

SHORT COMMUNICATION

EFFECT OF YOGA-NIDRA ON BLOOD GLUCOSE LEVEL IN DIABETIC PATIENTS

S. AMITA*, S. PRABHAKAR**, I. MANOJ***, S. HARMINDER# AND T. PAVAN##

*Departments of *Physiology, **Pharmacology and ***Medicine, S. S. Medical College, Rewa – 486 001 (M.P.)*

and

Departments of #Pharmacology and ##Anatomy Govt. Medical College Jagdalpur – 494 001 (C.G.)

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Abstract : Diabetes is a metabolic disorder, which has become a major health challenge worldwide. South East Asian countries have a highest burden of diabetes. In India the prevalence of diabetes is rising rapidly especially in the urban population because of increasing obesity and reduced physical activity. An objective of this study is to evaluate the effect of *Yoga-Nidra* on blood glucose level in diabetic patients. This study was conducted on 41, middle aged, type-2 diabetic patients, who were on oral hypoglycaemic. These patients were divided in to two groups: (a) 20 patients on oral hypoglycaemic with *yoga-nidra*, and (b) 21 were on oral hypoglycaemic alone. *Yoga-nidra* practiced for 30 minutes daily up to 90 days, parameters were recorded every 30th day. Results of this study showed that most of the symptoms were subsided ($P < 0.004$, significant), and fall of mean blood glucose level was significant after 3-month of *Yoga-nidra*. This fall was 21.3 mg/dl, $P < 0.0007$, (from 159 ± 12.27 to 137.7 ± 23.15 .) in fasting and 17.95 mg/dl, $P = 0.02$, (from 255.45 ± 16.85 to 237.5 ± 30.54) in post prandial glucose level. Results of this study suggest that subjects on *Yoga-nidra* with drug regimen had better control in their fluctuating blood glucose and symptoms associated with diabetes, compared to those were on oral hypoglycaemics alone.

Key words : *yoga-nidra*
blood glucose

diabetes mellitus
oral hypoglycaemic

INTRODUCTION

Diabetes represents a spectrum of metabolic disorder, which has become a major health challenge worldwide. The unprecedented economic development and

rapid urbanization in Asian countries particularly India has led to shift in health problems from communicable to non-communicable diseases (1). Currently the number of cases of diabetes worldwide is estimated to be around 150 million, 20% of

*Corresponding Author : Dr. Amita, Assistant Professor, Department of Physiology, S.S. Medical College, Rewa – 486 001 (M.P.)

the current global diabetic population resides in south East Asia region (2). India comprises 85% of the adult population of SEA and therefore the major contribution to diabetic population in SEA is from India (3). Prevalence of type-2 diabetes mellitus is expected to rise more rapidly in future because of increasing obesity and reduced physical activity level (4). Diabetes mellitus is a psychosomatic disorder, occurs due to sedentary habits, physical and mental stress and strain (5) which is commonly found in modern man (6). Epinephrine released during stress and exercise, inhibit insulin secretion and also able to overcome the potent stimulant effect of glucose on B-cell Islets (7). Sympathetic nervous system and adrenal medulla act as the mediator of neural induced hyperglycemia (8). Hypothalamus is also involved in neural induced hyperglycaemia and there is rise in circulating catecholamine after stimulation of hypothalamus (9). Drugs available for the treatment of diabetes are not ideal and have many disadvantages, Yoga-nidra is the yogic tranquilliser, the natural method to establish harmony and well being throughout the entire system. It is a systemic method of inducing complete mental, physical and emotional relaxation. Consequently, relaxation therapy might serve to prevent the adverse effects of stress induced sympathetic nervous system activity on the metabolic control of diabetic patients (5). Therefore the present research work has been taken to study the comparative and cumulative effectiveness of yoga-nidra therapy and drug treatment in diabetic subjects.

MATERIAL AND METHODS

This study was conducted among 41,

middle aged, type-2 diabetic patients who were on oral hypoglycaemic drugs, in Department of Physiology, S.S. Medical College, Rewa (MP), persons selected for this study were asked about the symptoms pertaining to the diabetes mellitus. Detailed information was collected on pre-designed proforma; complete general, anthropometries and systemic examination were carried out. Patients with >200 mg/dl fasting, or >300 mg/dl Post meal blood glucose level, history of diabetic complications or other systemic diseases were excluded from study. These 41 patients were randomly divided in to two groups, 20 for study group, those who took oral hypoglycaemic and regularly practicing yoga-nidra, 45 minutes daily up to 90 days and 21 were selected for control group, who took oral hypoglycaemic regular and not practicing yoga-nidra. The subjects were demonstrate yoga-nidra regularly, and it was according to Shankardevananda method's (10), it is a state of relaxation and awareness on the border between sleep and wakefulness, allowing contact with the subconscious unconscious mind (10). Practicing of Yoga-nidra was done in peaceful, lighted and well-ventilated yoga centre (brahmakumari's ashram) at comfortable temperature between 6.0 to 7.0 am. Clothing was minimal and very loose. Vital parameters and blood glucose level were examined every 30th day. Blood glucose was measured in two phases-fasting and postprandial (2 h after meal) by simple glucometer technique. The Student's *t*-test was used for statical analysis, a P-value of <0.05 was considered statistically significant.

RESULTS AND DISCUSSION

In present study diabetes was most

prevalent in 46–55 years of age group (Table I). 71% subjects were male and 29% were females, the male female ratio was 2.4:1. 46% were govt. servant, 27% businessman, 27% housewife and 5% were belongs to labour class. In this study, 2% belongs to upper, 54% middle and 44% were lower social class, of these 63% were pure vegetarian and 37% on mixed diet. 39% had positive family history of diabetes and 90% were symptomatic at time of enrolment, 37% had positive history of addiction; the A mean BMI was 22.64 kg/m². During 3-month course of yoga-nidra, most of the symptoms were subsided (P<0.004, significant) (Table II), and mean blood glucose level begins to fall within 15 days and at the end of 3-months this fall was statistically significant in both fasting as well as Post Prandial (PP) blood glucose level. Fall in fasting Blood Glucose (BG) was 21.75 mg/dl, (P<0.007, significant) and Post Prandial Blood Glucose (PP BG) was 17.95 mg/dl, (P=0.02, significant) (Table III). The frequency and severity of symptoms had been reduced, symptomatic improvements as reported by patients; 7 had good, 5-fair, 3-poor and 4-subjects were not responding to Yoga-nidra. This symptomatic improvement was reflected by the favourable comments

TABLE I: Age wise distribution of cases.

Age group	Diabetic patients				Total
	Control group		Study group		
	No.	%	No.	%	
35-45	4	19.0	2	10.0	6
46-55	10	47.6	11	55.0	21
56-65	7	33.3	7	35.0	14
Total	21		20		41

Most of patients were belongs to 46–55 years age group.

TABLE II: Comparison in symptoms from 1st visit to 3-months after Yoga-nidra and their statistical status in diabetic patients.

Symptoms	Before yoga-nidra (n=19)		After 3 months after Yoga-nidra (n=19)	
	Number	%	Number	%
Headache	04	19.05	01	4.76
Palpitation	08	38.10	01	4.76
Insomnia	09	42.86	01	4.76
Sweating	08	38.10	02	9.52
Anxious	01	4.76	01	4.76
Distress	06	28.57	02	9.52
Total	36		8	

Data showed, most of the symptoms were subsided after 3-months course of yoga-nidra and results were statistically significant (P<0.004).

TABLE III: Comparison of blood glucose level, from 1st visit to 1, 2 and 3 months after yoga-nidra, and its statistical correlation with diabetic patients.

Visit at BG recorded	Changes in mean blood glucose level from 1st visit to 3-months after yoga-nidra (Mean±SD).			
	F	P-value	PP	P-value
At 1 st visit	159.5±12.27		255.45±16.85	
After 1-months	154.7±18.14	P=0.33	250.55±22.31	P=0.43
After 2-months	145.65±20.25	PP0.012	244.15±25.23	P=0.10
After 3-months	137.75±23.15	P<0.0007	237.5±30.54	P=0.02

F=Fasting, PP=Post prandial, BG=Blood glucose.

Fall in mean glucose level after 3-months of yoga nidra, was statistically significant, in fasting it was =21.3 mg/dl (P<0.0007) and PP=17.95 mg/dl (P=0.02).

given voluntarily by patients during the course of yoga-nidra.

From this study we explored the effect

of yoga-nidra (along with oral hypoglycaemic) in controlling the blood glucose in diabetic patients because drugs are expensive, have a number of side effects and complications if they are used for long time. In contrast to it, yoga-nidra is inexpensive, easily performed at home and has no side effects. Chronic psychological stress are associated with undetected type-2 diabetes mellitus (11). The effect of stress on glucose metabolism are mediated by a variety of "Counter regulation" hormone that are released in response to stress (12). The anti-stress effect of yoga could be one factor for better control of blood glucose in diabetic patients (13). In our study fall in blood glucose level begin after 1-month of yoga-nidra but this fall was statistically not significant in fasting ($P=0.33$) as well as in post-prandial level ($P=0.43$), while after 2-months of exercise fasting was decreased up to significant ($P=0.012$) level and fall in Post Prandial (PP) was not significant ($P=0.10$). After 3-months, this fall was statistically significant in both fasting ($P>0.0007$) as well as post-prandial ($P=0.02$) blood glucose level, while Gore et al (5) showed that fasting blood glucose was fall significantly after one-month and Post Prandial (PP) was after 2-weeks of yogic treatment (shavasanas and tranquillisation). Another five days progressive relaxation

training (14) showed the fasting glucose improved for all subjects and 2 h PP blood glucose value improved significantly only in treated patients ($P=0.03$). Improvements in clinical features were starts within 15 days of exercise and at the end of 3-months maximum symptoms were subsided ($P>0.004$), similar study at CENEX (15) showed, there was significant decrease in clinical features ($P<0.03$) and glycaemia ($P<0.03$) after 3-month of relaxation exercise. Similar to our study Mercuri et al (16) showed that; palpitation, heart rate and glycaemia were significantly decreased in diabetics after practicing yoga, these effects could be secondary to decrease in the activity of adrenergic sympathetic system which is increased in people with type-2 diabetes. Our previous study (17) on different yogasanas showed that, yogasanas had significantly decreases blood glucose level in patients who taking drugs and practicing yogasanas.

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