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Effects of Yoga Practices and Naturopathy Treatments on Blood Sugar and Blood Pressure of Diabetic Patients

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Abstract

The study was designed to investigate the effects of yoga practices and naturopathy treatments on selected blood sugar & blood pressure variables of diabetic patients. For this 45 diabetic patients were selected randomly from Annai Sakunthala Nature Cure Hospital & Yoga Centre, Karaikudi. Their age ranged from 35 to 55 years. They were divided into three equal groups' namely experimental group 1, experimental group 2 and control group. The treatment was given during the working days (except Saturdays and Sundays). The experimental group 1 underwent naturopathy treatment, experimental group 2 underwent yogic practices and control group was not given any specific training. The following criterion variables were chosen namely, blood sugar, blood pressure and were assessed before and after the training period of 12 weeks. The analysis of co-variance and Scheffe's Post_Hoc test were used to test the adjusted posttest mean difference among the experimental groups. The study revealed that the selected blood sugar and blood pressure were significantly reduced due to the influence of yogic practices and naturopathy treatments in diabetic patients.

Key Words: Yogic Practices, Naturopathy Treatments, Blood Sugar, Blood Pressure.

INTRODUCTION

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 naturac, 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)*. The whole practice of nature cure is based on the following three principles

- Accumulation of morbid matter
- Abnormal composition of blood & lymph
- Lowered vitality.

Nature cure believes that all the diseases arise due to accumulation of morbid matter in the body and if scope is given for its removal, it provides cure or relief *(Underwood, 1971; Stofen, 1974)*. It also believes that the human body possesses inherent self constructing and self healing powers.

Yoga means a holistic approach towards the cause and treatment of disease *(Kirkwood et al, 2005)*. According to yoga most of the diseases mental, psychosomatic and physical originate in

mind through wrong way of thinking, living and eating which is caused by attachment. The basic approach of yoga is to correct the life style by cultivating a rational positive and spiritual attitude towards all life situations. All the systems of medicine at their best aim at curing the disease whereas yoga aims at preventing the disease and promoting health by reconditioning the psycho-physiological mechanism of the individual.

Methodology

In this study 45 diabetic patients were selected randomly from Annai Sakunthala Nature Cure Hospital & Yoga Centre, Karaikudi. Their age ranged from 35 to55 years. They were divided into three equal groups' namely experimental group 1, experimental group 2 and control group. The treatment was given during the working days (except Saturdays and Sundays) the experimental group 1 underwent naturopathy treatment, experimental group 2 underwent yogic practices and control group was not given any specific training. The following criterion variables were chosen namely, blood sugar, blood pressure and were assessed before and after the training period of 12 weeks. The analysis of co-variance was used to test the adjusted post-test mean difference among the experimental groups. If the adjusted post test result was significant the Scheffe's Post_Hoc test was used to determine the significance of the paired mean differences of the dependent variables.

Table –1: Computation of analysis of covariance of systolic pressure

	Control Group	Experimental Group –I	Experimental Group –II	SV	SS	DF	MS	F
Pre-Test Means, mm Hg	178.53	178.67	178.80	B	0.53	2	0.27	0.004
				W	2567.47	42	61.13	
Post-Test Means, mm Hg	178.73	170.27	164.93	B	1452.84	2	726.42	11.82*
				W	2580.80	42	61.45	
Adjusted Post –Test Means, mm Hg	178.86	170.27	164.81	B	1503.43	2	751.71	70.58*
				W	436.68	41	10.65	

*significant at 0.05 level table f ratio is 3.220 and the (df) is 2, 41

Results & Discussion

Table 1 shows the analyzed data on systolic pressure. The pre test, post test and adjusted post test means of the systolic pressure were (178.5, 178. 7, 178.8), (178.7, 170.3, 164.9) and (178.8, 170.3, 164.8) mmHg for the experimental group 1, 2 and control groups respectively. The obtained 'f' ratio of post and adjusted post test were 11.82 and 70.58. The table value is 3.35 at 5% level of significance for the degree of freedom (2,42 and 2,41). Therefore it is concluded that experimental group II was better than the other two groups.

Table 2: Computation of Scheffe's post hoc test ordered adjusted final mean difference of systolic BP

Control Group	Experimental Group –I	Experimental Group –II	M.D.	CI
178.85	170.27		8.59	3.026
178.85		164.81	14.04	3.026
	170.27	164.81	5.45	3.026

Table 2 shows the scheffe's post hoc test of ordered adjusted final mean difference of systolic pressure of different groups. The mean difference between the control group and the experimental group I was 8.59, control group and experimental group II was 14.04, experimental group I and experimental group II was 5.45. The CI value 3.026 is greater than table f ratio value. Hence all the three comparisons were significant.

The analysis of covariance of systolic blood pressure indicated that experimental group I (naturopathy group) and experimental group II (yoga group) were significantly reduced the systolic blood pressure. It may due to the nature of yoga and naturopathy exercise.

Berger (1982) supported that during exercise, the dilation of blood vessels in the working muscles reduces the arterial resistance to blood flow. More than the vasoconstriction in non-working tissues increases the resistance. Therefore, the net effect of changes in blood vessels, size, during exercise is to decrease the blood pressure simultaneously however, cardiac out put cause a greater systolic pressure, that more than counteracts the tendeney toward reduced pressure caused by vasodilation in the working muscles, since only a slight fall in blood pressure. The finding of the above said study supports the present study.

Table- 2: Computation of Analysis of Covariance of Diastolic Pressure

	Cont Grp	Exp Grp I	Exp Grp II	SV	SS	DF	MS	OF
Pre-Test Means	106.60	106.67	106.53	B	0.13	2	0.07	0.007
				W	412.67	42	9.83	
Post-Test Means	106.73	97.33	93.47	B	1396.58	2	698.29	29.99*
				W	978.00	42	23.29	
Adjusted Post – Test Means	106.73	97.27	93.53	B	1389.64	2	694.82	44.62*
				W	638.44	41	15.57	

*Significant at 0.05 level table f ratio is 3.220 and the (df) is 2, 41.

Table 2 shows the analyzed data on diastolic pressure. The pre test, post test and adjusted post test means of the diastolic pressure were (106.60,106.67,106.53),(106.73,97.33,93.47)and(106.73,97.27,93.53) for the experimental group I, II and the control groups respectively. The obtained 'f' ratio for pre test 0.007, post test 29.99 and adjusted post test 44.62. The obtained 'f' ratio of post and adjusted post test were 29.99 and 44.62. The table value is 3.22 at 5% level of significance for the degree of freedom (2.42 and 2.41). Therefore it is accomplished that experimental group II has been better than the other two groups.

TABLE-II (A): Computation of Scheffe's post hoc test ordered adjusted final mean difference of diastolic pressure

Cont Grp	Exp Grp I	Exp Grp II	M.D.	CI
106.73	97.27		9.46	3.66
10.73		93.53	13.21	3.66
	97.27	93527	3.75	3.66

Table ii (a) shows the Scheffe's post hoc test of ordered adjusted final mean difference of diastolic pressure of different groups. The difference between control group and the experimental group I was 9.46, control group and experimental group II was 13.21, experimental group I and experimental group II was 3.75. The CI value 3.66 is greater than table f ratio value. Hence all the three comparisons were significant.

The analysis of covariance of diastolic pressure indicated that the experimental group I, the experimental group II exhibited significant reduction in the diastolic pressure. It may due to the treatment procedures.

William (1991) although the degree to which regular exercise can benefit a hypertensive condition is still unclear. It does appear that both systolic and diastolic blood pressure can be brought down to a modest degree with a program of exercise training. Aerobic exercise training in patients with documented coronary artery disease and in young, middle, aged and elderly "border line" hypertensive patients, the effects of exercise training on blood pressure of seven middle aged male patients decreased from 139 to 133 mm hg after 4 to 6 weeks of interval training. In

addition, at similar sub maximal exercise levels diastolic pressure fall form 173 to 155 mm Hg and diastolic pressure was also reduced from 92 to 76 mm Hg. The finding of the above said study supports the present study.

Table 3: Computation of analysis of covariance of diabetic –fasting

	Cont Grp	Exp Gr–I	Exp Grp–II	SV	SS	DF	MS	OF
PRE-TEST MEANS	161.13	161.53	161.667	B	2.31	2	1.16	0.02
				W	2898.80	42	69.02	
POST-TEST MEANS	160.93	135.40	145.867	B	4942.53	2	2471.27	20.06*
				W	5174.27	42	123.20	
ADJUSTED POST – TEST MEANS	161.25	135.31	145.642	B	5112.31	2	2556.16	47.12*
				W	2224.31	41	54.25	

*Significant at 0.05 level table f ratio is 3.220 and the (df) is 2, 41.

Table 3 shows the analyzed data on diabetic-fasting. The pre test, post test and adjusted post test means of the diabetic-fasting were (161.133,161.533,161.667), (160.933,135.400,145.867) and (161.247,135.310,145.642) for the experimental group I, II and the control groups respectively. The obtained 'f' ratio for pre test 0.02, post test 20.06 and adjusted post test 47.12. The obtained 'f' ratio of post and adjusted post test were 20.06 and 47.12. The table value is 3.22 at 5% level of significance for the degree of freedom (2 and 41). Therefore it is proved that experimental group I & II has been better than control group.

Table 3a: Computation of schaffe's post hoc test ordered adjusted final mean difference of Diabetic – fasting

Cont Grp	Exp Grp –I	Exp Grp – II	M.D.	CI
161.247	135.310		25.94	6.83
161.247		145.642	15.61	6.83
	135.31	145.642	10.33	6.83

Table 3a shows the Scheffe's post hoc test of ordered adjusted final mean difference of diabetic-fasting of different groups. The difference between control group and experimental group i was 25.94 control group and experimental group II was 15.61 experimental groups I and experimental group II was 10.33. The CI value 6.83 is greater than table f ratio value. Hence all the three comparisons were significant.

Discussion

1.normally, blood glucose levels are tightly controlled by insulin, a hormone produced by the pancreas. Insulin lowers the blood glucose level. When the blood glucose elevates (for example, after eating food) insulin is released from the pancreas to normalize the glucose level. *Lima (2008) and Fenicchia (2004)* study showed that yoga and naturopathy help to reduce blood sugar. The finding of the above said study supports the present study.

The present study was one fasting blood glucose measurement in the morning is sufficient for him to maintain a health daily routine of exercise, consuming meals/ snacks and leading a productive life with mental and physical activities.

Table- iv

Computation of analysis of covariance of post prandial of blood sugar

	Control Group	Exp Group –I	Exp Group –II	SV	SS	DF	MS	OF
Pre-Test Means	279.07	279.73	279.60	B	3.73	2	1.87	0.004
				W	20361.47	42	484.80	
Post-Test Means	278.20	25.27	265.53	B	3958.93	2	1979.47	3.95
				W	21045.07	42	501.07	

Adjusted Post – Test Means	278.60	255.00	265.40	B	4194.55	2	2097.27	91.32
				W	941.58	41	22.96	

*Significant at 0.05 level table f ratio is 3.220 and the (df) is 2, 41.

Table i shows the analyzed data on post period of blood sugar. The pre test, post test and adjusted post test means of the post period of blood sugar were(279.067,279.733,279.600),(278.200, 25.267,265.533) and (278.597, 255.002, 265.40) for the experimental group i, ii and control group respectively. The obtained 'f' ratio for pre test 0.004, post test 3.950 and adjusted post test 91.324. The obtained 'f' ratio of post and adjusted post test were 3.950 and 91.324. The table value is 3.220 at 5% level of significance for the degree of freedom (2.42 and 2.41). Therefore it is proved that experimental group i has been better than the other two groups.

Table- iv (a): Computation of scheffe's post hoc test ordered adjusted final mean difference of post period of blood sugar

Control Group	Exp Grp –I	Exp Grp –II	M.D.	CI
278.59	255.00		23.59	4.44
278.59		265.40	13.19	4.44
	255.00	265.40	10.39	4.44

Table ii (a) shows the scheffe's post hoc test of ordered adjusted final mean difference of post period of blood sugar of different groups. The difference between control group and experimental group i was 23.596 control group and experimental group ii was 13.197 experimental group i and experimental group ii was 10.399. The ci value 4.444 is greater than table f ratio value. Hence all the three comparisons were significant.

Discussion

1.Hsin-iwu (2005) study on type 2 diabetic subjects indicate that the recovery time of the post-prandial blood glucose level can adjusted to 4 hours, which is comparable to the typical time interval for non-diabetics: 3 to 4 hours. A moderate lifestyle adjustment of light supper coupled with morning swimming of 20 laps in a 25m pool for 40 minutes enabled the subject to reduce his ale level from 6.7 to 6.0 in six months and to maintain this level for the subsequent six months. *Sahay (2005)* reported significant reduction in fasting and postprandial blood glucose concentrations within three months of yoga exercise in type 2 diabetic patients

The subject has been able to keep post-prandial blood glucose levels within 200 mg/dl with the mean fasting reading of 90±20 mg/dl. I hour yogic practices and naturopathy treatments were given to the patients daily.

Conclusion

The blood pressure and blood sugar were significantly reduced due to the influence of yoga practices and naturopathy treatment than the control group. The blood sugar was significantly reduced due to the influence of naturopathy treatment than the yoga practice and control group. The blood pressure was significantly reduced due to the influence of yoga practice than the naturopathy and control group.

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