

CHAPTER - IV

RESULTS AND DISCUSSIONS

4.1 OVERVIEW

The analysis of data collected from the sample under study is dealt in an elaborate manner in this chapter. Two experimental groups and one control group were analyzed for the differences in health related Physiological, Bio chemical and Psychological components in relation with pre test and post test.

For this study 45men with Type II diabetes, aged between 60 – 70 years were selected from Chennai as the subjects, irrespective of their occupation. The subjects were divided into three groups of 15 each. On the basis of the type of practice given experimental groups I was given Yoga practice with Varma Therapy, experimental group II was given Yoga practices alone without Varma Therapy and the control group was not given any training but were in active rest.

The experimental groups practiced the above practices, six days in a week for a period of twelve weeks. Group-I underwent Yoga Practices with Varma Therapy (n=15) and Group-II underwent Yoga Practices without Varma Therapy (n=15) and Group-III acted as a control group (n=15).

To test the significance of changes made from the pre and post test on the 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 dissertation 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.

4.3 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.

4.4 COMPUTATION OF ANALYSIS OF COVARIANCE AND SCHEFFE'S POST HOC TEST

4.5 RESULTS OF SYSTOLIC BLOOD PRESSURE

The Systolic Blood Pressure was measured through Digital Sphygmomanometer. The Table XIV shows the variance of Systolic Blood Pressure among Yoga Practices with Varma Therapy (Group-I), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III) of aged type II Diabetic men.

TABLE XIV ANALYSIS OF CO-VARIANCE (ANCOVA) OF THE MEANS OF TWO EXPERIMENTAL GROUPS AND THE CONTROL GROUP ON SYSTOLIC BLOOD PRESSURE (Scores in mmHg)

	Group I	Group II	Group III	Source of variance	Sum of squares	Df	Mean squares	Obtained F-ratio
Pre test mean	134.20	135.60	134.20	Between	19.60	2	9.80	0.08
				Within	5264.40	42	125.34	
Post test mean	120.60	127.87	134.60	Between	1470.71	2	735.36	16.39*
				Within	1884.93	42	44.88	
Adjusted post test mean	120.66	127.74	134.66	Between	1470.07	2	735.03	16.82*
				Within	1792.23	41	43.71	

* **Significant at 0.05 level of confidence (The Table value for significant F ratio at 0.05 level of confidence for df 2 and 42 = 3.22, 2 and 41 = 3.23).**

The obtained F value on pre test scores 0.08 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 16.39 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 16.82 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 Yoga Practices with

Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (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 XIV (A).

TABLE XIV (A) SCHEFFE'S POST-HOC TEST FOR SYSTOLIC BLOOD PRESSURE (Scores in mmHg)

MEANS			Mean difference	Required C. I
GROUP-I	GROUP-II	GROUP-III		
120.66	127.74		7.08*	6.14
	127.74	134.66	6.92*	6.14
120.66		134.66	14.00*	6.14

* Significant at 0.05 level of confidence

The multiple mean comparisons shown in Table XIV (A) proved that there existed significant differences between the adjusted means of Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (Group-II), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III), Yoga Practices with Varma Therapy (Group-I) and Control Group (Group-III). There was significant difference between Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (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 55.

BAR DIAGRAM SHOWING THE MEAN DIFFERENCE AMONG YOGA PRACTICES WITH VARMA THERAPY, YOGA PRACTICES WITHOUT THERAPY AND CONTROL GROUP ON SYSTOLIC BLOOD PRESSURE (Scores in mm Hg)

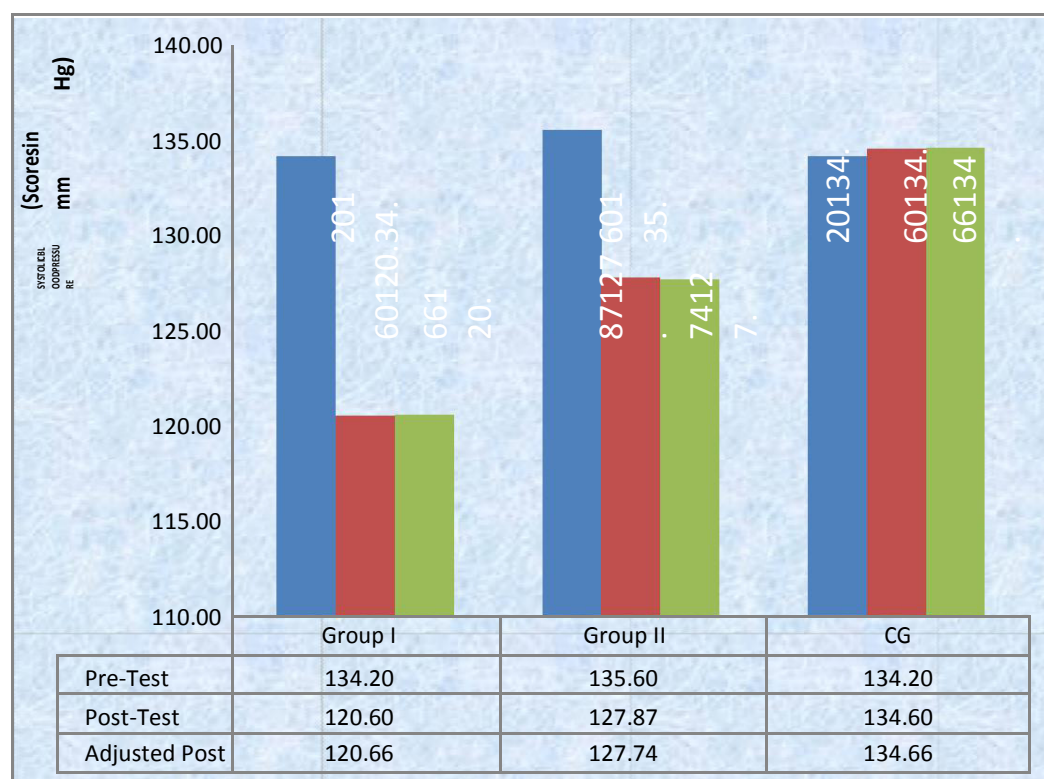


Figure 55

4.5.1 DISCUSSION ON THE FINDINGS OF SYSTOLIC BLOOD PRESSURE

The Table XIV (A) shows that Scheffe's confidence interval values of Systolic Blood Pressure among Yoga Practices with Varma Therapy (Group-I), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III) of Diabetic patients.

From the Table XIV (A) it is clear that the adjusted post mean value of Yoga Practices with Varma Therapy (Group-I), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III) of Diabetic patients were 120.66, 127.74 and

134.66 respectively. The mean difference between Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (Group-II), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III), Yoga Practices with Varma Therapy (Group I) and Control Group (Group-III), were 7.08, 6.92 and 14.00 respectively. The required Scheffe's confidence interval to be significant at 0.05 level was 6.14 and the difference between Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy(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 **Shepal Amod V et. al., (2013)** who has conducted the study on effect of yoga on bio-markers linked with development of diabetes complications in Type II Diabetes Patients and found that systolic and diastolic blood pressure decreased significantly as like the present study.

4.5.2 RESULTS OF DIASTOLIC BLOOD PRESSURE

The Diastolic Blood Pressure was measured through Digital Sphygmomanometer. The Table XV shows the variance of Diastolic Blood Pressure among Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III) of aged Diabetic men.

**TABLE XV ANALYSIS OF CO-VARIANCE OF THE MEANS OF TWO
EXPERIMENTAL GROUPS AND THE CONTROL GROUP
INDIASTOLICBLOOD PRESSURE (Scores in mm Hg)**

	Group- I	Group- II	Group- III	Source of variance	Sum of squares	Df	Mean squares	Obtained F-ratio
Pre test mean	90.13	90.47	88.20	Between	44.93	2	22.47	0.39
				Within	2415.87	42	57.52	
Post test mean	80.67	85.07	88.73	Between	489.38	2	244.69	7.58*
				Within	1355.20	42	32.27	
Adjusted post test mean	80.41	84.65	89.40	Between	598.91	2	299.45	15.16*
				Within	809.68	41	19.75	

* Significant at 0.05 level of confidence (The Table value for significant F ratio at 0.05 level of confidence for df 2 and 42 = 3.22, 2 and 41 = 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 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 7.58 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 15.16 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 Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (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 XV (A).

TABLE XV(A) SCHEFFE'S POST-HOC TEST FOR DIASTOLIC BLOOD PRESSURE (Scores in mm Hg)

MEANS			Mean difference	Required C. I
GROUP-I	GROUP-II	GROUP-III		
80.41	84.65		4.24*	4.12
	84.65	89.40	4.74*	4.12
80.41		89.40	8.99*	4.12

* Significant at 0.05 level of confidence

The multiple mean comparisons shown in Table XV (A) proved that there existed significant differences between the adjusted means of Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (Group-II), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III), Yoga Practices with Varma Therapy (Group-I) and Control Group (Group-III). There was significant difference between Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (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 56.

BAR DIAGRAM SHOWING THE MEAN DIFFERENCE AMONG YOGA PRACTICES WITH VARMA THERAPY, YOGA PRACTICES WITHOUT VARMA THERAPY AND CONTROL GROUP ON DIASTOLIC BLOOD PRESSURE (Scores in mm Hg)

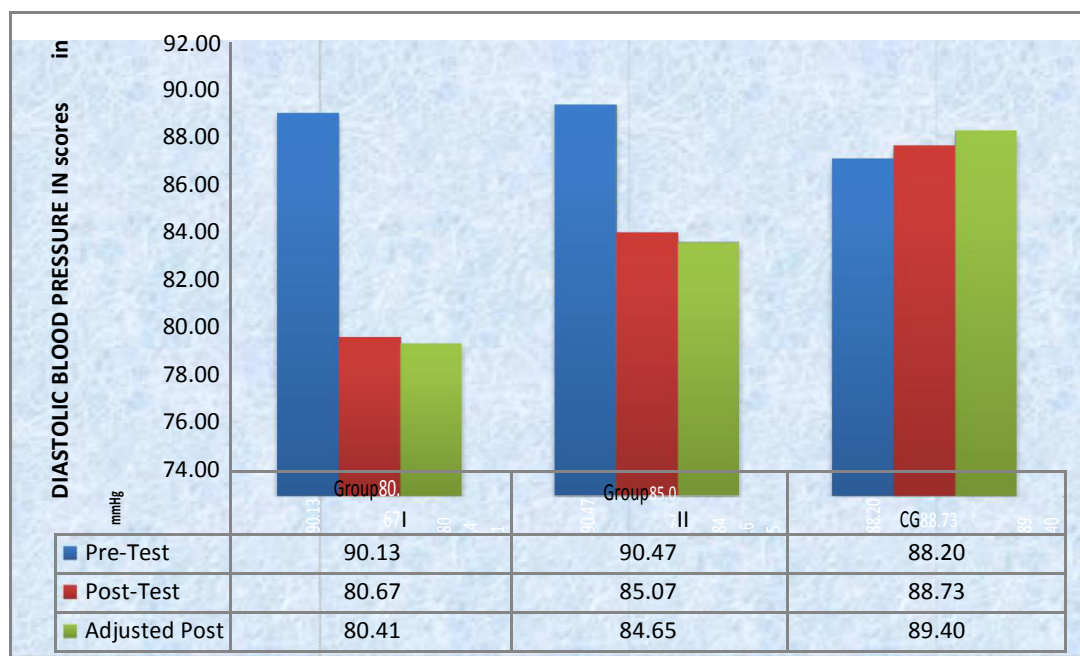


Figure 56

4.5.3 DISCUSSION ON THE FINDINGS OF DIASTOLIC BLOOD PRESSURE

The Table XV (A) shows that Scheffe's confidence interval values of Diastolic Blood Pressure among Yoga Practices with Varma Therapy (Group-I), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III) of Diabetic patients.

From the Table XV (A) it is clear that the adjusted post mean value of Yoga Practices with Varma Therapy (Group-I), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III) of Diabetic patients were 80.41, 84.65 and 89.40 respectively. The mean difference between Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (Group-II), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III), Yoga Practices with

Varma Therapy (Group I) and Control Group (Group-III), were 4.24, 4.74 and 8.99 respectively. The required Scheffe's confidence interval to be significant at 0.05 level was 4.12 and the difference between Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (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 **John Ebnezer et.al., (2012)** who have conducted the study on the effect of integrated Yoga therapy and found that diastolic blood pressure decreased significantly as like the present study.

4.5.4 RESULTS OF RESTING HEART RATE

The Resting Heart Rate was measured through Digital Resting Heart Rate Monitor. The Table XVI shows the variance of Resting Heart Rate among Yoga Practices with Varma Therapy (Group-I), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III) of Diabetic patients.

**TABLE XVI ANALYSIS OF CO-VARIANCE OF THE MEANS OF
TWO EXPERIMENTAL GROUPS AND THE CONTROL
GROUP ON RESTING HEART RATE (Scores in bpm)**

	Group I	Group II	Group III	Source of variance	Sum of squares	Df	Mean squares	Obtained F-ratio
Pre test mean	80.93	80.87	80.00	Between	8.13	2	4.07	0.10
				Within	1650.67	42	39.30	
Post test mean	72.27	77.20	83.33	Between	922.13	2	461.07	12.05*
				Within	1606.67	42	38.25	
Adjusted post test mean	72.04	77.02	83.74	Between	1030.34	2	515.17	25.13*
				Within	840.39	41	20.50	

* Significant at 0.05 level of confidence (The Table value for significant F ratio at 0.05 level of confidence for df 2 and 42 = 3.22, 2 and 41 = 3.23).

The obtained F value on pre test scores 0.10 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 12.05 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 25.13 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 Yoga Practices with

Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (Group-II) on Resting Heart 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 XVI (A).

**TABLE XVI(A) SCHEFFE'S POST-HOC TEST FOR
RESTING HEART RATE (Scores in mmHg)**

MEANS			Mean difference	Required C. I
GROUP-I	GROUP-II	GROUP-III		
72.04	77.02		4.98*	4.20
	77.02	83.74	6.72*	4.20
72.04		83.74	11.70*	4.20

*** 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 Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (Group-II), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III), Yoga Practices with Varma Therapy (Group-I) and Control Group (Group-III). There was significant difference between Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (Group-II).

The ordered adjusted means on Resting Heart Rate were presented through bar diagram for better understanding of the results of this study in Figure 57.

BAR DIAGRAM SHOWING THE MEAN DIFFERENCE AMONG YOGA PRACTICES WITH VARMA THERAPY, YOGA PRACTICES WITHOUT THERAPY AND CONTROL GROUP ON RESTING HEART RATE (Scores in bpm)

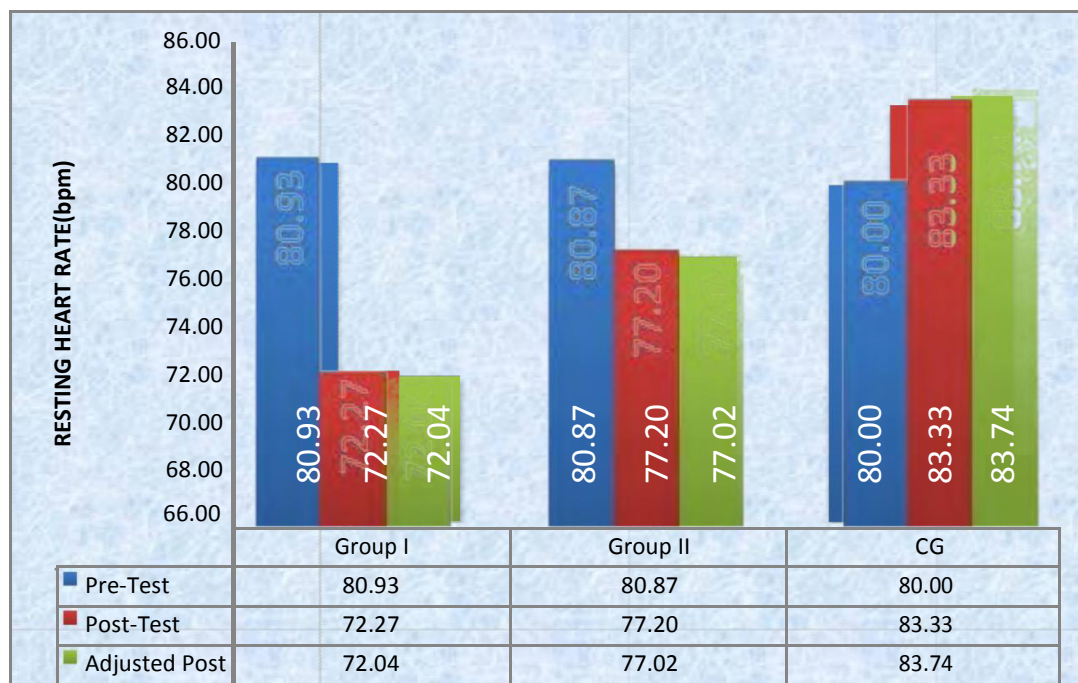


Figure 57

4.5.5 DISCUSSION ON THE FINDINGS OF RESTING HEART RATE

The Table XVI (A) shows that Scheffe's confidence interval values of Resting Heart Rate among Yoga Practices with Varma Therapy (Group-I), Yoga Practices without Varma Therapy (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 Yoga Practices with Varma Therapy (Group-I), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III) of Diabetic patients were 72.04, 77.02 and 83.74 respectively. The mean difference between Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (Group-II), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III), Yoga Practices with

Varma Therapy (Group I) and Control Group (Group-III), were 4.98, 6.72 and 11.70 respectively. The required Scheffe's confidence interval to be significant at 0.05 level was 4.20 and the difference between Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (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 Resting Heart Rate has in line with the study conducted by **Satyanarayana P et.al., (2013)** who have conducted the study on the role of yoga in modifying certain cardiovascular functions in type II diabetic patients and found that the heart rate decreased significantly as like the present study.

4.5.6 RESULTS OF BLOOD SUGAR (FASTING)

The Blood Sugar (Fasting) was measured through Lab Test. The Table XVII shows the variance of Blood Sugar (Fasting) among Yoga Practices with Varma Therapy (Group-I), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III) of Diabetic patients.

TABLE XVII ANALYSIS OF CO-VARIANCE OF THE MEANS OF TWO EXPERIMENTAL GROUPS AND THE CONTROL GROUP ON BLOOD SUGAR (FASTING) (Scores in mg/dL)

	Group I	Group II	Group III	Source of variance	Sum of squares	Df	Mean squares	Obtained F-ratio
Pre test mean	123.80	123.40	123.53	Between	1.24	2	0.62	0.03
				Within	845.73	42	20.14	
Post test mean	112.73	119.40	125.67	Between	1254.93	2	627.47	23.83*
				Within	1105.87	42	26.33	
Adjusted post test mean	112.64	119.47	125.69	Between	1276.49	2	638.24	27.36*
				Within	956.46	41	23.33	

* Significant at 0.05 level of confidence (The Table value for significant F ratio at 0.05 level of confidence for df 2 and 42 = 3.22, 2 and 41 = 3.23).

The obtained F value on pre test scores 0.03 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 23.83 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 27.36 was greater than the required F value of 3.22. This proved that there was significant difference among the means due to twelve weeks of Yoga Practices with Varma Therapy (Group-I), Yoga Practices without Varma Therapy (Group-II) on Bio-chemical Variable, Blood Sugar (Fasting)

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 BLOOD SUGAR (FASTING) (Scores in mg/dL)

MEANS			Mean difference	Required C. I
GROUP-I	GROUP-II	GROUP-III		
112.64	119.47		6.83*	4.48
	119.47	125.69	6.21*	4.48
112.64		125.69	13.05*	4.48

* 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 Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (Group-II), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III), Yoga Practices with Varma Therapy (Group-I) and Control Group (Group-III). There was significant difference between Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (Group-II).

The ordered adjusted means on Blood Sugar (Fasting) were presented through bar diagram for better understanding of the results of this study in Figure 58.

BAR DIAGRAM SHOWING THE MEAN DIFFERENCE AMONG YOGA PRACTICES WITH VARMA THERAPY, YOGA PRACTICES WITHOUT THERAPY AND CONTROL GROUP ON BLOOD SUGAR (FASTING) (Scores in mg/dL)

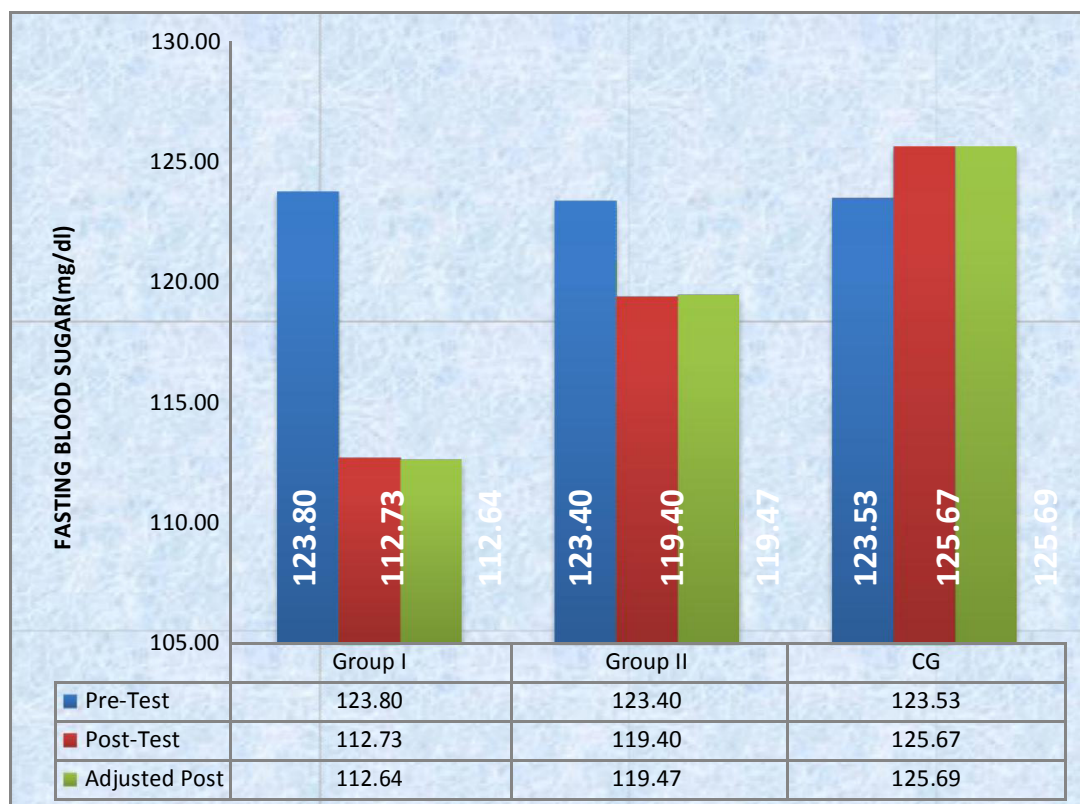


Figure 58

4.5.7 DISCUSSION ON THE FINDINGS OF BLOOD SUGAR (FASTING)

The Table XVII(A) shows that Scheffe's confidence interval values of Blood Sugar (Fasting) among Yoga Practices with Varma Therapy (Group-I), Yoga Practices without Varma Therapy (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 Yoga Practices with Varma Therapy (Group-I), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III) of Diabetic patients were 112.64, 119.47 and 125.69 respectively.

The mean difference between Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (Group-II), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III), Yoga Practices with Varma Therapy (Group I) and Control Group (Group-III), were 6.83, 6.21 and 13.05 respectively. The required Scheffe's confidence interval to be significant at 0.05 level was 4.48 and the difference between Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (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 **Vizcaino M (2013)** who have conducted the study on effect of hata yoga practice for Type II Diabetes Mellitus patients and found that the fasting blood glucose level decreased significantly as like the present study.

4.5.8 RESULTS OF HbA1c

The HbA1c was measured through Lab test. The Table XVIII shows the variance of HbA1c among Yoga Practices with Varma Therapy (Group-I), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III) of Diabetic patients.

TABLE XVIII - ANALYSIS OF CO-VARIANCE OF THE MEANS OF TWO EXPERIMENTAL GROUPS AND THE CONTROL GROUP ON HbA1c (Scores in %)

	Group I	Group II	Group III	Source of variance	Sum of squares	Df	Mean squares	Obtained F-ratio
Pre test mean	8.91	8.71	8.79	Between	0.30	2	0.15	0.33
				Within	19.16	42	0.46	
Post test mean	6.91	7.47	8.76	Between	27.11	2	13.55	26.48*
				Within	21.50	42	0.51	
Adjusted post test mean	6.86	7.51	8.77	Between	28.17	2	14.08	33.40*
				Within	17.29	41	0.42	

* Significant at 0.05 level of confidence (The Table value for significant F ratio at 0.05 level of confidence for df 2 and 42 = 3.22, 2 and 41 = 3.23).

The obtained F value on pre test scores 0.33 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 26.48 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 33.40 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 Yoga Practices with Varma Therapy (Group-I), Yoga Practices without Varma Therapy (Group-II) on Bio-chemical 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 XVIII (A).

**TABLE XVIII (A) SCHEFFE'S POST-HOC TEST FOR
HbA1c (Scores in %)**

MEANS			Mean difference	Required C. I
GROUP-I	GROUP-II	GROUP-III		
6.86	7.51		0.65*	0.60
	7.51	8.77	1.26*	0.60
6.86		8.77	1.91*	0.60

*** 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 Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (Group-II), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III), Yoga Practices with Varma Therapy (Group-I) and Control Group (Group-III). There was significant difference between Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (Group-II).

The ordered adjusted means on HbA1c were presented through bar diagram for better understanding of the results of this study in Figure 59.

BAR DIAGRAM SHOWING THE MEAN DIFFERENCE AMONG YOGA PRACTICES WITH VARMA THERAPY, YOGA PRACTICES WITHOUT THERAPY AND CONTROL GROUP ON HbA1c (Scores in %)

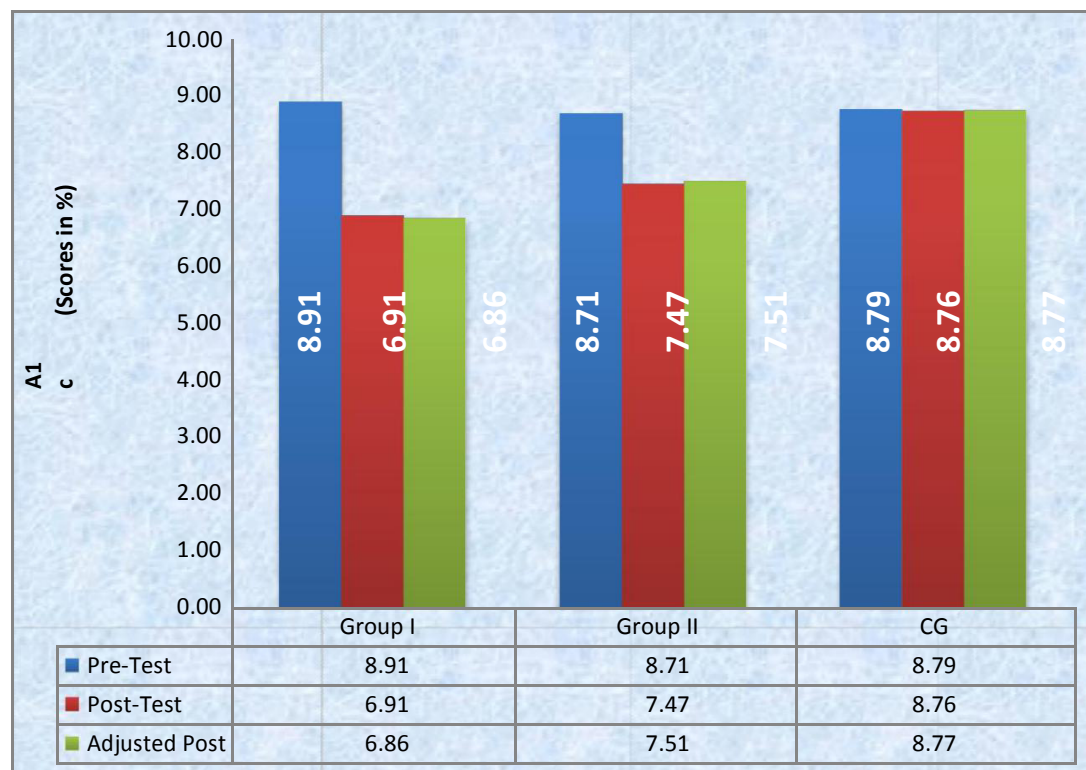


Figure 59

4.5.9 DISCUSSION ON THE FINDINGS OF HbA1c

The Table XVIII (A) shows that Scheffe's confidence interval values of HbA1c among Yoga Practices with Varma Therapy (Group-I), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III) of Diabetic patients.

From the Table XVIII (A) it is clear that the adjusted post mean value of Yoga Practices with Varma Therapy (Group-I), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III) of Diabetic patients were 6.86, 7.51 and 8.77 respectively. The mean difference between Yoga Practices with Varma

Therapy(Group-I) and Yoga Practices without Varma Therapy (Group-II), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III), Yoga Practices with Varma Therapy (Group I) and Control Group (Group-III), were 0.65, 1.26 and 1.91 respectively. The required Scheffe's confidence interval to be significant at 0.05 level was 0.60 and the difference between Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (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 **Beena R K, et.al., (2013)**, who have conducted the study on influence of yogic practice and Diabetes Mellitus in geriatric patients and found that the HbA1c decreased significantly as like the present study.

4.5.10 RESULTS OF BLOOD UREA

The blood urea was measured through Lab test. The Table XIX shows the variance of Blood Urea among Yoga Practices with Varma Therapy (Group-I), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III) of Diabetic patients.

TABLE XIX ANALYSIS OF CO-VARIANCE OF THE MEANS OF TWO EXPERIMENTAL GROUPS AND THE CONTROL GROUP ON BLOOD UREA (Scores in mg/dL)

	Group I	Group II	Group III	Source of variance	Sum of squares	Df	Mean squares	Obtained F-ratio
Pre test mean	24.05	24.45	24.09	Between	1.43	2	0.71	0.09
				Within	330.81	42	7.88	
Post test mean	21.38	23.08	24.77	Between	86.02	2	43.01	19.35*
				Within	93.36	42	2.22	
Adjusted post test mean	21.40	23.04	24.79	Between	85.76	2	42.88	21.02*
				Within	83.66	41	2.04	

* Significant at 0.05 level of confidence (The Table value for significant F ratio at 0.05 level of confidence for df 2 and 42 = 3.22, 2 and 41 = 3.23).

The obtained F value on pre test scores 0.09 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 at 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 19.35 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 21.02 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 Yoga Practices with Varma Therapy (Group-I), Yoga Practices without Varma Therapy (Group-II) on Bio-chemical variable, Blood Urea.

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
BLOOD UREA (Scores in mg/dL)**

MEANS			Mean difference	Required C. I
GROUP-I	GROUP-II	GROUP-III		
21.40	23.04		1.63*	1.33
	23.04	24.79	1.75*	1.33
21.40		24.79	3.38*	1.33

*** 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 Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (Group-II), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III), Yoga Practices with Varma Therapy (Group-I) and Control Group (Group-III). There was significant difference between Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (Group-II).

The ordered adjusted means on Blood Urea were presented through bar diagram for better understanding of the results of this study in Figure 60.

BAR DIAGRAM SHOWING THE MEAN DIFFERENCE AMONG YOGA PRACTICES WITH VARMA THERAPY, YOGA PRACTICES WITHOUT THERAPY AND CONTROL GROUP ON BLOOD UREA (Scores in mg/dL)

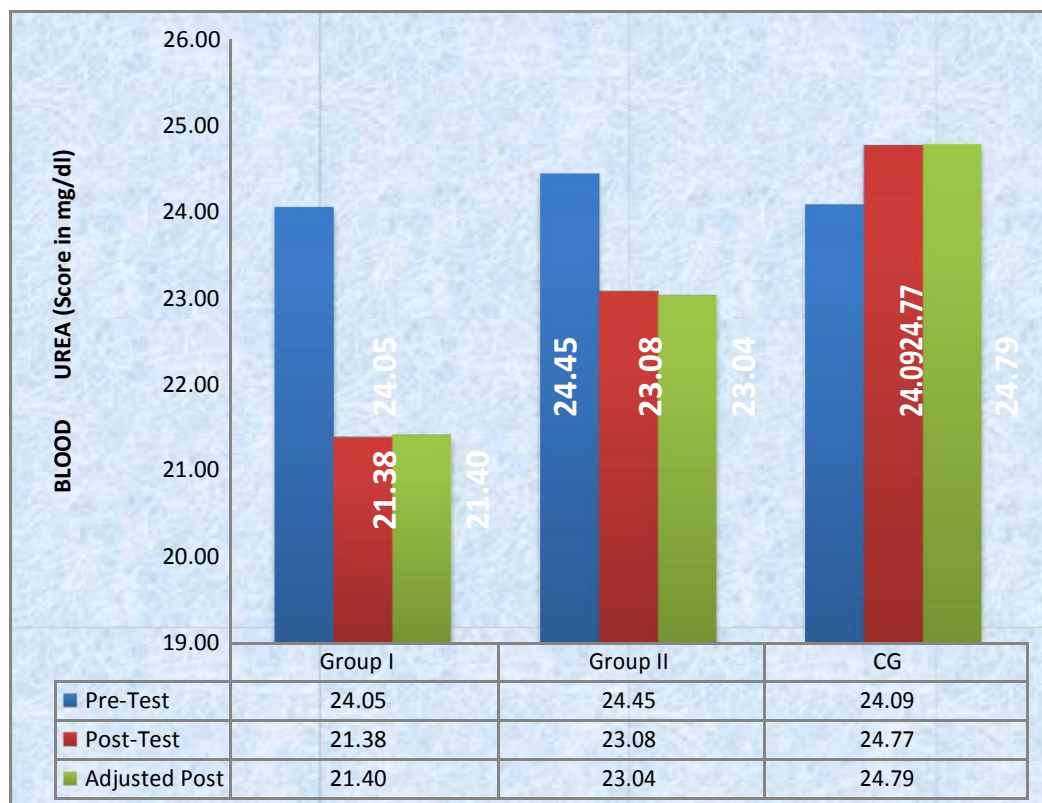


Figure 60

4.5.11 DISCUSSION ON THE FINDINGS OF BLOOD UREA

The Table XIX (A) shows that Scheffe's confidence interval values of Blood Urea among Yoga Practices with Varma Therapy (Group-I), Yoga Practices without Varma Therapy (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 Yoga Practices with Varma Therapy (Group-I), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III) of Diabetic patients were 21.40, 23.04 and 24.79 respectively. The mean difference between Yoga Practices with Varma Therapy

(Group-I) and Yoga Practices without Varma Therapy (Group-II), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III), Yoga Practices with Varma Therapy (Group I) and Control Group (Group-III), were 1.63, 1.75 and 3.38 respectively. The required Scheffe's confidence interval to be significant at 0.05 level was 1.33 and the difference between Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy(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 blood urea has in line with the study conducted by **Himashree G et.al., (2016)** improved Physiological and Bio-chemical Status at High Altitude and found that the blood glucose and blood urea decreased significantly as like the present study.

4.5.12 RESULTS OF ANXIETY

The Anxiety was measured through Taylor's Manifest Anxiety Scale. The Table XX shows the variance of Anxiety among Yoga Practices with Varma Therapy (Group-I), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III) of Diabetic patients.

TABLE XX ANALYSIS OF CO-VARIANCE OF THE MEANS OF TWO EXPERIMENTAL GROUPS AND THE CONTROL GROUP ON ANXIETY (in Scores)

	Group I	Group II	Group III	Source of variance	Sum of squares	Df	Mean squares	Obtained F-ratio
Pre test mean	19.00	17.87	17.07	Between	28.31	2	14.16	0.87
				Within	686.67	42	16.35	
Post test mean	7.93	13.67	22.93	Between	1718.71	2	859.36	65.96*
				Within	547.20	42	13.03	
Adjusted post test mean	7.59	13.70	23.24	Between	1796.29	2	898.15	78.48*
				Within	469.22	41	11.44	

* **Significant at 0.05 level of confidence (The Table value for significant F ratio at 0.05 level of confidence for df 2 and 42 = 3.22, 2 and 41 = 3.23).**

The obtained F value on pre test scores 0.87 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 obtained F value 65.96 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 78.48 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 Yoga Practices with

Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (Group-II) on Psychological variable, Anxiety.

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 ANXIETY (in Scores)

MEANS			Mean difference	Required C. I
GROUP-I	GROUP-II	GROUP-III		
7.59	13.70		6.12*	3.14
	13.70	23.24	9.54*	3.14
7.59		23.24	15.65*	3.14

* 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 Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (Group-II), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III), Yoga Practices with Varma Therapy (Group-I) and Control Group (Group-III). There was significant difference between Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (Group-II).

The ordered adjusted means on Anxiety were presented through bar diagram for better understanding of the results of this study in Figure 61.

**BAR DIAGRAM SHOWING THE MEAN DIFFERENCE AMONG
YOGA PRACTICES WITH VARMA THERAPY, YOGA PRACTICES
WITHOUT THERAPY AND CONTROL GROUP ON ANXIETY (in Scores)**

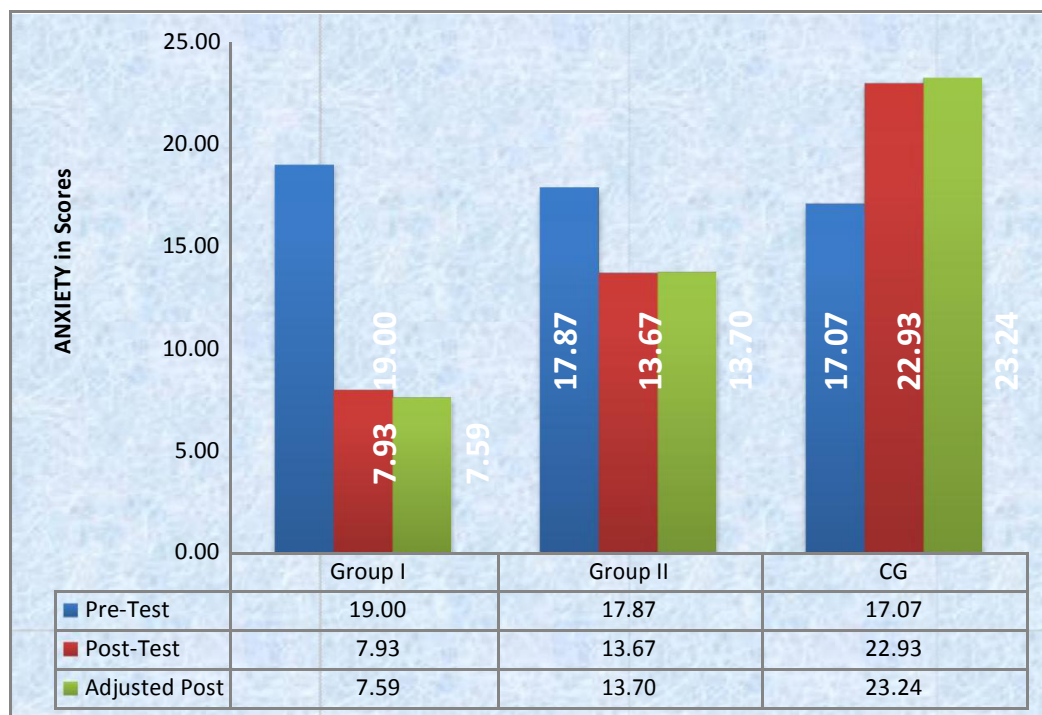


Figure 61

4.5.13 DISCUSSION ON THE FINDINGS OF ANXIETY

The Table XX (A) shows that Scheffe's confidence interval values of Anxiety among Yoga Practices with Varma Therapy (Group-I), Yoga Practices without Varma Therapy (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 Yoga Practices with Varma Therapy (Group-I), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III) of Diabetic patients were 7.59, 13.70 and 23.24 respectively. The mean difference between Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (Group-II), Yoga Practices

without Varma Therapy (Group-II) and Control Group (Group-III), Yoga Practices with Varma Therapy (Group I) and Control Group (Group-III), were 6.12, 9.54 and 15.65 respectively. The required Scheffe's confidence interval to be significant at 0.05 level was 3.14 and the difference between Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (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)** improved physical and psychological outcomes and found that the anxiety scores decreased significantly as like the present study.

4.5.14 RESULTS OF ADJUSTMENT

The adjustment was measured through H. S. Asthana – Adjustment Inventory Scale & Questionnaire. The Table XXI shows the variance in adjustment among Yoga Practices with Varma Therapy (Group-I), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III) of Diabetic patients.

TABLE XXI ANALYSIS OF CO-VARIANCE (ANCOVA) OF THE MEANS OF TWO EXPERIMENTAL GROUPS AND THE CONTROL GROUP ON ADJUSTMENT (in Scores)

	Group I	Group II	Group III	Source of variance	Sum of squares	Df	Mean squares	Obtained F-ratio
Pre test mean	25.36	25.40	25.73	Between	36.93	2	18.47	0.44
				Within	1743.87	42	41.52	
Post test mean	30.73	27.33	20.80	Between	764.58	2	382.29	15.61*
				Within	1028.67	42	24.49	
Adjusted post test mean	30.82	27.39	20.66	Between	932.59	2	466.29	46.52*
				Within	410.98	41	10.02	

* **Significant at 0.05 level of confidence (The Table value for significant F ratio at 0.05 level of confidence for df 2 and 42 = 3.22, 2 and 41 = 3.23).**

The obtained F value on pre test scores 0.44 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 15.61 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 46.52 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 Yoga Practices with

Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (Group-II) on Psychological variable, 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 XXI(A).

TABLE XXI (A) SCHEFFE'S POST-HOC TEST FOR ADJUSTMENT (in Scores)

MEANS			Mean difference	Required C. I
GROUP-I	GROUP-II	GROUP-III		
30.82	27.39		3.43*	2.94
	27.39	20.66	6.73*	2.94
30.82		20.66	10.16*	2.94

* **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 Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (Group-II), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III), Yoga Practices with Varma Therapy (Group-I) and Control Group (Group-III). There was significant difference between Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (Group-II).

The ordered adjusted means on Adjustment were presented through bar diagram for better understanding of the results of this study in Figure 62.

**BAR DIAGRAM SHOWING THE MEAN DIFFERENCE AMONG
YOGA PRACTICES WITH VARMA THERAPY, YOGA PRACTICES
WITHOUT THERAPY AND CONTROL GROUP ON ADJUSTMENT (in
Scores)**

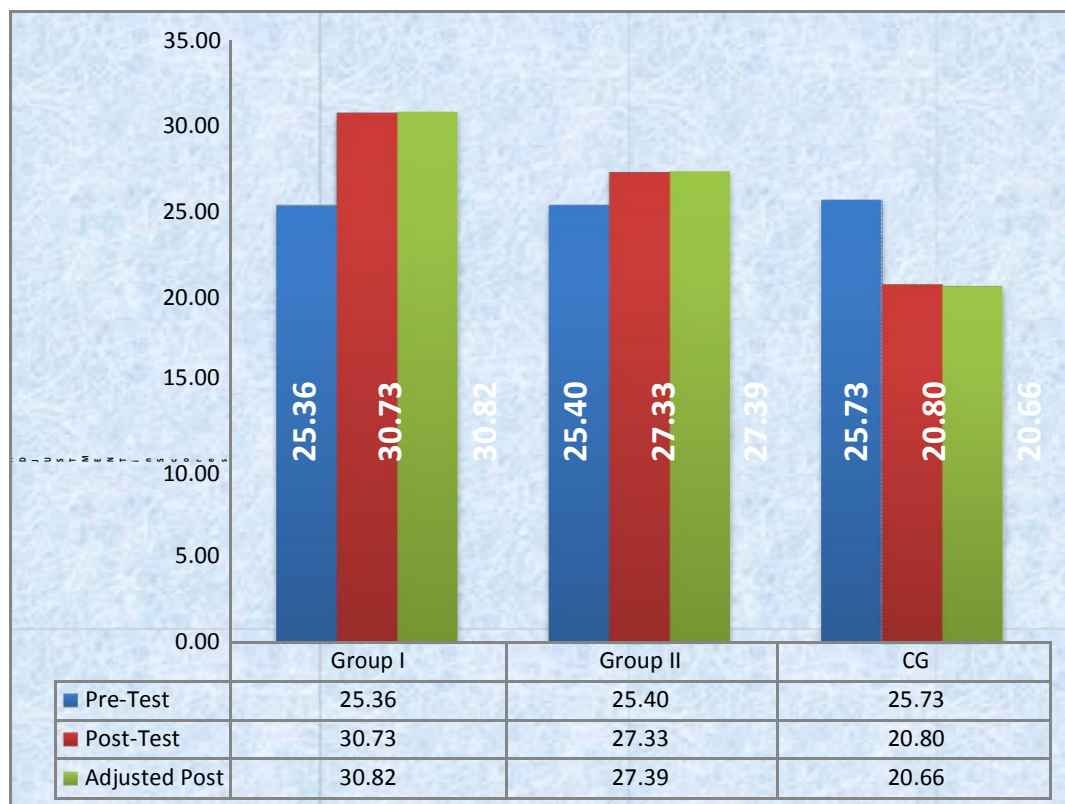


Figure 62

4.5.15 DISCUSSION ON THE FINDINGS OF ADJUSTMENT

The Table XXI(A) shows that Scheffe's confidence interval values of Adjustment among Yoga Practices with Varma Therapy (Group-I), Yoga Practices without Varma Therapy (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 Yoga Practices with Varma Therapy (Group-I), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III) of Diabetic patients were 30.82, 27.39 and 20.66 respectively. The mean difference between Yoga Practices with Varma Therapy

(Group-I) and Yoga Practices without Varma Therapy (Group-II), Yoga Practices without Varma Therapy (Group-II) and Control Group (Group-III), Yoga Practices with Varma Therapy (Group I) and Control Group (Group-III), were 3.43, 6.73 and 10.16 respectively. The required Scheffe's confidence interval to be significant at 0.05 level was 2.94 and the difference between Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (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 adjustment has in line with the study conducted by **Himmat J Narke (2015)** found that the adjustment scores increased significantly.

4.6 DISCUSSION ON HYPOTHESIS

It was hypothesized that there would be significant differences due to the practices of Yogawith Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (Group-II) on Physiological, Bio-chemical and Psychological Variables among Diabetic aged men than the control group.

The results presented in Tables XIV to XXI proved that there were significant differences due to twelve weeks of Yoga Practices with Varma Therapy (Group-I) and Yoga Practices without Varma Therapy (Group-II) on Physiological variables such as Blood Pressure (Systolic), Blood Pressure (Diastolic) and Resting Heart Rate (all decreased), Bio-chemical Variables like Blood Sugar (Fasting), HbA1c and Blood Urea (all decreased)and Psychological variables such as Anxiety (reduced), Adjustment (improved) than the Control Group (Group-III). Thus, the hypothesis was accepted at 0.05 level of confidence.

It was hypothesized that there would be significant differences between Yoga Practices with Varma Therapy and Yoga Practices without Varma Therapy groups on Selected Physiological, Bio-chemical and Psychological Variables among Diabetic aged Men.

The post hoc analysis of the results proved that Yoga Practices with Varma Therapy (Group-I) were considerably effective than Yoga Practices without Varma Therapy (Group-II) in decreasing the Physiological variables such as Blood Pressure (Systolic), Blood Pressure (Diastolic) and decreasing Resting Heart Rate, decreasing Bio-chemical Variables like Blood Sugar (Fasting), HbA1c and Blood Urea and Psychological variables such as Anxiety reduced and Adjustment improved. Thus the hypothesis was accepted at 0.05 level of confidence.