

## Chapter IV

# RESULTS AND DISCUSSIONS

### 4.1 OVERVIEW

This chapter deals with the analysis of data collected from the samples under study. The purpose of the study was to analyze the varma and yoga therapy on selected physiological, bio-chemical and psychological variables among diabetic patients. To achieve the purpose of the study, 90 male diabetic patients were selected from Chennai city, at random and their age ranged from 40-55 years. The selected subjects were divided into three groups namely VTG, YTG and CG with thirty subjects each. The criterion variables namely resting pulse rate, systolic and diastolic blood pressure, total cholesterol, blood glucose, stress and self-confidence were assessed prior to and immediately after the training period by using the standardized test items. The experimental design used in this study was pre and post test random group design involving 90 subjects. The Experimental groups participated in their respective training programme for a period of 12 weeks. No attempt was made to equate the groups in any manner. Hence, to make adjustments for difference in the initial means and to test the adjusted post test means for significant differences among the groups. The collected data were analyzed by using Analysis of Covariance (ANCOVA). Whenever the 'F' ratio was found to be significant, Scheffe's test was used as post-hoc test to determine which of the paired means differed significantly. In all cases the criterion for statistical significance was set at 0.05 level of confidence ( $P < 0.05$ ).

## **4.2 Test of Significance**

This was the crucial portion of the thesis in arriving at the hypothesis, which was ended either by accepting the hypothesis or rejecting the same in accordance with the result obtained in relation to the level of confidence fixed by the investigator.

## **4.3. Level of Significance**

The probability level below which we reject the hypotheses is termed as level of significance. The F- ratio obtained by analysis of covariance was compared to 0.05 levels of significance which were considered adequate. In using analysis of covariance, F ratio of 3.10 needed for significance at 0.05 levels with the degrees of freedom 2 and 87; and 2 and 86 and table value required for significance at 0.05 level. If the present study, the obtained values were greater than the table value at 0.05 levels, the null hypotheses were rejected and if they obtained values were less than the required value at 0.05 levels. The null hypotheses were accepted to the effects that there existed no significant difference among the means of the groups under study.

## **4.4 Computation of Analysis of Covariance and Scheffe's Post Hoc Test on Resting pulse rate**

The Analysis of Covariance on the data obtained for resting pulse rate of pre and post-test of COM, SSG, MSBG and CG have been presented in table VII.

**TABLE VII**  
**ANALYSIS OF COVARIANCE OF DATA ON RESTING PULSE RATE**  
**AMONG VTG YTG AND CG**

Tests/ Groups		VTG	YTG	CG	S O V	SS	df	MS	“F” Ratio
Pre test	M	77.5	74.73	77.4	B	147.7556	2	73.87778	8.7*
	$\sigma$	2.71	3.26	2.74	W	738.5667	87	8.489272	
Post test	M	74.53	71.13	76.73	B	477.6	2	238.8	26.21*
	$\sigma$	3.06	3.39	2.55	W	792.8	87	9.112644	
Adjusted post test		73.635	72.835	75.93	B	142.8878	2	71.44389	43.83*
					W	140.1762	86	1.629956	

\* Significant at .05 level of confidence (Resting pulse rate in beats/minute)  
(The table value required for 0.05 level of significance with df 2, 87 and 2, 87 are 3.10)

#### 4.4.1 Results of Resting pulse rate

Table VII shows that the pre-test means in resting pulse rate timing of the VTG, YTG and CG were 77.5, 74.73 and 77.4 respectively, resulted in an “F” ratio of 8.7, which indicates statistically significant difference between the pre test means at 0.05 level of confidence. The post test means of VTG, YTG and CG were 74.53, 71.13 and 76.73 respectively, resulted in an “F” ratio of 26.21, which indicates statistically significant difference between the post test means at 0.05 level of confidence. The adjusted post-test means of VTG, YTG and CG were 73.635, 72.835 and 75.93 respectively. The obtained F-ratio value was 43.83, which was higher than the table value of 3.10 for df 2 and 86 required for significance at 0.05 level. It indicates that there was a significant difference among the adjusted post test means of resting pulse rate timings of the VTG, YTG and CG.

To find out which of the paired means had a significant difference, the Scheffe’s post-hoc test is applied and the results are presented in table VIII.

**TABLE VIII**  
**SCHEFFE'S TEST FOR DIFFERENCES OF THE ADJUSTED**  
**POST-TEST PAIRED MEANS OF RESTING PULSE RATE**

Adjusted Post-test means			Mean Differences	Confidence Interval
VTG	YTG	CG		
73.635	72.835		0.8*	0.80
73.635		75.93	2.295*	0.80
	72.835	75.93	3.095*	0.80

\* Significant at 0.05 level.

#### 4.4.2. Results of Scheffe's Test on Resting pulse rate

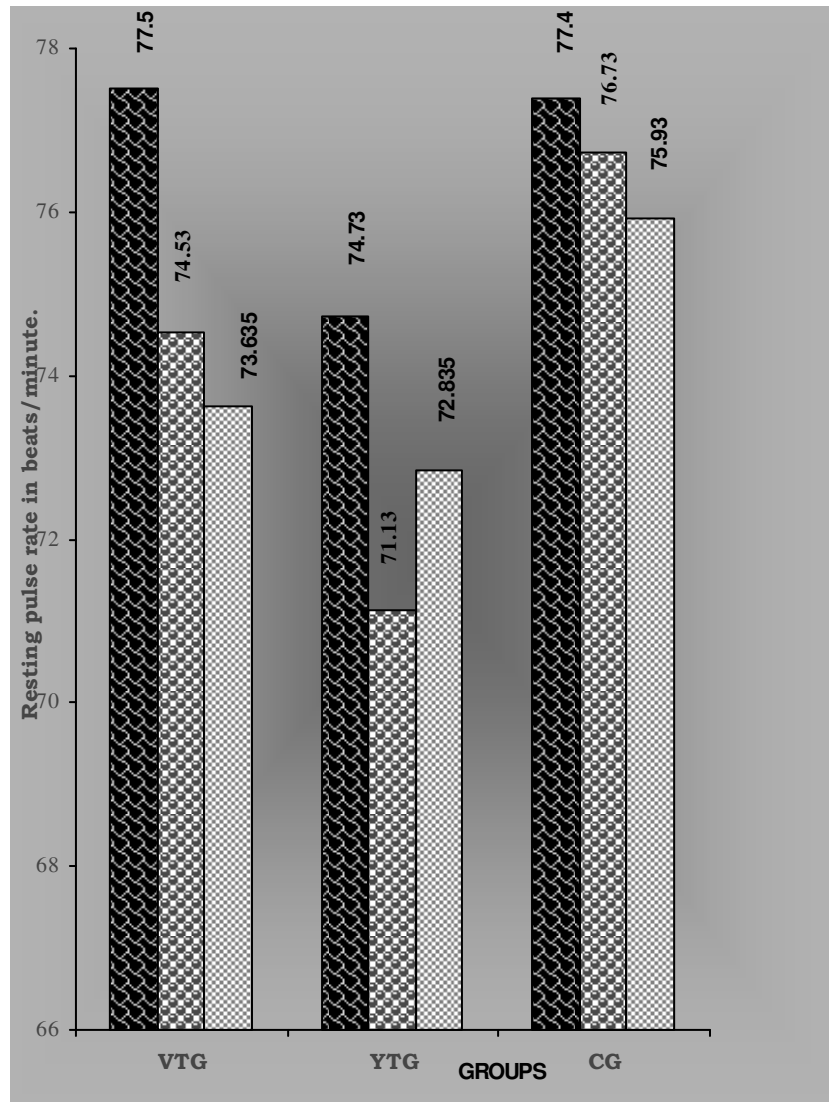
Table VIII shows that the adjusted post-test mean difference in resting pulse rate between VTG and YTG, VTG and CG and between YTG and CG are 0.8, 2.295 and 3.095 respectively, which were statistically significant at 0.05 level of confidence. However, YTG was to be found better in reduce the resting pulse rate timing than the VTG.

#### 4.4.3. Discussion on Findings on Resting pulse rate

The findings of the study on resting pulse rate reveal that the experimental group namely VTG and YTG had significantly improved after the training. Besides, the results of the study indicated that there was a significant difference between the VTG and YTG. YTG training showed better results in resting pulse rate than the VTG.

A systematic varma and yogic therapy decrease the resting pulse rate. The present study is very well supported by the renowned experts **Ebnezar, et al., (2012)**, **Telles, et al., (2011)** and **Pramanik, et al., (2009)**.

The pre test, post test and adjusted post-test mean values of VTG, YTG and CG on resting pulse rate performance are graphically presented in figure I.



**FIGURE I: RESTING PULSE RATE OF THE VTG, YTG AND THE CONTROL GROUPS (CG)**

#### 4.5.Computation of Analysis of Covariance and Scheffe's Post Hoc Test on Systolic blood pressure

The Analysis of Covariance on the data obtained for systolic blood pressure of pre and post-test of COM, SSG, MSBG and CG have been presented in table IX.

**TABLE IX**  
**ANALYSIS OF COVARIANCE OF DATA ON SYSTOLIC BLOOD PRESSURE AMONG VTG YTG AND CG**

Tests/ Groups		VTG	YTG	CG	S O V	SS	df	MS	"F" Ratio
Pre test	M	126.7	125.9	127.03	B	20.35556	2	10.17778	0.69
	$\sigma$	3.71	4.34	3.41	W	1285.967	87	14.78123	
Post test	M	123.27	121.37	126.07	B	335.4	2	167.7	20.02*
	$\sigma$	2.79	2.57	3.28	W	728.7	87	8.375862	
Adjusted post test		123.188	121.69	125.821	B	258.9348	2	129.4674	27.51*
					W	404.7537	86	4.706438	

\* Significant at .05 level of confidence (Systolic blood pressure in mm.Hg)  
(The table value required for 0.05 level of significance with df 2, 87 and 2, 87 are 3.10)

##### 4.5.1 Results of Systolic blood pressure

Table IX shows that the pre-test means in systolic blood pressure timing of the VTG, YTG and CG were 126.7, 125.9 and 127.03 respectively, resulted in an "F" ratio of 0.69, which indicates statistically no significant difference between the pre test means at 0.05 level of confidence. The post test means of VTG, YTG and CG were 123.27, 121.37 and 126.07 respectively, resulted in an "F" ratio of 20.02, which indicates statistically significant difference between the post test means at 0.05 level of confidence. The adjusted post-test means of VTG, YTG and CG were 123.188, 121.69 and 125.821 respectively. The obtained F-ratio value was 27.51, which was

higher than the table value of 3.10 for df 2 and 86 required for significance at 0.05 level. It indicates that there was a significant difference among the adjusted post test means of systolic blood pressure timings of the VTG, YTG and CG.

To find out which of the paired means had a significant difference, the Scheffe's post-hoc test is applied and the results are presented in table X.

**TABLE X**  
**SCHEFFE'S TEST FOR DIFFERENCES OF THE ADJUSTED**  
**POST-TEST PAIRED MEANS OF SYSTOLIC BLOOD PRESSURE**

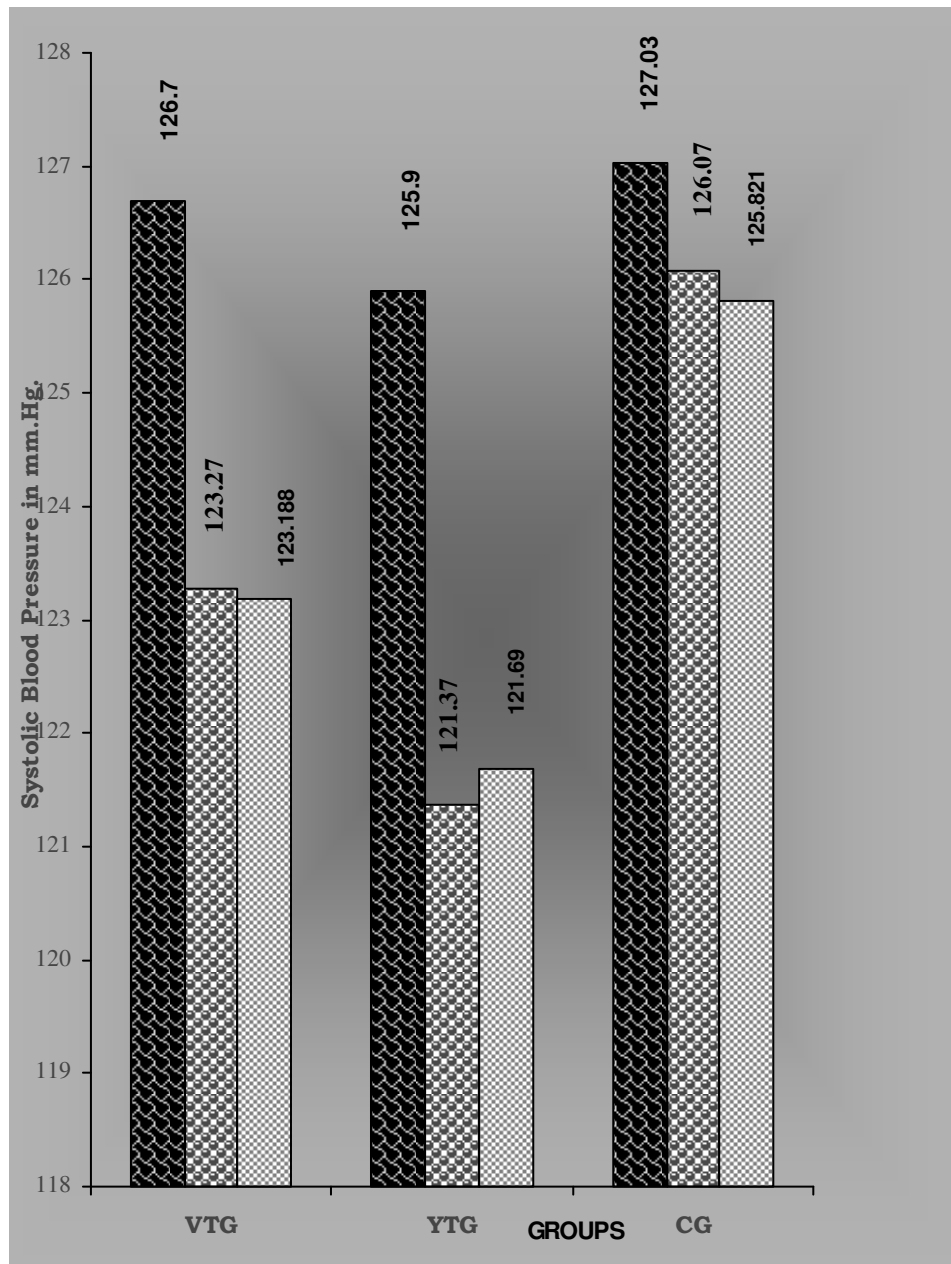
Adjusted Post-test means			Mean Differences	Confidence Interval
VTG	YTG	CG		
123.188	121.69		1.498*	1.394
123.188		125.821	2.633*	1.394
	121.69	125.821	4.131*	1.394

\* Significant at 0.05 level.

#### **4.5.2. Results of Scheffe's Test on Systolic blood pressure**

Table X shows that the adjusted post-test mean difference in systolic blood pressure between VTG and YTG, VTG and CG and between YTG and CG are 4.131, 1.498 and 2.633 respectively, which were statistically significant at 0.05 level of confidence. However, YTG was to be found better in reduce the systolic blood pressure timing than the VTG.

The pre test, post test and adjusted post-test mean values of VTG, YTG and CG on systolic blood pressure performance are graphically presented in figure II.



**FIGURE II: SYSTOLIC BLOOD PRESSURE OF THE VTG, YTG AND THE CONTROL GROUPS (CG)**



#### 4.6.Computation of Analysis of Covariance and Scheffe's Post Hoc Test on Diastolic blood pressure

The Analysis of Covariance on the data obtained for diastolic blood pressure of pre and post-test of COM, SSG, MSBG and CG have been presented in table XI.

**TABLE XI**  
**ANALYSIS OF COVARIANCE OF DATA ON DIASTOLIC BLOOD PRESSURE AMONG VTG YTG AND CG**

Tests/ Groups		VTG	YTG	CG	S O V	SS	df	MS	"F" Ratio
Pre test	M	84.1	83.23	84.4	B	22.02222	2	11.01111	0.82
	$\sigma$	4.66	2.59	3.43	W	1165.267	87	13.39387	
Post test	M	81.93	79.6	83.6	B	242.2222	2	121.1111	18.94*
	$\sigma$	3.03	1.99	2.46	W	556.2667	87	6.39387	
Adjusted post test		81.84	79.933	83.359	B	173.7273	2	86.86367	27.19*
					W	274.7004	86	3.19419	

\* Significant at .05 level of confidence (Diastolic blood pressure in mm.Hg)  
(The table value required for 0.05 level of significance with df 2, 87 and 2, 87 are 3.10)

##### 4.6.1 Results of Diastolic blood pressure

Table XI shows that the pre-test means in diastolic blood pressure timing of the VTG, YTG and CG were 84.1, 83.23 and 84.4 respectively, resulted in an "F" ratio of 0.82, which indicates statistically no significant difference between the pre test means at 0.05 level of confidence. The post test means of VTG, YTG and CG were 81.93, 79.6 and 83.6 respectively, resulted in an "F" ratio of 18.94, which indicates statistically significant difference between the post test means at 0.05 level of confidence. The adjusted post-test means of VTG, YTG and CG were 81.84, 79.933 and 83.359 respectively. The obtained F-ratio value was 27.19, which was

higher than the table value of 3.10 for df 2 and 86 required for significance at 0.05 level. It indicates that there was a significant difference among the adjusted post test means of diastolic blood pressure timings of the VTG, YTG and CG.

To find out which of the paired means had a significant difference, the Scheffe's post-hoc test is applied and the results are presented in table XII.

**TABLE XII**  
**SCHEFFE'S TEST FOR DIFFERENCES OF THE ADJUSTED**  
**POST-TEST PAIRED MEANS OF DIASTOLIC BLOOD PRESSURE**

Adjusted Post-test means			Mean Differences	Confidence Interval
VTG	YTG	CG		
81.84	79.933		1.907*	1.148
81.84		83.359	1.519*	1.148
	79.933	83.359	3.426*	1.148

\* Significant at 0.05 level.

#### **4.6.2. Results of Scheffe's Test on Diastolic blood pressure**

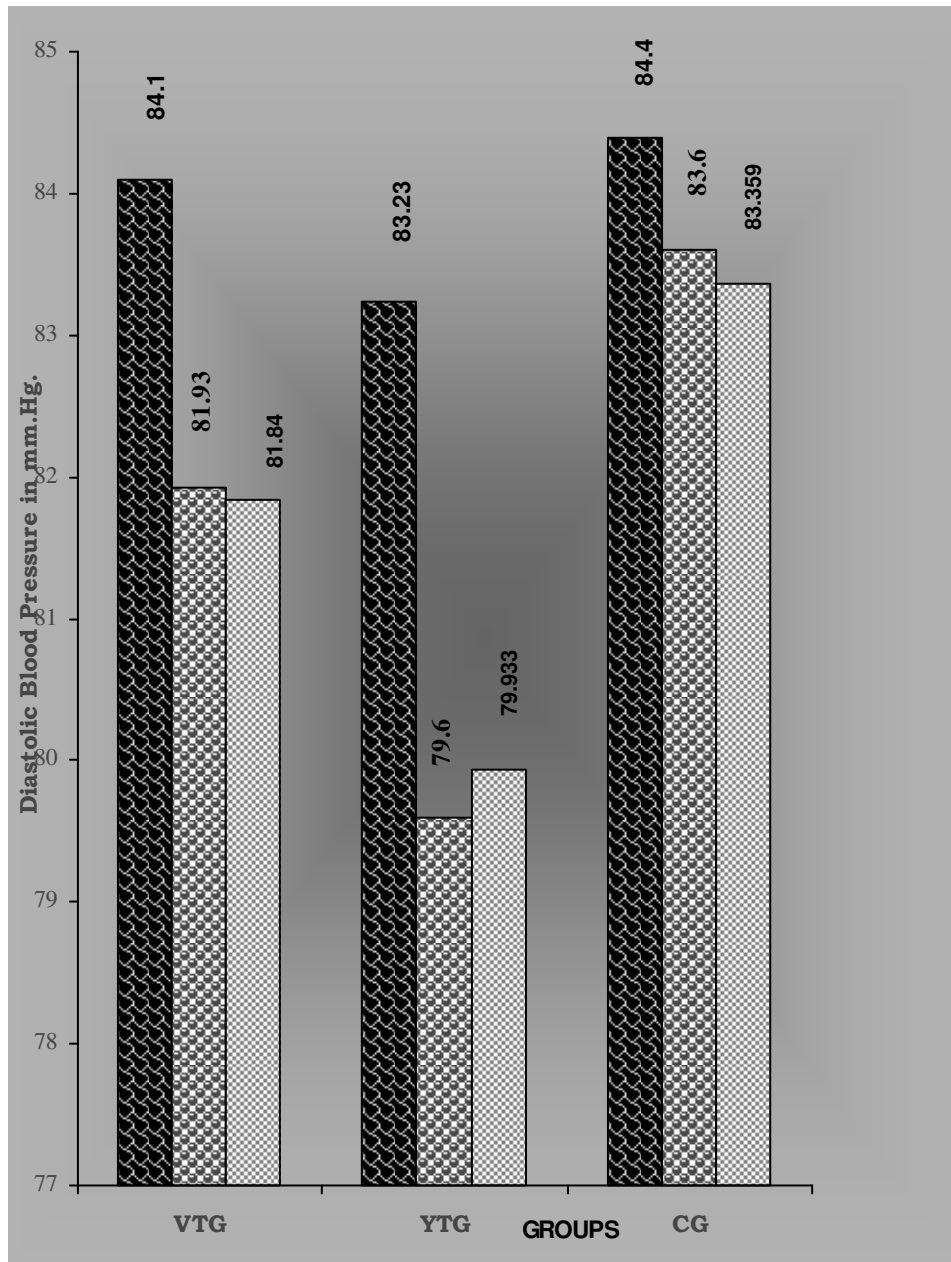
Table XII shows that the adjusted post-test mean difference in diastolic blood pressure between VTG and YTG, VTG and CG and between YTG and CG are 1.907, 1.519 and 3.426 respectively, which were statistically significant at 0.05 level of confidence. However, YTG was to be found better in reduce the diastolic blood pressure timing than the VTG.

#### **4.6.3. Discussion on Findings on Diastolic blood pressure**

The findings of the study on diastolic blood pressure reveal that the experimental group namely VTG and YTG had significantly improved after the training. Besides, the results of the study indicated that there was a significant difference between the VTG and YTG. YTG training showed better results in diastolic blood pressure than the VTG.

**Innes, and Vincent, (2007)**, stated that regular yoga-based programs can stabilize the blood pressure in adults with DM 2. Blood pressure has stabilized for all the experimental groups when compared with the control group. The results of this study also in line with the findings of **Hegde, et al., (2011)**, and **Ebnezar, et al., (2012)**, who were also reported that there was a significant improvement in blood pressure after the yogic practices. The findings of **Yang, et al, (2009)**, also shown that there was a significant improvement in blood pressure after the yogic practices. The present research findings also suggested that varma and yogic therapy stabilize the blood pressure.

The pre test, post test and adjusted post-test mean values of VTG, YTG and CG on diastolic blood pressure performance are graphically presented in figure III.



**FIGURE III: DIASTOLIC BLOOD PRESSURE OF THE VTG, YTG AND THE CONTROL GROUPS (CG)**

#### 4.7.Computation of Analysis of Covariance and Scheffe's Post Hoc Test on Total cholesterol

The Analysis of Covariance on the data obtained for total cholesterol of pre and post-test of COM, SSG, MSBG and CG have been presented in table XIII.

**TABLE XIII**  
**ANALYSIS OF COVARIANCE OF DATA ON TOTAL CHOLESTEROL**  
**AMONG VTG YTG AND CG**

Tests/ Groups		VTG	YTG	CG	S O V	SS	df	MS	"F" Ratio
Pre test	M	191	189.63	191.93	B	80.28889	2	40.14444	0.29
	$\sigma$	11.91	13.13	9.49	W	11726.83	87	134.7912	
Post test	M	187.4	184.9	190.62	B	492.7722	2	246.3861	1.9
	$\sigma$	11.73	12.76	9.39	W	11271.74	87	129.5602	
Adjusted post test		186.086	187.259	189.57	B	187.2754	2	93.63771	37.89*
					W	212.5258	86	2.471231	

\* Significant at .05 level of confidence (Total cholesterol in ml/dL)  
(The table value required for 0.05 level of significance with df 2, 87 and 2, 87 are 3.10)

#### 4.7.2. Results of Total cholesterol

Table XIII shows that the pre-test means in total cholesterol timing of the VTG, YTG and CG were 191, 189.63 and 191.93 respectively, resulted in an "F" ratio of 0.29, which indicates statistically no significant difference between the pre test means at 0.05 level of confidence. The post test means of VTG, YTG and CG were 187.4, 184.9 and 190.62 respectively, resulted in an "F" ratio of 1.9, which indicates statistically insignificant difference between the post test means at 0.05 level of confidence. The adjusted post-test means of VTG, YTG and CG were 186.086, 187.259 and 189.57 respectively. The obtained F-ratio value was 37.89, which was higher than the table value of 3.10 for df 2 and 86 required for significance at 0.05

level. It indicates that there was a significant difference among the adjusted post test means of total cholesterol timings of the VTG, YTG and CG.

To find out which of the paired means had a significant difference, the Scheffe's post-hoc test is applied and the results are presented in table XIV.

**TABLE XIV**  
**SCHEFFE'S TEST FOR DIFFERENCES OF THE ADJUSTED**  
**POST-TEST PAIRED MEANS OF TOTAL CHOLESTEROL**

Adjusted Post-test means			Mean Differences	Confidence Interval
VTG	YTG	CG		
186.086	187.259		1.173*	1.01
186.086		189.57	3.484*	1.01
	187.259	189.57	2.311*	1.01

\* Significant at 0.05 level.

#### **4.7.3. Results of Scheffe's Test on Total cholesterol**

Table XIV shows that the adjusted post-test mean difference in total cholesterol between VTG and YTG, VTG and CG and between YTG and CG are 1.173, 3.484 and 2.311 respectively, which were statistically significant at 0.05 level of confidence. However, VTG was to be found better in reduce the total cholesterol timing than the YTG.

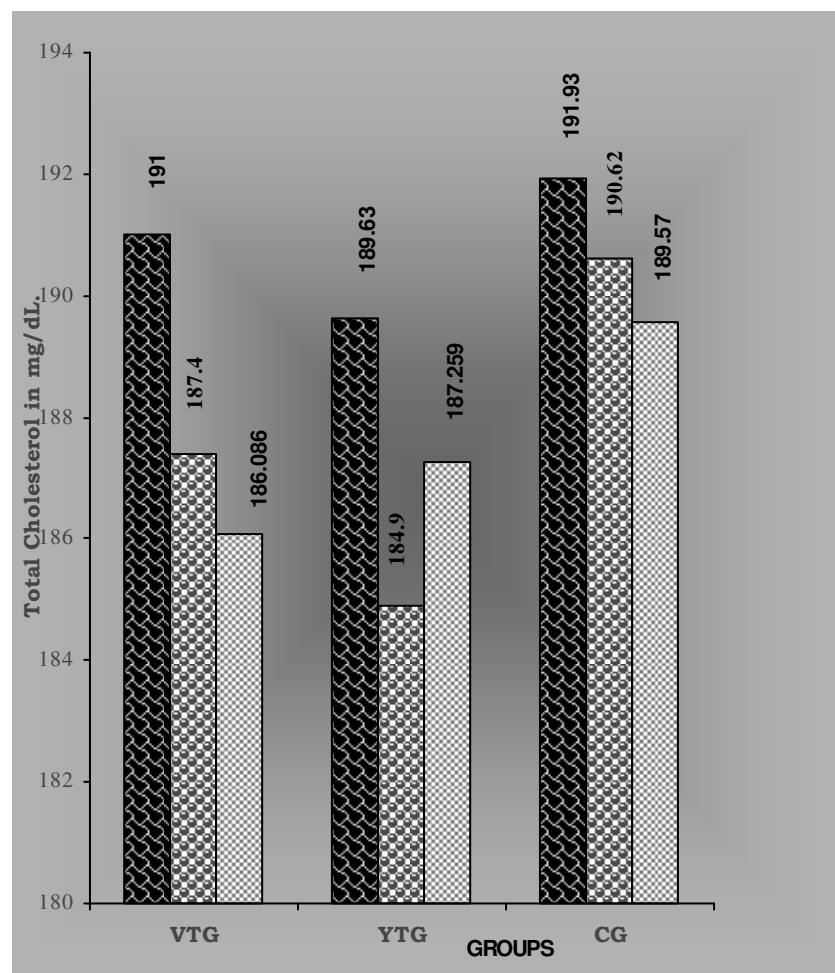
#### **4.7.4. Discussion on Findings on Total cholesterol**

The findings of the study on total cholesterol reveal that the experimental group namely VTG and YTG had significantly improved after the training. Besides, the results of the study indicated that there was a significant difference between the VTG and YTG. VTG training showed better results in total cholesterol than the YTG.

Systematic varma and yogic therapy reduces the total cholesterol level. The above findings can also be substantiated by observations made by renowned

expert **Gordon, et al., (2012)**, **Yang, (2007)** and **Vedamurthachar, et al., (2011)**. In a study **Dhananjai, et al., (2011)**, stated that 12 weeks of yogic practices reduce the total cholesterol of 56 obese subjects (32 females and 24 males) age ranged from 20 to 45 yrs. The present research findings also suggested that varma and yogic therapy reduces the total cholesterol level among diabetic patients.

The pre test, post test and adjusted post-test mean values of VTG, YTG and CG on total cholesterol performance are graphically presented in figure IV.



**FIGURE IV: TOTAL CHOLESTEROL OF THE VTG, YTG AND THE CONTROL GROUPS (CG)**

#### 4.8.Computation of Analysis of Covariance and Scheffe's Post Hoc Test on Blood glucose

The Analysis of Covariance on the data obtained for blood glucose of pre and post-test of COM, SSG, MSBG and CG have been presented in table XV.

**TABLE XV**  
**ANALYSIS OF COVARIANCE OF DATA ON BLOOD GLUCOSE**  
**AMONG VTG YTG AND CG**

Tests/ Groups		VTG	YTG	CG	S O V	SS	df	MS	"F" Ratio
Pre test	M	154.63	152.23	150.43	B	266.4	2	133.2	0.98
	$\sigma$	11.85	10.36	12.59	W	11783.7	87	135.4448	
Post test	M	151.63	147.67	150.07	B	239.4889	2	119.7444	0.96
	$\sigma$	11.50	10.65	11.27	W	10813.5	87	124.2931	
Adjusted post test		149.554	147.856	151.957	B	253.3229	2	126.6614	38.22*
					W	284.999	86	3.313942	

\* Significant at .05 level of confidence (Blood glucose in ml/dL)  
(The table value required for 0.05 level of significance with df 2, 87 and 2, 87 are 3.10)

#### 4.8.2 Results of Blood glucose

Table XV shows that the pre-test means in blood glucose timing of the VTG, YTG and CG were 154.63, 152.23 and 150.43 respectively, resulted in an "F" ratio of 0.98, which indicates statistically no significant difference between the pre test means at 0.05 level of confidence. The post test means of VTG, YTG and CG were 151.63, 147.67 and 150.07 respectively, resulted in an "F" ratio of 0.96, which indicates statistically no significant difference between the post test means at 0.05 level of confidence. The adjusted post-test means of VTG, YTG and CG were 149.554, 147.856 and 151.957 respectively. The obtained F-ratio value was 38.22, which was higher than the table value of 3.10 for df 2 and 86 required for significance



at 0.05 level. It indicates that there was a significant difference among the adjusted post test means of blood glucose timings of the VTG, YTG and CG.

To find out which of the paired means had a significant difference, the Scheffe's post-hoc test is applied and the results are presented in table XVI.

**TABLE XVI**  
**SCHEFFE'S TEST FOR DIFFERENCES OF THE ADJUSTED**  
**POST-TEST PAIRED MEANS OF BLOOD GLUCOSE**

Adjusted Post-test means			Mean Differences	Confidence Interval
VTG	YTG	CG		
149.554	147.856		1.698*	1.17
149.554		151.957	2.403*	1.17
	147.856	151.957	4.101*	1.17

\* Significant at 0.05 level.

#### **4.8.3. Results of Scheffe's Test on Blood glucose**

Table XVI shows that the adjusted post-test mean difference in blood glucose between VTG and YTG, VTG and CG and between YTG and CG are 0.78, 1.28 and 1.03 respectively, which were statistically significant at 0.05 level of confidence. However, YTG was to be found better in reduce the blood glucose timing than the VTG.

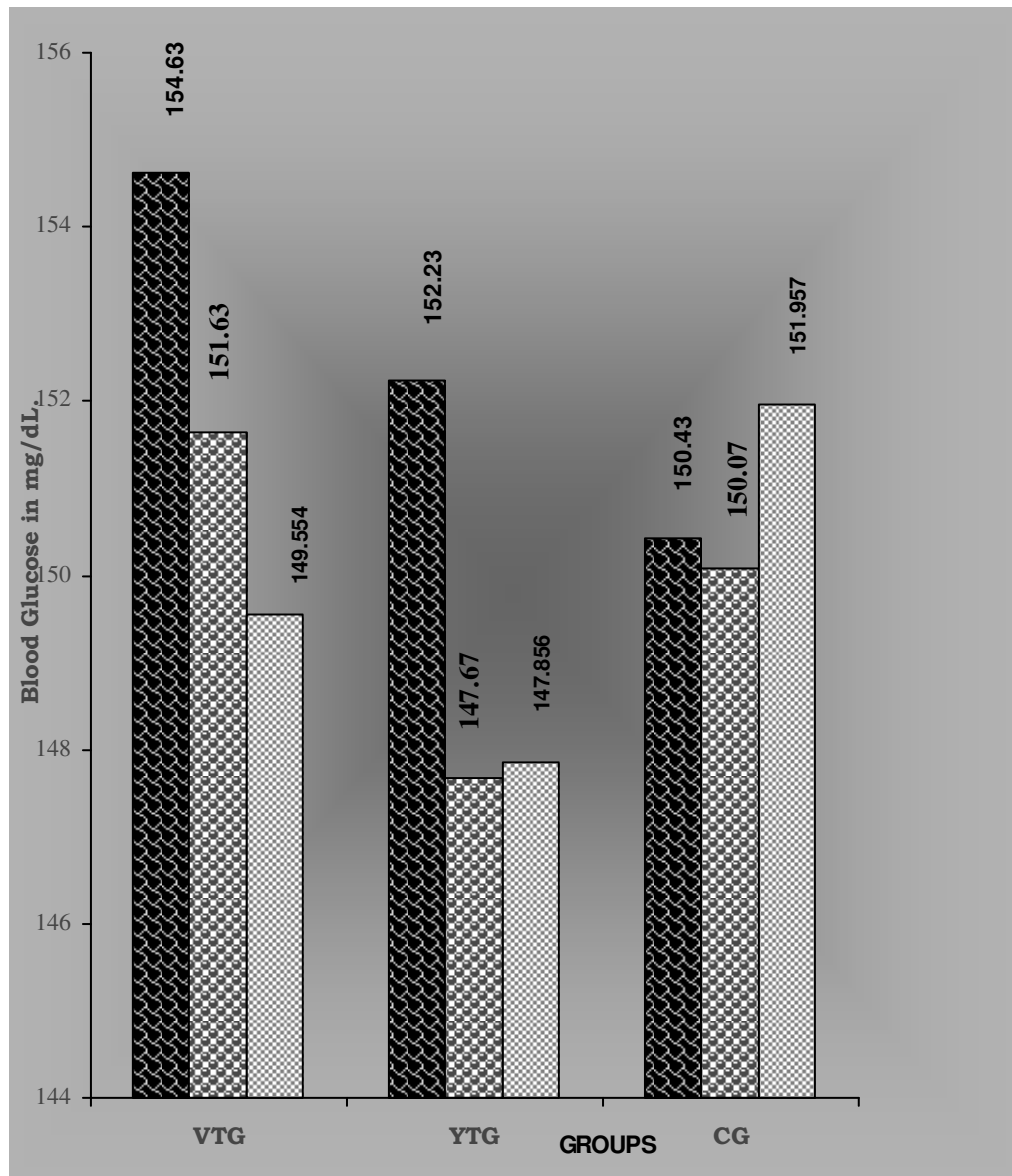
#### **4.8.4. Discussion on Findings on Blood glucose**

The findings of the study on blood glucose reveal that the experimental group namely VTG and YTG had significantly improved after the training. Besides, the results of the study indicated that there was a significant difference between the VTG and YTG. YTG training showed better results in blood glucose than the VTG.

In patients with type 2 diabetes, who were subjected to yoga therapy for a period of 40days, it was seen that there was a significant decrease in the fasting and

postprandial blood glucose levels. A significant decrease in waist-hip ratio and changes in insulin levels were also observed, suggesting a positive effect of yogasanas on glucose utilization and fat redistribution in type 2 diabetes. The investigators suggest that yogasanas may be used as an adjunct with diet and drugs in the management of type 2 diabetes (**Malhotra, et al., 2005**). The findings from the study by **Gordon et al., 2008**, also second these findings. Their study demonstrated the efficacy of hatha yoga exercise on fasting blood glucose, lipid profile, oxidative stress markers and antioxidant status in patients with type 2 diabetes and suggest that hatha yoga exercise and conventional physical therapy exercise may have therapeutic preventative and protective effects on diabetes mellitus by decreasing oxidative stress and improving antioxidant status. The present study also concluded that varma and yoga therapy reduce the blood glucose level among the diabetic patients. The findings of present study are in agreement with the study conducted by **Sharma and Knowlden, (2012)**.

The pre test, post test and adjusted post-test mean values of VTG, YTG and CG on blood glucose performance are graphically presented in figure V.



**FIGURE V: BLOOD GLUCOSE OF THE VTG, YTG AND THE CONTROL GROUPS (CG)**

#### 4.9.Computation of Analysis of Covariance and Scheffe's Post Hoc Test on Stress

The Analysis of Covariance on the data obtained for stress of pre and post-test of COM, SSG, MSBG and CG have been presented in table XVII.

**TABLE XVII**  
**ANALYSIS OF COVARIANCE OF DATA ON STRESS**  
**AMONG VTG YTG AND CG**

Tests/ Groups		VTG	YTG	CG	S O V	SS	df	MS	"F" Ratio
Pre test	M	32.23	30.57	31.3	B	41.86667	2	20.93333	0.79
	$\sigma$	4.61	5.72	5.07	W	2311.033	87	26.5636	
Post test	M	29.7	26.63	30.53	B	253.0889	2	126.5444	5.4*
	$\sigma$	4.82	5.66	3.88	W	2038.733	87	23.43372	
Adjusted post test		28.922	27.351	30.593	B	157.2088	2	78.6044	37.92*
					W	178.2926	86	2.07317	

\* Significant at .05 level of confidence (Stress in points)

(The table value required for 0.05 level of significance with df 2, 87 and 2, 87 are 3.10)

##### 4.9.1 Results of Stress

Table XVII shows that the pre-test means in stress timing of the VTG, YTG and CG were 32.23, 30.57 and 31.3 respectively, resulted in an "F" ratio of 0.79, which indicates statistically no significant difference between the pre test means at 0.05 level of confidence. The post test means of VTG, YTG and CG were 29.7, 26.63 and 30.53 respectively, resulted in an "F" ratio of 5.4, which indicates statistically significant difference between the post test means at 0.05 level of confidence. The adjusted post-test means of VTG, YTG and CG were 28.922, 27.351 and 30.593 respectively. The obtained F-ratio value was 37.92, which was higher than the table value of 3.10 for df 2 and 86 required for significance at 0.05 level. It indicates that

there was a significant difference among the adjusted post test means of stress timings of the VTG, YTG and CG.

To find out which of the paired means had a significant difference, the Scheffe's post-hoc test is applied and the results are presented in table XVIII.

**TABLE XVIII**  
**SCHEFFE'S TEST FOR DIFFERENCES OF THE ADJUSTED**  
**POST-TEST PAIRED MEANS OF STRESS**

Adjusted Post-test means			Mean Differences	Confidence Interval
VTG	YTG	CG		
28.922	27.351		1.571*	0.925
28.922		30.593	1.671*	0.925
	27.351	30.593	3.242*	0.925

\* Significant at 0.05 level.

#### 4.9.2 Results of Scheffe's Test on Stress

Table XVIII shows that the adjusted post-test mean difference in stress between VTG and YTG, VTG and CG and between YTG and CG are 1.571, 1.671 and 3.242 respectively, which were statistically significant at 0.05 level of confidence. However, YTG was to be found better in reduce the stress timing than the VTG.

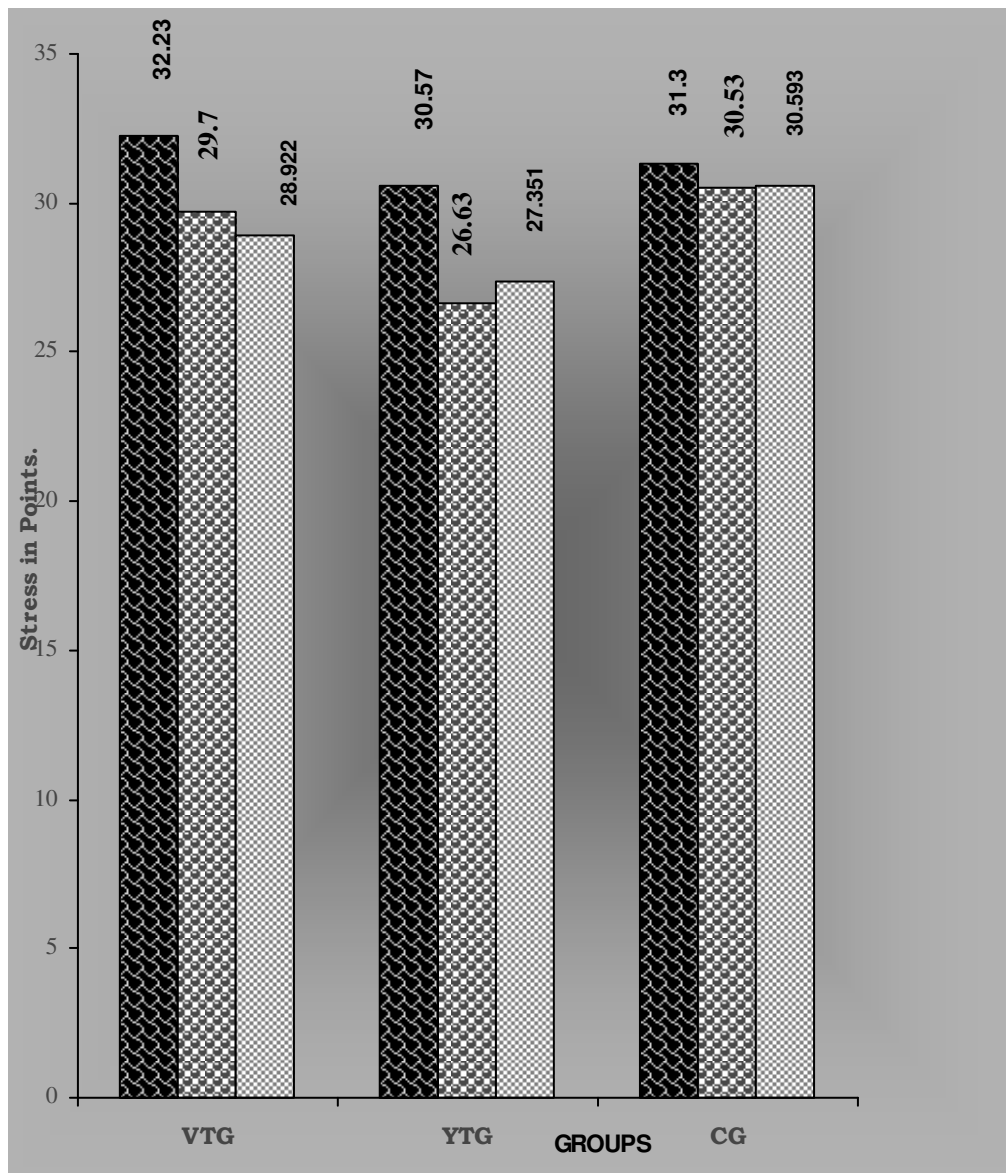
#### 4.9.3. Discussion on Findings on Stress

The findings of the study on stress reveal that the experimental group namely VTG and YTG had significantly improved after the training. Besides, the results of the study indicated that there was a significant difference between the VTG and YTG. YTG training showed better results in stress than the VTG.

12 weeks of varma and yogic therapy reduces the stress level. Emotional distress is an increasing public health problem and yoga has been claimed to induce stress reduction and empowerment in practicing subjects. Yoga therapy has been shown to be associated with improved mood, and is possibly a useful way of reducing

stress in patients admitted for psychiatric treatment (**Lavey, et al., (2005)**). **Michalsen et al., 2005**, showed in a study that women suffering from mental distress participating in a 3-month Iyengar yoga class show significant improvements on measures of stress, anxiety, well-being, vigor, fatigue and depression. Physical well-being is also increased, and those subjects suffering from headache or back pain reported marked pain relief.

The pre test, post test and adjusted post-test mean values of VTG, YTG and CG on stress performance are graphically presented in figure VI.



**FIGURE VI: STRESS OF THE VTG, YTG AND THE CONTROL GROUPS (CG)**

#### 4.10.Computation of Analysis of Covariance and Scheffe's Post Hoc Test on Self-confidence

The Analysis of Covariance on the data obtained for self-confidence of pre and post-test of COM, SSG, MSBG and CG have been presented in table XIX.

**TABLE XIX**  
**ANALYSIS OF COVARIANCE OF DATA ON SELF-CONFIDENCE**  
**AMONG VTG YTG AND CG**

Tests/ Groups		VTG	YTG	CG	S O V	SS	df	MS	"F" Ratio
Pre test	M	31.73	30.07	32.9	B	121.6667	2	60.83333	3.67*
	$\sigma$	4.53	4.15	3.45	W	1440.433	87	16.5567	
Post test	M	28.67	25.57	31.53	B	534.2889	2	267.1444	17.78*
	$\sigma$	4.39	4.49	2.36	W	1307.5	87	15.02874	
Adjusted post test		28.526	26.835	30.406	B	176.8317	2	88.41586	27.36*
					W	277.9231	86	3.231664	

\* Significant at .05 level of confidence (Self-confidence in points)  
(The table value required for 0.05 level of significance with df 2, 87 and 2, 87 are 3.10)

##### 4.10.1 Results of Self-confidence

Table XIX shows that the pre-test means in self-confidence timing of the VTG, YTG and CG were 31.73, 30.07 and 32.9 respectively, resulted in an "F" ratio of 3.67, which indicates statistically significant difference between the pre test means at 0.05 level of confidence. The post test means of VTG, YTG and CG were 28.67, 25.57 and 31.53 respectively, resulted in an "F" ratio of 17.78, which indicates statistically significant difference between the post test means at 0.05 level of confidence. The adjusted post-test means of VTG, YTG and CG were 26.834, 26.835 and 30.406 respectively. The obtained F-ratio value was 27.36, which was higher than the table value of 3.10 for df 2 and 86 required for significance at 0.05 level. It



indicates that there was a significant difference among the adjusted post test means of self-confidence timings of the VTG, YTG and CG.

To find out which of the paired means had a significant difference, the Scheffe's post-hoc test is applied and the results are presented in table XX.

**TABLE XX**  
**SCHEFFE'S TEST FOR DIFFERENCES OF THE ADJUSTED**  
**POST-TEST PAIRED MEANS OF SELF-CONFIDENCE**

Adjusted Post-test means			Mean Differences	Confidence Interval
VTG	YTG	CG		
28.526	26.835		1.691*	1.155
28.526		30.406	1.88*	1.155
	26.835	30.406	3.571*	1.155

\* Significant at 0.05 level.

#### **4.10.2. Results of Scheffe's Test on Self-confidence**

Table XX shows that the adjusted post-test mean difference in self-confidence between VTG and YTG, VTG and CG and between YTG and CG are 0.78, 1.28 and 1.03 respectively, which were statistically significant at 0.05 level of confidence. However, YTG was to be found better in reduce the self-confidence timing than the VTG.

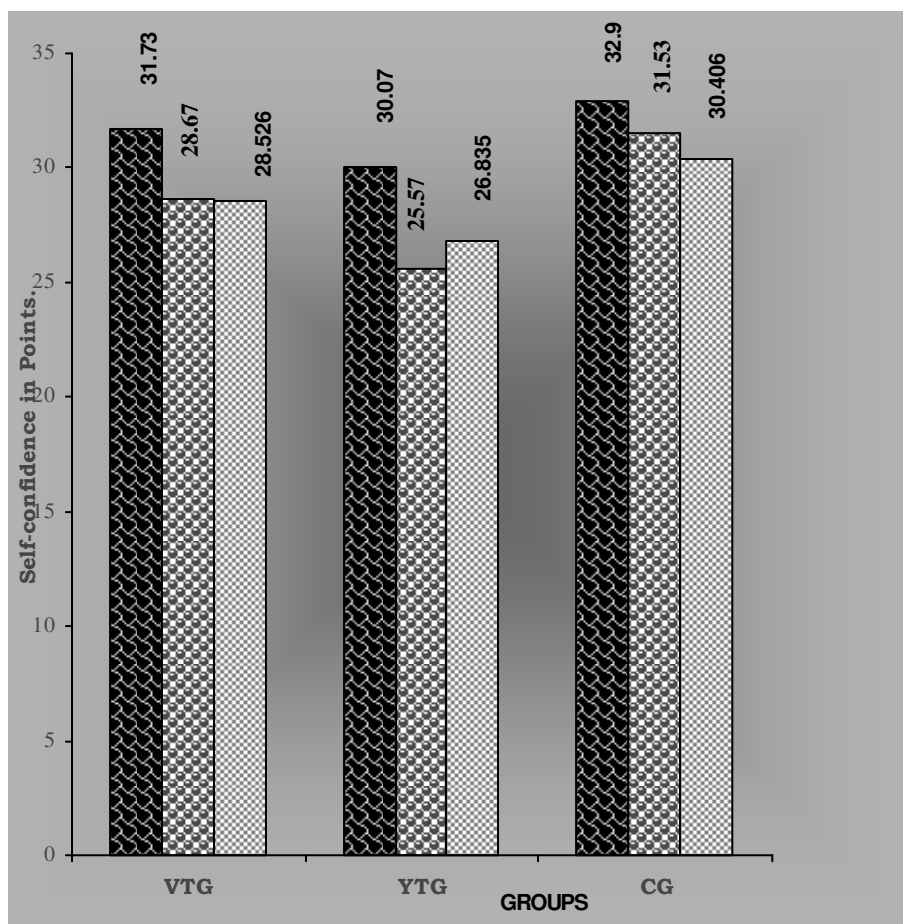
#### **4.10.3. Discussion on Findings on Self-confidence**

The findings of the study on self-confidence reveal that the experimental group namely VTG and YTG had significantly improved after the training. Besides, the results of the study indicated that there was a significant difference between the VTG and YTG. YTG training showed better results in self-confidence than the VTG.

The analysis of the data indicates that 12 weeks of varma and yoga therapy increase the self-confidence level among diabetic patients. The above findings

very well be supported by observations made by the following studies conducted by Ray, et al., (2001).

The pre test, post test and adjusted post-test mean values of VTG, YTG and CG on self-confidence performance are graphically presented in figure VII.



**FIGURE VII : SELF CONFIDENCE OF THE VTG, YTG AND THE CONTROL GROUPS (CG)**

#### **4.11. DISCUSSION ON HYPOTHESES**

1. It was mentioned in the first hypothesis that there would be a significant improvement on the selected physiological, bio-chemical and psychological variables due to effect of varma and yoga therapy than the control group. The results of the study indicate that there was a significant improvement in resting pulse rate, blood pressure, total cholesterol, blood glucose, stress and self-confidence due to the effect of varma and yoga therapy than the control group. Hence, the first hypothesis was completely accepted at 0.05 level of confidence with respect to the all criterion variables.
2. It was mentioned in the second hypothesis that there would be a significant difference on the development of selected dependent variables between the experimental groups. The result of the study indicates that there was a significant difference between the VTG and YTG, with respect to all the physiological, bio-chemical and psychological variables. Hence, the second hypothesis was also completely accepted at 0.05 level of confidence.