6.25	37.5
Above poverty line	93.75	62.5
Associated Diseases		
Hypertension	25	3.12
Thyroid disorder	15.62	6.25
Osteoarthritis	9.37	9.37
Obesity	6.25	6.25
Others	25	37.5
None	18.75	37.5
Marital Status		
Married	90.62	90.62
Unmarried/Single	9.37	9.37
Type of Food		
Vegetarian	59.37	59.37
Non Vegetarian	40.62	40.62

Table 2: Glycemic status and other vital parameters at baseline and after 2 months follow-up in both the groups

Parameters	Group	Pre & post	Mean $\pm$ sd	P-value
Weight	1	Pre	77.26 $\pm$ 15.55	
		Post-2	76.37 $\pm$ 15.49*	0.030
	2	Pre	68.48 $\pm$ 12.96	
		Post-2	68.79 $\pm$ 13.01	0.362
BMI	1	Pre	29.86 $\pm$ 5.05	
		Post-2	29.53 $\pm$ 5.13	0.054
	2	Pre	27.72 $\pm$ 5.69	
		Post-2	27.83 $\pm$ 5.60	0.445
W/H Ratio	1	Pre	0.95 $\pm$ 0.06	
		Post-2	0.95 $\pm$ 0.05	0.430
	2	Pre	0.98 $\pm$ 0.06	
		Post-2	0.99 $\pm$ 0.06	0.328
B.P (Systolic)	1	Pre	128.38 $\pm$ 15.93	
		Post-2	126.25 $\pm$ 11.58	0.261
	2	Pre	124.19 $\pm$ 14.38	
		Post-2	125 $\pm$ 12.52	0.573
B.P (Diastolic)	1	Pre	83.13 $\pm$ 7.68	
		Post-2	80.50 $\pm$ 8.40*	0.042
	2	Pre	77.06 $\pm$ 6.79	
		Post-2	78.69 $\pm$ 7.26	0.231

Sugar fasting	1	Pre	153.81 ± 65.29	
		Post-2	130.81 ± 35.88*	0.043
	2	Pre	141.14 ± 68.72	
		Post-2	128.81 ± 43.01	0.179
Sugar pp	1	Pre	251.75 ± 95.98	
		Post-2	195.93 ± 66.20***	0.000
	2	Pre	247.26 ± 69.43	
		Post-2	209.54 ± 68.77**	0.009

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3: Comparison of clinical symptoms at baseline and after 2 months follow-up in both the groups

Parameters	Intervention		Control	
	Baseline (%)	2 nd month (%)	Baseline (%)	2 nd month (%)
Urination				
Normal	62.5	62.5	31.3	28.1
Mild	0	31.3	21.9	59.4
Severe	37.5	6.3	46.9	12.5
Blurred vision				
Normal	59.4	56.3	56.3	53.1
Mild	34.4	37.5	34.4	40.6
Severe	6.3	6.3	9.4	6.3
Fatigue				
Normal	28.1	40.6	37.5	40.6
Mild	34.4	53.1	34.4	50
Severe	37.5	6.3	28.1	9.4
Drowsiness				
Normal	37.5	43.8	21.9	53.1
Mild	28.1	46.9	37.5	43.8
Severe	34.4	9.4	40.6	3.1
Hunger				
Normal	81.3	78.1	56.3	65.6
Mild	15.6	18.8	28.1	0
Severe	3.1	3.1	15.6	34.4
Thirst				
Normal	50	40.6	43.8	37.5
Mild	6.3	46.9	18.8	53.1
Severe	43.8	12.5	37.5	9.4

DISCUSSION

Naturopathic treatment modalities are found to be beneficial as a complementary therapy to oral hypoglycemic drugs (13). A study demonstrated the modifications in risk-factors that occur with long-term naturopathic care for T2DM with notable percentages of patients achieving improvements in glucose levels as measured by HbA1c and blood pressure measures (14).

Application of a mud pack to the abdomen enhances peripheral circulation, increases metabolic rate, and hence helps reduce blood glucose levels (13). It is a very simple, cost effective and efficacious treatment modality of naturopathy. Mud dilutes and absorbs the toxic substances of body and ultimately eliminates them from body(15). A study conducted on the diabetic inpatients in Varkala naturopathy centre in the years 2000 and 2005 shows that mud therapy has got a stimulating effect on pancreas thereby assisting the increased production of insulin(6).

Several studies have documented the benefits of massage to people with diabetes by including the relaxation response, thereby controlling the counter-regulatory stress hormones and permitting the body to use insulin more effectively. By skillfully the body's massage can stimulate better blood movement around the body. Improved circulation can do wonders for diabetic neuropathy and other diabetic-related complications. Even then it has suggested the necessity to consult closely with health care team before using massage therapy for a diabetic patient even for relaxation purpose (16).

Diabetes control by naturopathy following hydrotherapy enhances the muscle capacities to metabolize the sugar level in blood and increase blood circulation throughout the body. These lower the excessive high sugar levels in blood and take it to normal levels (6).

Few studies have examined how naturopathic approaches impact health in people with diabetes (17), (18). The present study proves that combined therapy of naturopathy and allopathy with diet control has a tremendous effect on improving glycemic status, clinical symptoms, blood pressure and weight.

CONCLUSION

Diabetic mellitus is a major complication that can result in significant morbidity and mortality if untreated. This study helped us to prove the therapeutic effects of Naturopathy as an adjunct treatment for type-2 diabetes mellitus. An important conclusion can be drawn from the study is the need to conduct scientifically larger clinical trials evaluating the effectiveness and cost-effectiveness of naturopathic care for this common, debilitating and costly health problem.

ACKNOWLEDGEMENT

The author would like to thank Ministry of Ayush, Govt. of India for funding the research project and Dr. R. M. Nair Director, Babu Nature Cure Hospital & Yogashram, Mayur Vihar-1, New Delhi for providing the research facilities. The author also expresses appreciation to the participants whose cooperation and dedication made this study possible.

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