CHAPTER IV

RESULTS AND DISCUSSIONS

4.1   OVERVIEW

This chapter deals with the analysis of data collected from sample under study. The two groups of experimental group and one group of control group were analyzed for the differences in health related Physiological, Biochemical and Psychological components in relation with pre test and post test.

In this Random Group Experimental study 45 Diabetic Women aged between 35 – 45 years were selected at random as the subjects irrespective of their occupation from Chennai. The subjects were divided into three groups, each 15 namely experimental groups I, II and control group III. The control group has not given any training but in active rest.

Only the experimental groups I and II underwent training in Traditional Yoga Practices and Tibetian Yoga Practices respectively. The experimental groups practiced the above weekly six days for a period of twelve weeks. Group-I underwent traditional yoga practices (n=15) and Group-II underwent Tibetian yoga practices (n=15) and Group-III acted as control group (n=15).

To test the significance of changes made from the pre and post test on three groups individually paired ANCOVA test was applied. The significance of the means of the obtained test results was tested at 0.05 level of confidence. Thus the obtained results were interpreted with earlier studies and presented in this chapter well along with graphical applications.

4.2   **TEST OF SIGNIFICANCE**

This is crucial portion of the thesis in arriving at the conclusion by examining the hypothesis. The procedure of testing the hypothesis was entered either by accepting the hypothesis or rejecting the hypothesis in accordance with the result is obtained in relation to the level of confidence 0.05 which was considered sufficient for the study. The test was usually called the test of significance. If the obtained value was greater than the table value null hypothesis was rejected. If the obtained value was less than table value, the null hypothesis was accepted.

4.2.1   **LEVEL OF SIGNIFICANCE**

The probability level below which we rejected the hypothesis is term as the level of significance. The F- ratio obtained analysis of variance needed 3.22 for significant at 0.05 level. In addition to that the significant difference between the paired adjusted means were tested by computing the confidence interval value utilizing the Scheffe's post-hoc test, in which the obtained means difference value needed to be greater than the Scheffe's confidence interval value for significance.

4.3   **COMPUTATION OF ANALYSIS OF COVARIANCE AND POST HOC TEST**

4.3.1   **RESULTS OF BODY MASS INDEX (BMI)**

BMI was calculated through the measurements from height and weight. The Table - XVI shows the variance of BMI among Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients.

TABLE - XVI

**ANALYSIS OF CO-VARIANCE OF THE MEANS OF TWO
EXPERIMENTAL GROUPS AND CONTROL
GROUP IN BODY MASS INDEX (BMI)**

	Group I	Group II	Group III	Source of variance	Sum of squares	Df	Mean squares	Obtained F-ratio
Pre test mean	26.56	27.40	26.73	Between	5.88	2	2.94	0.39
				Within	312.06	42	7.43	
Post test mean	24.09	26.01	27.77	Between	101.34	2	50.66	7.39*
				Within	287.78	42	6.85	
Adjusted post test mean	24.41	25.55	27.93	Between	96.65	2	48.32	83.42*
				Within	23.75	41	0.57	
Mean gain	2.47	1.39	-1.04					

*** Significant at 0.05 level of confidence. (Table F ratio at 0.05 level of confidence for 2 and 42 (df)
& 2 and 41 (df) was 3.22 & 3.23)**

The obtained F value on pre test scores 0.39 was lesser than the required F value of 3.22 to be significant at 0.05 level. This proved that there was no significant difference between the groups of pre test and the randomization at the pre test was equal.

The post test scores analysis proved that there was significant difference between the groups, as the obtained F value 7.39 was greater than the required F value of 3.22. This proved that the differences between the post test means of the subjects were significant.

Taking into consideration the pre and post test scores among the groups adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value of 83.42 was greater than the required F value of 3.22. This proved that there was significant differences among the means due to twelve weeks of Yogic practices of Traditional Yoga (Group-I) and Tibetian Yoga (Group-II) on Physiological variable, Body Mass Index (BMI).

Since significant improvements were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table XVI (A).

TABLE - XVI (A)

SCHEFFE'S POST-HOC TEST FOR BODY MASS INDEX (BMI)

MEANS			Mean difference	Required C.I
Group-I	Group-II	Group-III		
24.41	25.55		1.14*	0.80
24.41		27.93	3.52*	0.80
	25.55	27.93	2.37*	0.80

* Significant at 0.05 level of confidence

The multiple mean comparisons shown in Table XVI (A) proved that there existed significant differences between the adjusted means of Yogic practices of Traditional Yoga (Group-I) and Control Group (Group-III), Tibetian Yoga (Group-II) and Control Group (Group-III). There was significant difference between Yogic practices of Traditional Yoga (Group-I) and Tibetian Yoga (Group-II).

The ordered adjusted means on Body Mass Index (BMI) were presented through bar diagram for better understanding of the results of this study in Figure 48.

BAR DIAGRAM SHOWING THE MEAN DIFFERENCE AMONG YOGIC PRACTICES OF TRADITIONAL YOGA, TIBETIAN YOGA AND CONTROL GROUP ON BODY MASS INDEX (BMI)
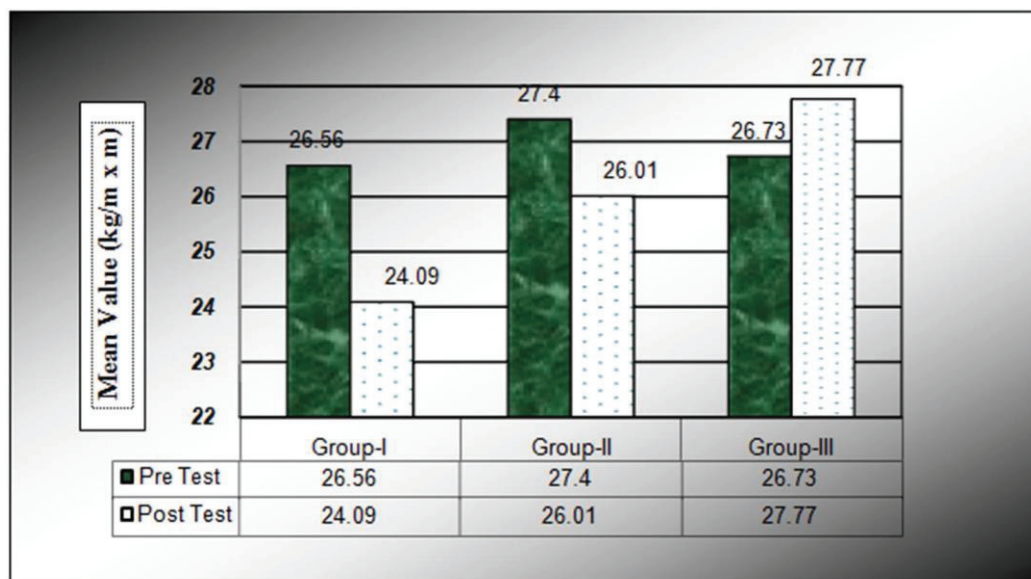

	Group-I	Group-II	Group-III
■ Pre Test	26.56	27.4	26.73
□ Post Test	24.09	26.01	27.77

Figure 48.

4.3.1.1   DISCUSSION ON THE FINDINGS OF BODY MASS INDEX (BMI)

The Table XVI (A) shows that Scheffe's confidence interval values of Body Mass Index (BMI) among Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients.

From the Table XVI (A) it is clear that the adjusted post mean value of Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients were 24.41, 25.55 and 27.93 respectively.

The mean difference between Yogic practices of Traditional Yoga (Group-I) and Tibetian Yoga (Group-II), Yogic Practices of Traditional Yoga (Group-I) and Control Group (Group-III), Tibetian Yoga (Group-II) and Control Group (Group-III) were 1.14, 3.52 and 2.37 respectively. The required Scheffe's confidence

interval to be significant at 0.05 level was 0.80 and the difference between yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients were greater than required confidence interval and hence the groups were significant.

The result of this study on Body Mass Index (BMI) has in line with the study conducted by **Tikhe AS et al. (2015),** who have conducted the study on yoga: managing overweight in mid-life T2DM and found that the BMI decreased significantly.

4.3.2 RESULTS OF SYSTOLIC BLOOD PRESSURE

The Systolic Blood Pressure was measured through blood pressure monitor. The Table XVII shows the variance of Systolic Blood Pressure among Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients.

TABLE - XVII

ANALYSIS OF CO-VARIANCE OF THE MEANS OF TWO EXPERIMENTAL GROUPS AND CONTROL GROUP IN SYSTOLIC BLOOD PRESSURE

	Group I	Group II	Group III	Source of variance	Sum of squares	Df	Mean squares	Obtained F-ratio
Pre test mean	137.60	130.66	139.60	Between	659.37	2	329.68	0.98
				Within	14088.53	42	335.44	
Post test mean	122.73	124.80	141.33	Between	3117.91	2	1558.95	5.73*
				Within	11412.67	42	271.73	
Adjusted post test mean	121.37	129.19	138.31	Between	2150.19	2	1075.09	25.76*
				Within	1710.53	41	41.72	
Mean gain	14.87	5.87	1.73					

* Significant at 0.05 level of confidence. (Table F ratio at 0.05 level of confidence for 2 and 42 (df) & 2 and 41 (df) was 3.22 & 3.23)

The obtained F value on pre test scores 0.98 was lesser than the required F value of 3.22 to be significant at 0.05 level. This proved that there was no significant difference between the groups of pre test and the randomization at the pre test was equal.

The post test scores analysis proved that there was significant difference between the groups, as the obtained F value 5.73 was greater than the required F value of 3.22. This proved that the differences between the post test means of the subjects were significant.

Taking into consideration the pre and post test scores among the groups' adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value of 25.76 was greater than the required F value of 3.22. This proved that there was significant differences among the means due to twelve weeks of Yogic practices of Traditional Yoga (Group-I) and Tibetian Yoga (Group-II) on Physiological variable, Systolic Blood Pressure.

Since significant improvements were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table XVII (A).

TABLE - XVII (A)

SCHEFFE'S POST-HOC TEST FOR SYSTOLIC BLOOD PRESSURE

MEANS			Mean difference	Required C.I
Group-I	Group-II	Group-III		
121.37	129.19		7.82*	6.84
121.37		138.31	16.94*	6.84
	129.19	138.31	9.12*	6.84

* Significant at 0.05 level of confidence

The multiple mean comparisons shown in Table XVII (A) proved that there existed significant differences between the adjusted means of Yogic practices of Traditional Yoga (Group-I) and Control Group (Group-III), Tibetian Yoga (Group-II) and Control Group (Group-III). There was significant difference between Yogic practices of Traditional Yoga (Group-I) and Tibetian Yoga (Group-II).

The ordered adjusted means on Systolic Blood Pressure were presented through bar diagram for better understanding of the results of this study in Figure 49.

BAR DIAGRAM SHOWING THE MEAN DIFFERENCE AMONG YOGIC PRACTICES OF TRADITIONAL YOGA, TIBETIAN YOGA AND CONTROL GROUP ON SYSTOLIC BLOOD PRESSURE
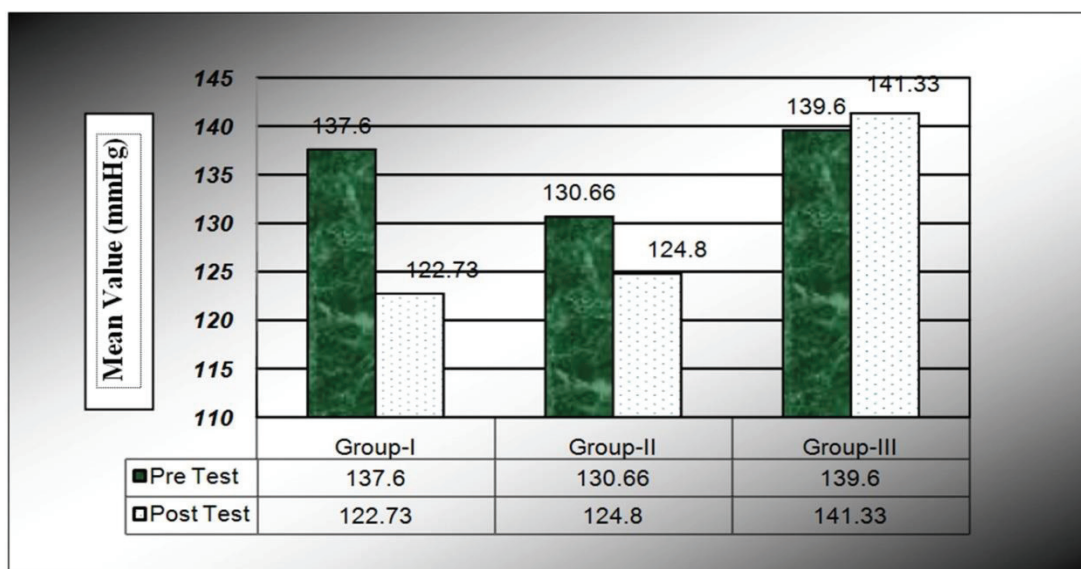

	Group-I	Group-II	Group-III
Pre Test	137.6	130.66	139.6
Post Test	122.73	124.8	141.33

Figure 49.

4.3.2.1 DISCUSSION ON THE FINDINGS OF SYSTOLIC BLOOD PRESSURE

The Table XVII (A) shows that Scheffe's confidence interval values of Systolic Blood Pressure among Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients.

From the Table XVII (A) it is clear that the adjusted post mean value of Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients were 121.37, 129.19 and 138.31 respectively.

The mean difference between Yogic practices of Traditional Yoga (Group-I) and Tibetian Yoga (Group-II), Yogic Practices of Traditional Yoga (Group-I) and Control Group (Group-III), Tibetian Yoga (Group-II) and Control Group (Group-III) were 7.82, 16.94 and 9.12 respectively. The required Scheffe's confidence interval to be significant at 0.05 level was 6.84 and the difference between yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients were greater than required confidence interval and hence the groups were significant.

The result of this study on systolic blood pressure has in line with the study conducted by **Shantakumari et al. (2012),** who have conducted the study on effect of a yoga intervention on hypertensive diabetic patients and found that systolic and diastolic blood pressure decreased significantly.

4.3.3   RESULTS OF DIASTOLIC BLOOD PRESSURE

The Diastolic Blood Pressure was measured through blood pressure monitor. The Table XVIII shows the variance of Diastolic Blood Pressure among Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients.

TABLE - XVIII

ANALYSIS OF CO-VARIANCE OF THE MEANS OF TWO

EXPERIMENTAL GROUPS AND CONTROL GROUP IN

DIASTOLIC BLOOD PRESSURE

	Group-I	Group-II	Group-III	Source of variance	Sum of squares	Df	Mean squares	Obtained F-ratio
Pre test mean	85.46	82.13	83.46	Between	84.44	2	42.22	0.63
				Within	2785.2	42	66.31	
Post test mean	74.00	76.40	86.33	Between	1282.71	2	641.35	14.95*
				Within	1800.93	42	42.87	
Adjusted post test mean	72.80	77.45	86.48	Between	1444.42	2	722.21	56.21*
				Within	526.71	41	12.84	
Mean gain	11.47	5.73	2.87					

* Significant at 0.05 level of confidence. (Table F ratio at 0.05 level of confidence for 2 and 42 (df) & 2 and 41 (df) was 3.22 & 3.23)

The obtained F value on pre test scores 0.63 was lesser than the required F value of 3.22 to be significant at 0.05 levels. This proved that there was no significant difference between the groups of pretest and the randomization at the pre test was equal.

The post test scores analysis proved that there was significant difference between the groups, as the obtained F value 14.95 was greater than the required F value of 3.22. This proved that the differences between the post test means of the subjects were significant.

Taking into consideration the pre and post test scores among the groups' adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value of 56.21 was greater than the required F value of 3.22. This proved that there was significant differences among the means due to twelve weeks of Yogic practices of Traditional Yoga (Group-I) and Tibetian Yoga (Group-II) on Physiological variable, Diastolic Blood Pressure.

Since significant improvements were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table XVIII (A).

TABLE - XVIII (A)

SCHEFFE'S POST-HOC TEST FOR DIASTOLIC BLOOD PRESSURE

MEANS			Mean difference	Required C.I
Group-I	Group-II	Group-III		
72.80	77.45		4.65*	3.79
72.80		86.48	13.68*	3.79
	77.45	86.48	9.03*	3.79

* Significant at 0.05 level of confidence

The multiple mean comparisons shown in Table XVIII (A) proved that there existed significant differences between the adjusted means of Yogic practices of Traditional Yoga (Group-I) and Control Group (Group-III), Tibetian Yoga (Group-II) and Control Group (Group-III). There was significant difference between Yogic practices of Traditional Yoga (Group-I) and Tibetian Yoga (Group-II).

The ordered adjusted means on Diastolic Blood Pressure were presented through bar diagram for better understanding of the results of this study in Figure 50.

BAR DIAGRAM SHOWING THE MEAN DIFFERENCE AMONG YOGIC PRACTICES OF TRADITIONAL YOGA, TIBETIAN YOGA AND CONTROL GROUP ON DIASTOLIC BLOOD PRESSURE
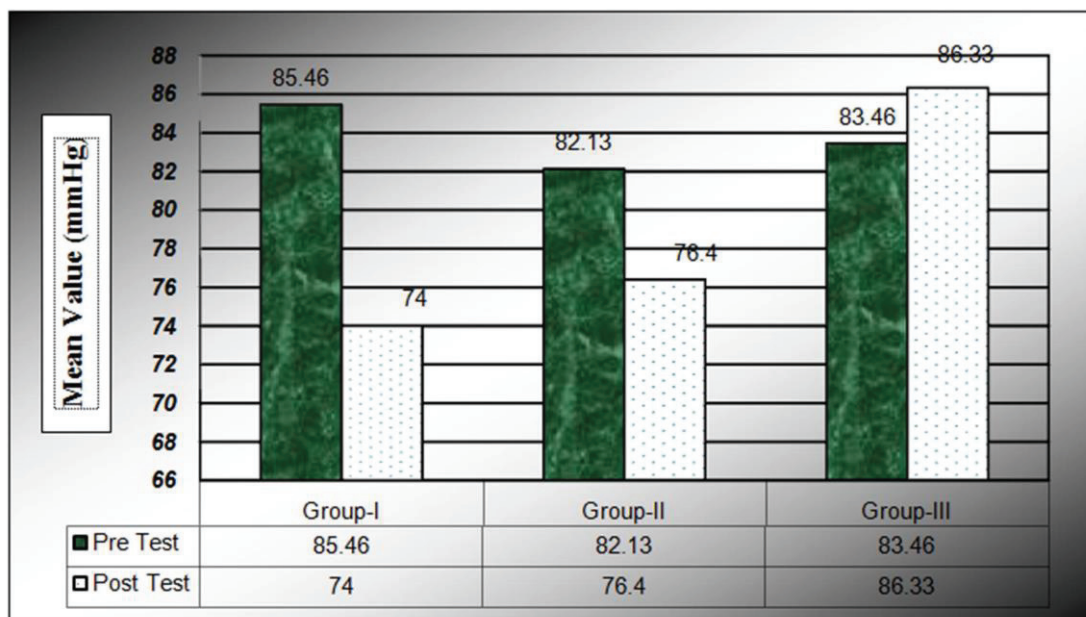

	Group-I	Group-II	Group-III
■ Pre Test	85.46	82.13	83.46
□ Post Test	74	76.4	86.33

Figure 50.

4.3.3.1   DISCUSSION ON THE FINDINGS OF DIASTOLIC BLOOD PRESSURE

The Table XVIII (A) shows that Scheffe's confidence interval values of Diastolic Blood Pressure among Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic women.

From the Table XVIII (A) it is clear that the adjusted post mean value of Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients were 72.80, 77.45 and 86.48 respectively.

The mean difference between Yogic practices of Traditional Yoga (Group-I) and Tibetian Yoga (Group-II), Yogic Practices of Traditional Yoga (Group-I) and

Control Group (Group-III), Tibetian Yoga (Group-II) and Control Group (Group-III) were 4.65, 13.68 and 9.03 respectively. The required Scheffe's confidence interval to be significant at 0.05 level was 3.79 and the difference between yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients were greater than required confidence interval and hence the groups were significant.

The result of this study on diastolic blood pressure has in line with the study conducted by **Mc Dermott KA et al. (2014),** who have conducted the study on a yoga intervention for type 2 diabetes risk reduction and found that systolic and diastolic blood pressure decreased significantly.

4.3.4   RESULTS OF PULSE RATE

The Pulse Rate was measured through stop watch. The Table XIX shows the variance of Pulse rate among Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients.

TABLE - XIX

ANALYSIS OF CO-VARIANCE OF THE MEANS OF TWO EXPERIMENTAL GROUPS AND CONTROL GROUP IN PULSE RATE

	Group I	Group II	Group III	Source of variance	Sum of squares	Df	Mean squares	Obtained F-ratio
Pre test mean	92.53	85.13	83.73	Between	670.8	2	335.4	1.85
				Within	7612.4	42	181.24	
Post test mean	73.06	76.60	85.06	Between	1140.84	2	570.42	6.45*
				Within	3709.47	42	88.32	
Adjusted post test mean	69.56	77.90	87.27	Between	2195.33	2	1097.67	89.93*
				Within	500.40	41	12.20	
Mean gain	19.47	8.53	-1.33					

* Significant at 0.05 level of confidence. (Table F ratio at 0.05 level of confidence for 2 and 42 (df) & 2 and 41 (df) was 3.22 & 3.23)

The obtained F value on pre test scores 1.85 was lesser than the required F value of 3.22 to be significant at 0.05 level. This proved that there was no significant difference between the groups of pre test and the randomization at the pre test was equal.

The post test scores analysis proved that there was significant difference between the groups, as the obtained F value 6.45 was greater than the required F value of 3.22. This proved that the differences between the post test means of the subjects were significant.

Taking into consideration the pre and post test scores among the groups' adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value of 89.93 was greater than the required F value of 3.22. This proved that there was significant differences among the means due to twelve weeks of Yogic practices of Traditional Yoga (Group-I) and Tibetian Yoga (Group-II) on Physiological variable, Pulse rate.

Since significant improvements were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table - XIX (A).

TABLE - XIX (A)

SCHEFFE'S POST-HOC TEST FOR PULSE RATE

MEANS			Mean difference	Required C.I
Group-I	Group-II	Group-III		
69.56	77.90		8.33*	3.70
69.56		87.27	17.71*	3.70
	77.90	87.27	9.37*	3.70

* Significant at 0.05 level of confidence

The multiple mean comparisons shown in Table XIX (A) proved that there existed significant differences between the adjusted means of Yogic practices of Traditional Yoga (Group-I) and Control Group (Group-III), Tibetian Yoga (Group-II) and Control Group (Group-III). There was significant difference between Yogic practices of Traditional yoga (Group-I) and Tibetian Yoga (Group-II).

The ordered adjusted means on Pulse rate were presented through bar diagram for better understanding of the results of this study in Figure 51.

BAR DIAGRAM SHOWING THE MEAN DIFFERENCE AMONG YOGIC PRACTICES OF TRADITIONAL YOGA, TIBETIAN YOGA AND CONTROL GROUP ON PULSE RATE
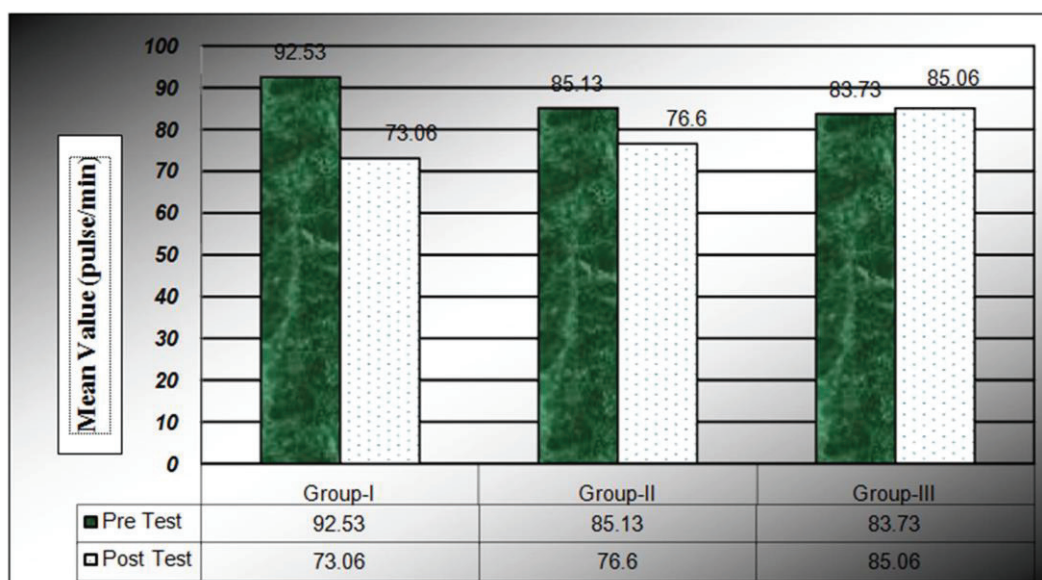

	Group-I	Group-II	Group-III
■ Pre Test	92.53	85.13	83.73
□ Post Test	73.06	76.6	85.06

Figure 51.

4.3.4.1 DISCUSSION ON THE FINDINGS OF PULSE RATE

Table XIX (A) shows that Scheffe's confidence interval values of Pulse Rate among Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients.

From the Table XIX (A) it is clear that the adjusted post mean value of Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients were 69.56, 77.90 and 87.27 respectively.

The mean difference between Yogic practices of Traditional Yoga (Group-I) and Tibetian Yoga (Group-II), Yogic Practices of Traditional Yoga (Group-I) and Control Group (Group-III), Tibetian Yoga (Group-II) and Control Group (Group-III) were 8.33, 17.71 and 9.37 respectively. The required Scheffe's confidence interval to be significant at 0.05 level was 3.70 and the difference between yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients were greater than required confidence interval and hence it is significant.

The result of this study on pulse rate has in line with the study conducted by **Singh S et al. (2004),** who have conducted the study on the role of yoga in modifying certain cardiovascular functions in type 2 diabetic patients and found that the pulse rate decreased significantly.

4.3.5 RESULTS OF FASTING BLOOD SUGAR

The Fasting Blood Sugar was measured through Lab test. The Table XX shows the variance of Fasting Blood Sugar among Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients.

TABLE - XX

ANALYSIS OF CO-VARIANCE OF THE MEANS OF TWO EXPERIMENTAL GROUPS AND CONTROL GROUP IN FASTING BLOOD SUGAR

	Group I	Group II	Group III	Source of variance	Sum of squares	Df	Mean squares	Obtained F-ratio
Pre test mean	155.80	140.00	139.93	Between	2506.97	2	1253.48	2.89
				Within	18187.33	42	433.03	
Post test mean	105.06	110.40	141.46	Between	11592.71	2	5796.35	32.66*
				Within	7452.27	42	177.43	
Adjusted post test mean	99.60	113.12	144.22	Between	14673.17	2	7336.58	116.87*
				Within	2573.59	41	62.77	
Mean gain	50.73	29.60	-1.53					

* Significant at 0.05 level of confidence. (Table F ratio at 0.05 level of confidence for 2 and 42 (df) & 2 and 41 (df) was 3.22 & 3.23)

The obtained F value on pre test scores 2.89 was lesser than the required F value of 3.22 to be significant at 0.05 level. This proved that there was no significant difference between the groups of pretest and the randomization at the pre test was equal.

The post test scores analysis proved that there was significant difference between the groups, as the obtained F value 32.66 was greater than the required F value of 3.22. This proved that the differences between the post test means of the subjects were significant.

Taking into consideration the pre and post test scores among the groups' adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value of 116.87 was greater than the required F value of 3.22. This proved that there was significant differences among the means due to twelve weeks of Yogic

practices of Traditional Yoga (Group-I) and Tibetian Yoga (Group-II) on Biochemical variable, Fasting Blood Sugar.

Since significant improvements were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table XX (A).

TABLE - XX (A)

SCHEFFE'S POST-HOC TEST FOR FASTING BLOOD SUGAR

MEANS			Mean difference	Required C.I
Group-I	**Group-II**	**Group-III**		
99.60	113.12		13.51*	8.39
99.60		144.22	44.61*	8.39
	113.12	144.22	31.10*	8.39

* Significant at 0.05 level of confidence

The multiple mean comparisons shown in Table XX (A) proved that there existed significant differences between the adjusted means of Yogic practices of Traditional Yoga (Group-I)and Control Group (Group-III), Tibetian Yoga (Group-II) and Control Group (Group-III). There was significant difference between Yogic practices of Traditional Yoga (Group-I) and Tibetian Yoga (Group-II).

The ordered adjusted means on Fasting Blood Sugar were presented through bar diagram for better understanding of the results of this study in Figure 52.

**BAR DIAGRAM SHOWING THE MEAN DIFFERENCE AMONG
YOGIC PRACTICES OF TRADITIONAL YOGA, TIBETIAN YOGA
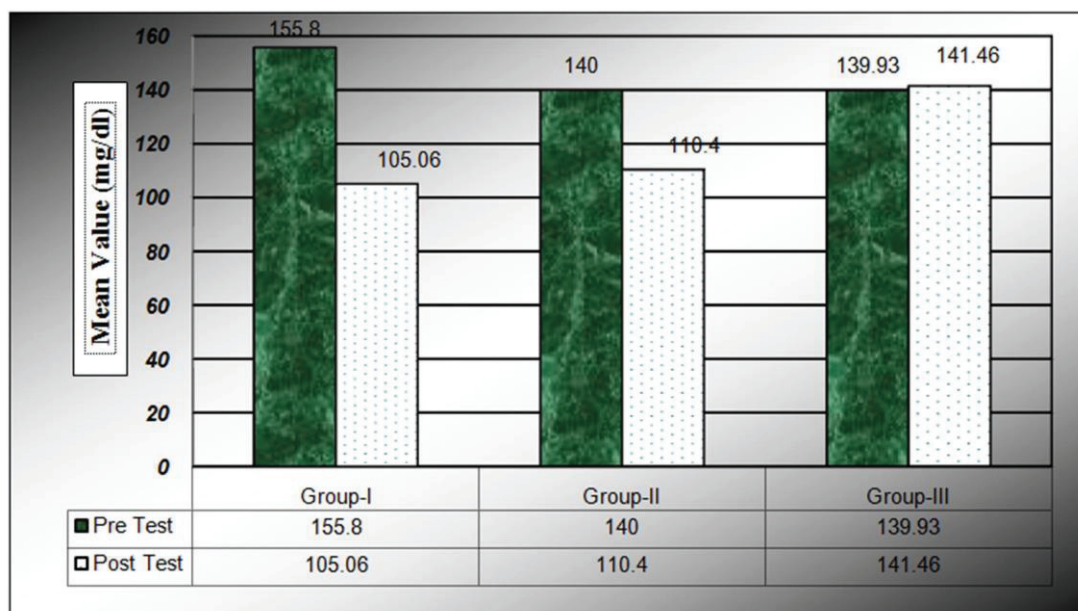AND CONTROL GROUP ON FASTING BLOOD SUGAR**

	Group-I	Group-II	Group-III
■ Pre Test	155.8	140	139.93
□ Post Test	105.06	110.4	141.46

Figure 52.

4.3.5.1   DISCUSSION ON THE FINDINGS OF FASTING BLOOD SUGAR

The Table XX (A) shows that Scheffe's confidence interval values of Fasting Blood Sugar among Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients.

From the Table XX (A) it is clear that the adjusted post mean value of Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients were 99.60, 113.12 and 144.22 respectively.

The mean difference between Yogic practices of Traditional Yoga (Group-I) and Tibetian Yoga (Group-II), Yogic Practices of Traditional Yoga (Group-I) and Control Group (Group-III), Tibetian Yoga (Group-II) and Control group (Group-III) were 13.51, 44.61 and 31.10 respectively. The required Scheffe's confidence interval

to be significant at 0.05 level was 8.39 and the difference between yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients were greater than required confidence interval and hence the groups were significant.

The result of this study on fasting blood sugar has in line with the study conducted by **Madanmohan et al. (2012),** who have conducted the study on effect of yoga therapy on reaction time, biochemical parameters and wellness score of pre and post-menopausal diabetic patients and found that the fasting blood glucose level decreased significantly.

4.3.6   RESULTS OF HbA1c

The HbA1c was measured through Lab test. The Table - XXI shows the variance of HbA1c among Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients.

TABLE - XXI

ANALYSIS OF CO-VARIANCE OF THE MEANS OF TWO EXPERIMENTAL GROUPS AND CONTROL GROUP IN HbA1c

	Group I	Group II	Group III	Source of variance	Sum of squares	Df	Mean squares	Obtained F-ratio
Pre test mean	8.46	7.92	8.08	Between	2.24	2	1.12	3.21
				Within	14.66	42	0.34	
Post test mean	6.96	7.07	8.26	Between	15.72	2	7.86	19.86*
				Within	16.62	42	0.39	
Adjusted post test mean	6.73	7.25	8.32	Between	19.06	2	9.53	49.12*
				Within	7.95	41	0.19	
Mean gain	1.50	0.85	0.18					

* Significant at 0.05 level of confidence. (Table F ratio at 0.05 level of confidence for 2 and 42 (df) & 2 and 41 (df) was 3.22 & 3.23)

The obtained F value on pre test scores 3.21 was lesser than the required F value of 3.22 to be significant at 0.05 level. This proved that there was no significant difference between the groups of pretest and the randomization at the pre test was equal.

The post test scores analysis proved that there was significant difference between the groups, as the obtained F value 19.86 was greater than the required F value of 3.22. This proved that the differences between the post test means of the subjects were significant.

Taking into consideration the pre and post test scores among the groups' adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value of 49.12 was greater than the required F value of 3.22. This proved that there was significant differences among the means due to twelve weeks of Yogic practices of Traditional Yoga (Group-I) and Tibetian Yoga (Group-II) on Biochemical variable, HbA1c.

Since significant improvements were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table XXI (A).

TABLE - XXI (A)

SCHEFFE'S POST-HOC TEST FOR HBA1C

MEANS			Mean difference	Required C.I
Group-I	Group-II	Group-III		
6.73	7.25		0.52*	0.46
6.73		8.32	1.59*	0.46
	7.25	8.32	1.07*	0.46

* Significant at 0.05 level of confidence

The multiple mean comparisons shown in Table XXI (A) proved that there existed significant differences between the adjusted means of Yogic practices of Traditional Yoga (Group-I) and Control Group (Group-III), Tibetian Yoga (Group-II) and Control Group (Group-III). There was significant difference between Yogic practices of Traditional Yoga (Group-I) and Tibetian Yoga (Group-II).

The ordered adjusted means on HbA1c were presented through bar diagram for better understanding of the results of this study in Figure 53.

BAR DIAGRAM SHOWING THE MEAN DIFFERENCE AMONG YOGIC PRACTICES OF TRADITIONAL YOGA, TIBETIAN YOGA AND CONTROL GROUP ON HbA1C

	Group-I	Group-II	Group-III
Pre Test	8.46	7.92	8.02
Post Test	6.96	7.07	8.26
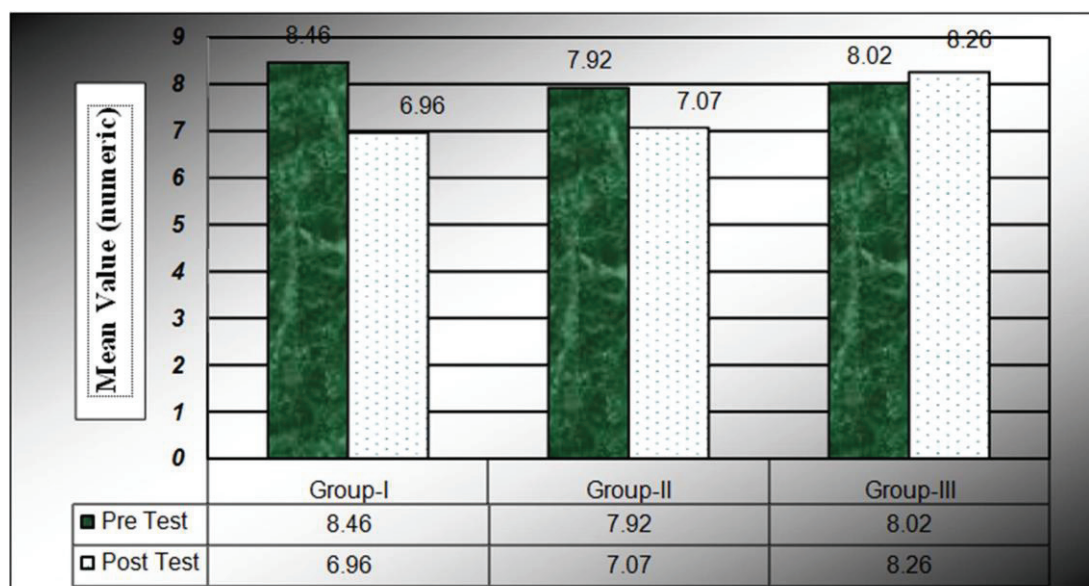
Figure 53.

4.3.6.1 DISCUSSION ON THE FINDINGS OF HbA1c

The Table XXI (A) shows that Scheffe's confidence interval values of HbA1c among Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients.

From the Table XXI (A) it is clear that the adjusted post mean value of Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients were 6.73, 7.25 and 8.32 respectively.

The mean difference between Yogic practices of Traditional Yoga (Group-I) and Tibetian Yoga (Group-II), Yogic Practices of Traditional Yoga (Group-I) and Control Group (Group-III), Tibetian Yoga (Group-II) and Control group (Group-III) were 0.52, 1.59 and 1.07 respectively. The required Scheffe's confidence interval to be significant at 0.05 level was 0.46 and the difference between yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients were greater than required confidence interval and hence the groups were significant.

The result of this study on HbA1c has in line with the study conducted by **Maninder Bindra et al. (2013),** who have conducted the study on influence of pranayamas and yoga asanas on blood glucose, lipid profile and HbA1c in type 2 diabetes and found that the HbA1c decreased significantly.

4.3.7   RESULTS OF TOTAL CHOLESTEROL

The Total Cholesterol was measured through Lab test. The Table XXII shows the variance of Total Cholesterol among Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients.

TABLE - XXII

ANALYSIS OF CO-VARIANCE OF THE MEANS OF TWO

EXPERIMENTAL GROUPS AND CONTROL

GROUP IN TOTAL CHOLESTEROL

	Group I	Group II	Group III	Source of variance	Sum of squares	Df	Mean squares	Obtained F-ratio
Pre test mean	225.67	219.40	204.40	Between	3582.71	2	1791.35	2.94
				Within	25530.53	42	607.86	
Post test mean	185.20	195.87	221.07	Between	10176.18	2	5088.08	8.62
				Within	24785.07	42	590.12	
Adjusted post test mean	177.77	193.51	230.85	Between	19553.72	2	9776.86	49.73
				Within	8059.31	41	196.56	
Mean gain	40.47	23.53	-16.67					

* Significant at 0.05 level of confidence. (Table F ratio at 0.05 level of confidence for 2 and 42 (df) & 2 and 41 (df) was 3.22 & 3.23)

The obtained F value on pre test scores 2.94 was lesser than the required F value of 3.22 to be significant at 0.05 level. This proved that there was no significant difference between the groups a pre test and the randomization at the pre test was equal.

The post test scores analysis proved that there was significant difference between the groups, as the obtained F value 8.62 was greater than the required F value of 3.22. This proved that the differences between the post test means of the subjects were significant.

Taking into consideration the pre and post test scores among the groups' adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value of 49.73 was greater than the required F value of 3.22. This proved that there was significant differences among the means due to six weeks of Yogic practices of Traditional yoga (Group-I) and Tibetian Yoga (Group-II) on Biochemical variable, Total Cholesterol.

Since significant improvements were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table XXII (A).

TABLE - XXII (A)

SCHEFFE'S POST-HOC TEST FOR TOTAL CHOLESTEROL

MEANS			Mean difference	Required C.I
Group-I	Group-II	Group-III		
177.77	193.51		15.74*	14.85
177.77		230.85	53.08*	14.85
	193.51	230.85	37.34*	14.85

* Significant at 0.05 level of confidence

The multiple mean comparisons shown in Table XXII (A) proved that there existed significant differences between the adjusted means of Yogic practices of Traditional Yoga (Group-I) and Control Group (Group-III), Tibetian Yoga (Group-II) and Control Group (Group-III). There was significant difference between Yogic practices of Traditional Yoga (Group-I) and Tibetian Yoga (Group-II).

The ordered adjusted means on Total Cholesterol were presented through bar diagram for better understanding of the results of this study in Figure 54.

**BAR DIAGRAM SHOWING THE MEAN DIFFERENCE AMONG YOGIC
PRACTICES OF TRADITIONAL YOGA, TIBETIAN YOGA
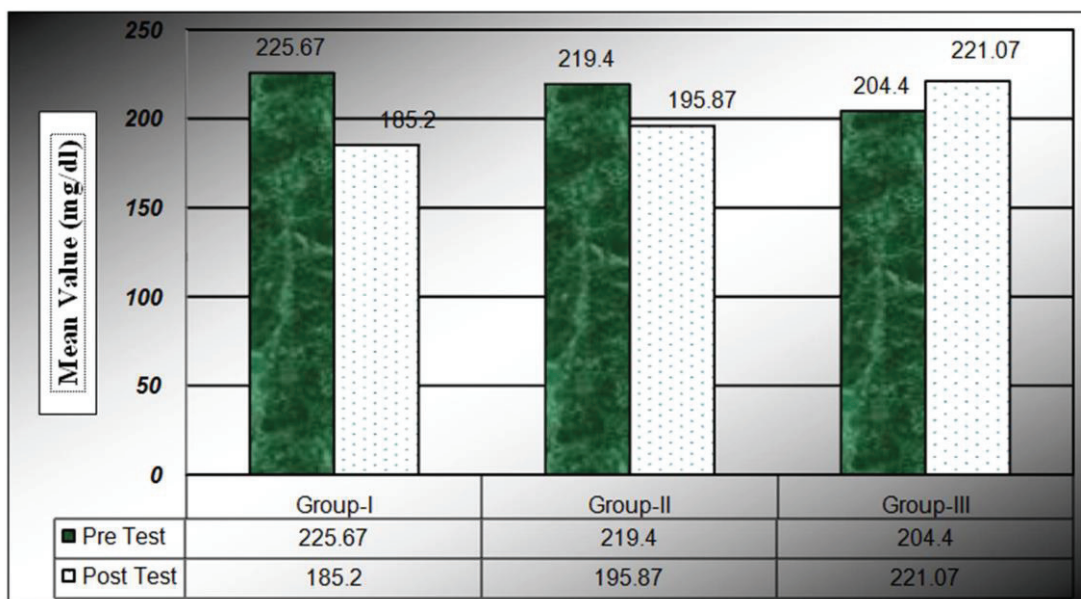AND CONTROL GROUP ON TOTAL CHOLESTEROL**

	Group-I	Group-II	Group-III
■ Pre Test	225.67	219.4	204.4
□ Post Test	185.2	195.87	221.07

Figure 54.

4.3.7.1   DISCUSSION ON THE FINDINGS OF TOTAL CHOLESTEROL

The Table XXII (A) shows that Scheffe's confidence interval values of Total Cholesterol among Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients.

From the Table XXII (A) it is clear that the adjusted post mean value of Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients were 177.77, 193.51 and 230.85 respectively.

The mean difference between Yogic Practices of Traditional Yoga (Group-I) and Tibetian Yoga (Group-II), Traditional Yoga (Group-I) and Control Group (Group-III), Tibetian Yoga (Group-II) were 15.74, 53.08 and 37.34 respectively. The required Scheffe's confidence interval to be significant at 0.05 level was 14.85 and

the difference between yogic practices of Traditional Yoga (Group-I) and Control Group (Group-III), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients were greater than required confidence interval and hence the groups were significant.

The result of this study on total cholesterol has in line with the study conducted by **Nagarathna R et al. (2012),** who have conducted the randomized control study on efficacy of yoga based life style modification program on medication score and lipid profile in type 2 diabetes and found that the total cholesterol decreased significantly.

4.3.8   RESULTS OF ANXIETY

The Anxiety was measured through Taylor's Manifest Anxiety Scale. The Table - XXIII shows the variance of Anxiety among Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients.

TABLE - XXIII

ANALYSIS OF CO-VARIANCE OF THE MEANS OF TWO

EXPERIMENTAL GROUPS AND CONTROL

GROUP IN ANXIETY

	Group I	Group II	Group III	Source of variance	Sum of squares	Df	Mean squares	Obtained F-ratio
Pre test mean	16.86	17.80	16.60	Between	11.91	2	5.95	0.32
				Within	767.73	42	18.27	
Post test mean	7.20	14.13	22.06	Between	1660.13	2	830.06	61.47*
				Within	567.07	42	13.50	
Adjusted post test mean	7.35	13.67	22.39	Between	1708.64	2	854.32	146.02*
				Within	239.86	41	5.85	
Mean gain	9.67	3.67	-5.47					

* Significant at 0.05 level of confidence. (Table F ratio at 0.05 level of confidence for 2 and 42 (df) & 2 and 41 (df) was 3.22 & 3.23)

The multiple mean comparisons shown in Table XXIII (A) proved that there existed significant differences between the adjusted means of Yogic practices of Traditional Yoga (Group-I) and Control Group (Group-III), Tibetian Yoga (Group-II) and Control Group (Group-III). There was significant difference between Yogic practices of Traditional Yoga (Group-I) and Tibetian Yoga (Group-II).

The ordered adjusted means on Anxiety were presented through bar diagram for better understanding of the results of this study in Figure 55.

BAR DIAGRAM SHOWING THE MEAN DIFFERENCE AMONG YOGIC PRACTICES OF TRADITIONAL YOGA, TIBETIAN YOGA AND CONTROL GROUP ON ANXIETY
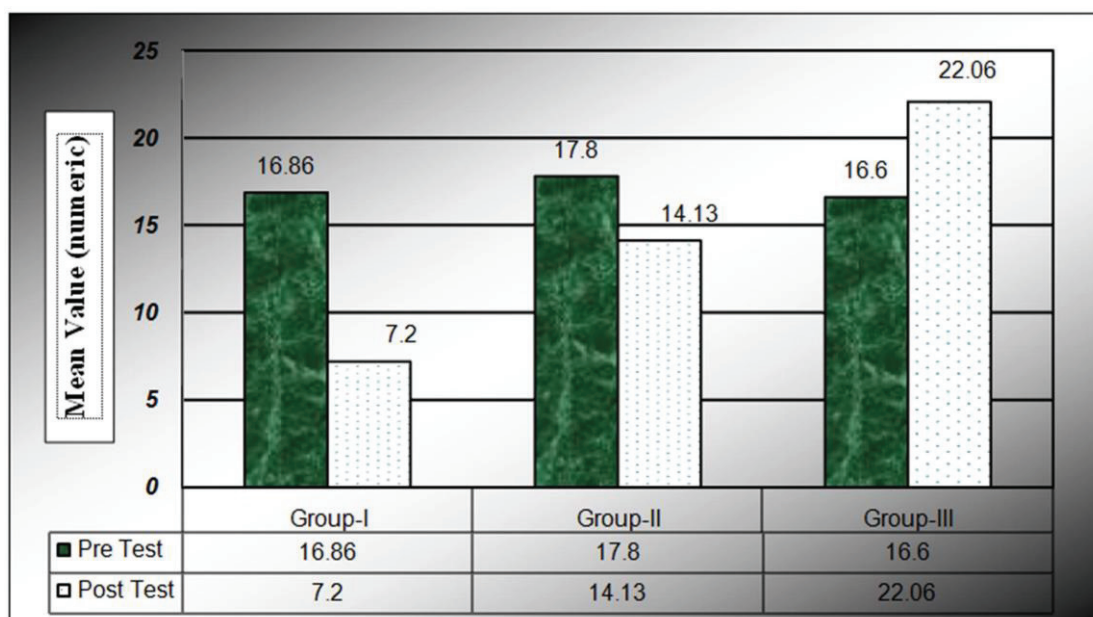

	Group-I	Group-II	Group-III
■ Pre Test	16.86	17.8	16.6
□ Post Test	7.2	14.13	22.06

Figure 55.

4.3.8.1   DISCUSSION ON THE FINDINGS OF ANXIETY

The Table XXIII (A) shows that Scheffe's confidence interval values of Anxiety among Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients.

From the Table XXIII (A) it is clear that the adjusted post mean value of Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients were 7.35, 13.67 and 22.39 respectively.

The mean difference between Yogic practices of Traditional Yoga (Group-I) and Tibetian Yoga (Group-II), Yogic Practices of Traditional Yoga (Group-I) and Control Group (Group-III), Tibetian Yoga (Group-II) and Control Group (Group-III) were 6.32, 15.04 and 8.71 respectively. The required Scheffe's confidence interval to be significant at 0.05 level was 2.56 and the difference between yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients were greater than required confidence interval and hence the groups were significant.

The result of this study on anxiety has in line with the study conducted by **Kosuri M et al. (2009),** who have conducted the study on yoga practice in diabetes improves physical and psychological outcomes and found that the anxiety scores decreased significantly.

4.3.9   RESULTS OF WORK & SOCIAL ADJUSTMENT

The work and social adjustment was measured through Work & Social Adjustment scale designed by Serenity Programme. The Table XXIV shows the variance of work & social adjustment among Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients.

TABLE - XXIV

ANALYSIS OF CO-VARIANCE OF THE MEANS OF TWO
EXPERIMENTAL GROUPS AND CONTROL GROUP
IN WORK & SOCIAL ADJUSTMENT

	Group I	Group II	Group III	Source of variance	Sum of squares	Df	Mean squares	Obtained F-ratio
Pre test mean	25.06	26.06	25.06	Between	10	2	5	0.15
				Within	1364.8	42	32.49	
Post test mean	13.60	20.93	28.66	Between	1702.93	2	851.46	39.47*
				Within	905.87	42	21.56	
Adjusted post test mean	13.83	20.48	28.89	Between	1710.26	2	855.13	130.00*
				Within	269.69	41	6.57	
Mean gain	11.47	5.13	-3.60					

* Significant at 0.05 level of confidence.(Table F ratio at 0.05 level of confidence for 2 and 42 (df)
& 2 and 41 (df) was 3.22 & 3.23)

The obtained F value on pre test scores 0.15 was lesser than the required F value of 3.22 to be significant at 0.05 level. This proved that there was no significant difference between the groups of pre test and the randomization at the pre test was equal.

The post test scores analysis proved that there was significant difference between the groups, as the obtained F value 39.47 was greater than the required F value of 3.22. This proved that the differences between the post test means of the subjects were significant.

Taking into consideration the pre and post test scores among the groups' adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value of 130.00 was greater than the required F value of 3.22. This proved that there was significant differences among the means due to twelve weeks of Yogic practices of Traditional Yoga (Group-I) and Tibetian Yoga (Group-II) on Psychological variable, Work & Social Adjustment.

Since significant improvements were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table XXIV (A).

TABLE - XXIV (A)

SCHEFFE'S POST-HOC TEST FOR WORK & SOCIAL ADJUSTMENT

MEANS			Mean difference	Required C.I
GROUP-I	**GROUP-II**	**GROUP-III**		
13.83	20.48		6.65*	2.71
13.83		28.89	15.06*	2.71
	20.48	28.89	8.41*	2.71

* Significant at 0.05 level of confidence

The multiple mean comparisons shown in Table XXIV (A) proved that there existed significant differences between the adjusted means of Yogic practices of Traditional Yoga (Group-I) and Control Group (Group-III), Tibetian Yoga (Group-II) and Control Group (Group-III). There was significant difference between Yogic practices of Traditional Yoga (Group-I) and Tibetian Yoga (Group-II).

The ordered adjusted means on Work & Social Adjustment were presented through bar diagram for better understanding of the results of this study in Figure 56.

BAR DIAGRAM SHOWING THE MEAN DIFFERENCE AMONG YOGIC PRACTICES OF TRADITIONAL YOGA, TIBETIAN YOGA AND CONTROL GROUP ON WORK & SOCIAL ADJUSTMENT
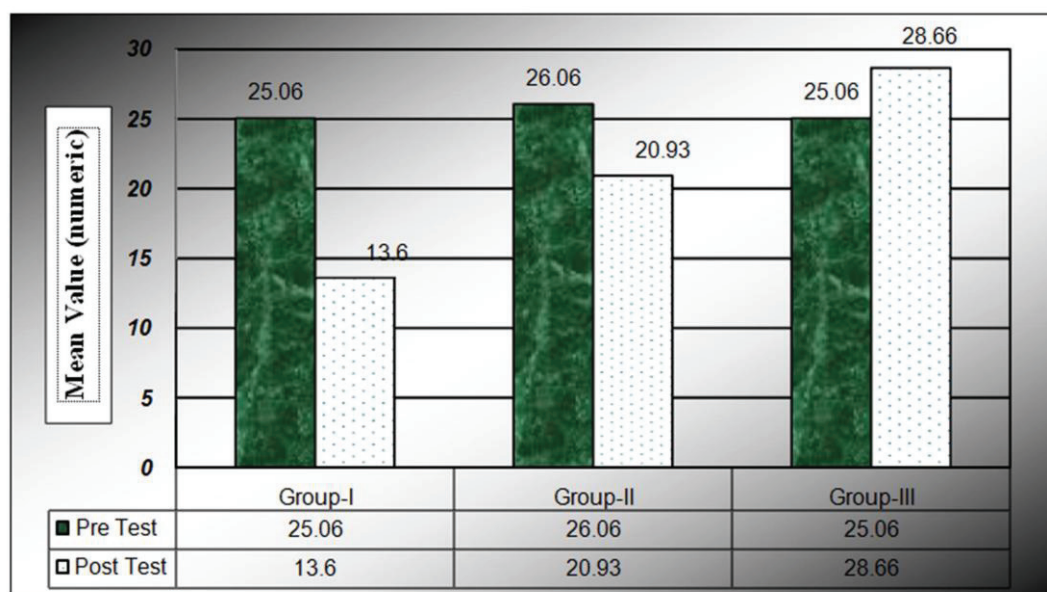

	Group-I	Group-II	Group-III
Pre Test	25.06	26.06	25.06
Post Test	13.6	20.93	28.66

Figure 56.

4.3.9.1   DISCUSSION ON THE FINDINGS OF WORK & SOCIAL ADJUSTMENT

The Table XXIV (A) shows that Scheffe's confidence interval values of work & social adjustment among Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients.

From the Table XXIV (A) it is clear that the adjusted post mean value of Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patientswere13.83, 20.48 and 28.89 respectively.

The mean difference between Yogic practices of Traditional Yoga (Group-I) and Tibetian Yoga (Group-II), Yogic Practices of Traditional Yoga (Group-I) and Control Group (Group-III), Tibetian Yoga (Group-II) and Control

Group (Group-III) were 6.65, 15.06 and 8.41 respectively. The required Scheffe's confidence interval to be significant at 0.05 level was 2.71 and the difference between yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients were greater than required confidence interval and hence the groups were significant.

The result of this study on work & social adjustment has in line with the study conducted by **Tamilselvi B et al. (2013),** who have conducted the study on effects of yoga on adjustment problems of school teachers and found that the adjustment scores increased significantly.

4.3.10   RESULTS OF SATISFACTION WITH LIFE

The Satisfaction with Life was measured through the Satisfaction with Life Scale designed by Diener, Fetzer Inst. The Table XXV shows the variance of Satisfaction with Life among Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients.

TABLE - XXV

ANALYSIS OF CO-VARIANCE OF THE MEANS OF TWO EXPERIMENTAL GROUPS AND CONTROL GROUP IN SATISFACTION WITH LIFE

	Group I	Group II	Group III	Source of variance	Sum of squares	Df	Mean squares	Obtained F-ratio
Pre test mean	16.40	17.20	19.66	Between	86.97	2	43.48	2.72
				Within	669.33	42	15.93	
Post test mean	26.73	21.26	18.33	Between	545.24	2	272.62	17.36*
				Within	659.20	42	15.69	
Adjusted post test mean	27.85	21.73	16.75	Between	833.23	2	416.61	84.75*
				Within	201.54	41	4.91	
Mean gain	-10.33	-4.07	1.33					

* Significant at 0.05 level of confidence. (Table F ratio at 0.05 level of confidence for 2 and 42 (df) & 2 and 41 (df) was 3.22 & 3.23)

The obtained F value on pre test scores 2.72 was lesser than the required F value of 3.22 to be significant at 0.05 level. This proved that there was no significant difference between the groups of pre test and the randomization at the pre test was equal.

The post test scores analysis proved that there was significant difference between the groups, as the obtained F value 17.36 was greater than the required F value of 3.22. This proved that the differences between the post test means of the subjects were significant.

Taking into consideration the pre and post test scores among the groups' adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value of 84.75 was greater than the required F value of 3.22. This proved that there was significant differences among the means due to twelve weeks of Yogic practices of Traditional Yoga (Group-I) and Tibetian Yoga (Group-II) on Psychological variable, Satisfaction with Life.

Since significant improvements were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table XXV (A).

TABLE - XXV (A)

SCHEFFE'S POST-HOC TEST FOR SATISFACTION WITH LIFE

MEANS			Mean difference	Required C.I
Group-I	Group-II	Group-III		
27.85	21.73		6.12*	2.34
27.85		16.75	11.10*	2.34
	21.73	16.75	4.97*	2.34

* Significant at 0.05 level of confidence

The multiple mean comparisons shown in Table XXV (A) proved that there existed significant differences between the adjusted means of Yogic practices of Traditional Yoga (Group-I) and Control Group (Group-III), Tibetian Yoga (Group-II) and Control Group (Group-III). There was significant difference between Yogic practices of Traditional Yoga (Group-I) and Tibetian Yoga (Group-II).

The ordered adjusted means on Satisfaction with Life were presented through bar diagram for better understanding of the results of this study in Figure 57.

BAR DIAGRAM SHOWING THE MEAN DIFFERENCE AMONG YOGIC PRACTICES OF TRADITIONAL YOGA, TIBETIAN YOGA AND CONTROL GROUP ON SATISFACTION WITH LIFE
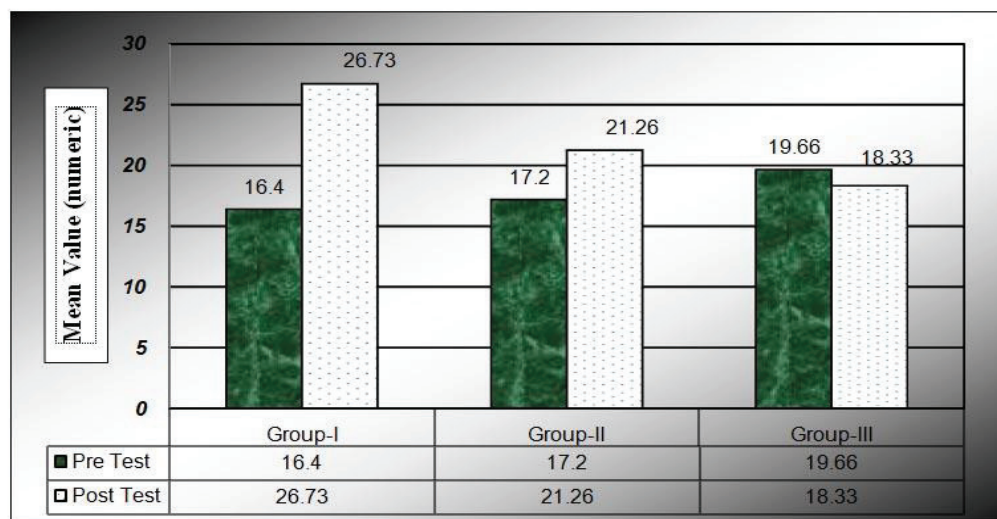

	Group-I	Group-II	Group-III
Pre Test	16.4	17.2	19.66
Post Test	26.73	21.26	18.33

Figure 57.

4.3.10.1 DISCUSSION ON THE FINDINGS OF SATISFACTION WITH LIFE

The Table XXV (A) shows that Scheffe's confidence interval values of Satisfaction with Life among Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients.

From the Table XXV (A) it is clear that the adjusted post mean value of Yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients were 27.85, 21.73 and 16.75 respectively.

The mean difference between Yogic practices of Traditional Yoga (Group-I) and Tibetian Yoga (Group-II), Yogic Practices of Traditional Yoga (Group-I) and Control Group (Group-III), Tibetian Yoga (Group-II) and Control Group (Group-III) were 6.12, 11.10 and 4.97 respectively. The required Scheffe's confidence interval to be significant at 0.05 level was 2.34 and the difference between yogic practices of Traditional Yoga (Group-I), Tibetian Yoga (Group-II) and Control Group (Group-III) of Diabetic patients were greater than required confidence interval and hence the groups were significant.

The result of this study on satisfaction with life has in line with the study conducted by **Schell FJ et al. (1994),** who have conducted the study on Physiological and psychological effects of hatha-yoga exercise in healthy women and found that the life satisfaction scores increased significantly.

4.4   DISCUSSION ON FINDINGS

- The results of the study reveal that there was significant difference on Physiological, Bio-chemical and Psychological Variable among Diabetic Women.

- The result of this study on BMI and Blood Pressure has in line with the study conducted by **Prithviraj Karak et al. (2014).**

- The result of this study on Pulse Rate, Blood Pressure and Anxiety has in line with the study conducted by **Ebnezar J et al. (2012).**

- The result of this study on Blood Sugar Fasting, HbA1c and Total Cholesterol has in line with the study conducted by **Sreedevi Ashwathy et al. (2013).**

- The result of this study on Anxiety and Work & Social Adjustment has in line with the study conducted by **Subbakrishna DK et al. (2012).**

- The result of this study on Satisfaction with Life has in line with the study conducted by **Schell FJ et al. (2012).**

4.5 DISCUSSION ON HYPOTHESIS

It was hypothesized that there would be significant differences due to the practices of Traditional Yoga and Tibetian Yoga on Selected Physiological, Bio-chemical and Psychological Variables among Diabetic Women than the control group.

The results presented in Tables XVI to XXV proved that there was a significant difference due to twelve weeks of Yogic practices of Traditional Yoga (Group-I) and Tibetian Yoga (Group-II) on Physiological variables such as Blood Pressure, Pulse rate & BMI (decreased), Biochemical variables like Fasting Blood Sugar, HbA1c & Total Cholesterol (decreased) and Psychological variables such as Anxiety (reduced), Work & Social Adjustment and Satisfaction with Life (improved) than the Control Group (Group-III). Thus, the first hypothesis was accepted at 0.05 level of significance.

It was hypothesized that there would be significant differences between Traditional Yoga and Tibetian Yoga groups on Selected Physiological, Bio-chemical and Psychological Variables among Diabetic Women.

The post hoc analysis of the results proved that Yogic practices of Traditional Yoga (Group-I) was slightly effective than the Tibetian Yoga (Group-II) in decreasing the Physiological variables such as Blood pressure, Pulse Rate, BMI and in decreasing Bio-chemical variables like Fasting blood sugar, HbA1c, Total Cholesterol and Psychological variable such as Anxiety (reduced), Work & Social Adjustment and Satisfaction with Life improved. Thus the second hypothesis was also accepted at 0.05 level of significance.