



## COMPARISION OF MAJOR ADVERSE CARDIAC EVENTS IN CONTROLLED AND UN CONTROLLED DIABETIC PATIENTS

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### Abstract:

The aim of this study reveals that males have elevated risk (15 to 30%) and females have average risk (<15%) in percentage of developing major adverse cardiovascular events in the following 10 years using UKPDS scale. Our study unfolds that as the age increases uncontrolled diabetic groups are more at risk of developing cardiovascular disease. The present study shows that both males and females under uncontrolled diabetic population had coronary artery disease as the major cardiovascular disease. The present study also shows that verbal counseling was more effective than counseling through Patient Information Leaflets. The study results conclude that the patient's knowledge, attitude and practice on diabetes were improved by means of patient counseling. It is also understood and revealed that despite of hypertension being proved a major risk factor for the development of cardiovascular diseases, its presence with diabetes aggravates the incidence of cardiovascular diseases. Among diabetic patients a careful follow up of their disease management and monitoring of non-fatal MACE symptoms had a greater impact on the quality of life of patient. Predictors such as positive family history, poor knowledge, availability of immediate health care facilities could decrease the incidence of MACE related deaths. Controlled diabetes decreases the severity of symptoms in contrary to the uncontrolled diabetic subjects. It should be made mandatory that all the diabetic people should undergo HbA1C checkup and strict monitoring of blood pressure and lipid profile. Lifestyle changes if inculcated can reduce the disease progression and also enables the patients to lead a quality life. Both males and females are observed to be at equal risk after the age 50 years among uncontrolled diabetes group. Knowledge on disease management and strict adherence and involvement in an active life style had shown a steep decrease in the incidence of MACE.

**Keywords:** Diabetes, MACE, Non-fatal.

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## INTRODUCTION:

Major adverse cardiovascular events (MACE) are defined as an incident myocardial infarction, stroke, heart failure, coronary revascularization, atrial fibrillation, or CVD death, irrespective of treatment arm. The secondary outcome was report of any CVD event. (FDA2020)

**Types of MACE:** Myocardial infarction (MI), percutaneous coronary intervention (PCI), coronary artery bypass grafting (CABG), atherosclerotic vascular disease (ASVD), coronary stenosis (CS), heart failure (HF), stroke or Transient ischemic attack (TIA). People with diabetes (DM) have 70% higher risk of mortality due to cardiovascular diseases. It is observed that people with DM along with myocardial infarction (MI) or stroke have higher death rate or decreased life expectancy. People with 60years of age with diabetes for more than 6-10years are more to have a MACE or cardiovascular death. (JAMA. 2015)

Multiple adverse events included in different research as a component of MACE are heart failure, non-fatal re-infarction, recurrent angina pain, re-hospitalization for cardiovascular-related illness, repeat percutaneous coronary intervention (PCI), coronary artery bypass grafting and all-cause mortality. MACE includes unscheduled coronary revascularization, stroke, re-infarction and all-cause death and mortality. (Lu YC, et al.)

It is also observed that among the people with DM, there is greater chance of development i.e 2-5 times risk of development of heart failure. It is evident that people with DM and HF drastically high risk of death i.e 60 -80%. (MacDonald MR et al)

To minimize or control the MACE, reduction in the glycemic levels has a huge impact. It is studied that regulation in the glucose levels or optimal control can reduce these cardiovascular events up to 30%. It is also studied that every 1%reduction of HBA1C reduces cardiovascular events by 37%. (Stratton, Irene M et al.)

Intensive control of glucose levels decreases occurrences of microvascular complications which is studied by using various scales such as UKPDS (The United Kingdom Prospective Diabetes Study) or in various clinical trials still remains unclear. (Bergental et al). It was suggested that at least 2 years of data is required to study the impact of diabetes on MACE.

## METHODOLOGY

### Method:

This is a prospective, cross sectional and comparative type of study. The study will be carried at Mediciti Hospitals in Hyderabad. This is a super specialty hospital. It is accommodated with more than 250 beds with various departments. This hospital is highly reputed for its cardiology as well as endocrinology departments. Both inpatient and outpatient services are provided.

The present study was carried out for a period of 5 years. In the initial step of this study, patient consent was taken after explaining about the objective and purpose of the study. After this structured data collection form was prepared which contains all the relevant details of the patients such as name, age, sex, socio- economic status, past medical history, medication history, and present medication history, reason for current admission or visit etc. The patient was followed for every 15 days.

A self-administered questionnaire was given to the patient to assess the knowledge, attitude and practice towards disease. The patients were asked to test their BSL (Blood sugar levels) every month. All the patients were assessed for their control on disease. Patients were observed for any adverse drug reactions due to drug or disease condition and also for the complications of diabetes.

Patients were divided into 2 groups such as a group1 in which the BSL are well controlled and another group 2 in which there is an inadequate control of BSL. The patients in group 1 were interviewed about their management of the disease and the same with group 2. Patients who have inadequate awareness about the management counseling were provided for the patient.

After the initiation of aggressive therapy, the patients in group 2 were followed up for every 15 days or as needed. All the pertaining data shall be recorded. The respond of the patients was observed and noted. For every 3 months the patients in both the groups were being undergone Hb A 1c test. All patients in the study were thoroughly followed for the incidence of any major cardiac events. All the patients were educated about the self-management of optimum glucose levels and explained about the complications associated with uncontrolled diabetes. A self-administered questionnaire was developed to understand and assess the

knowledge, attitude and practice of the patients involved in the study after obtaining their consent. Based on the HbA1C levels patients were categorized into controlled and uncontrolled groups. Patients among controlled group were assessed for cardiac risk by means of UKPDS scale. Patients who were found to have risk were counselled and suggested for lifestyle modifications. Glucose readings were thoroughly followed among uncontrolled group of patients. Patients who were admitted with MACE were monitored whether it is a recurrence or first event. Data is analyzed by using SPSS, T test, Chi square test, P test were conducted.

Overall, the study was conducted in various phases to obtain the most appropriate results possible. In the initial phase, all the enrolled patients were given a KAP FORM to assess their basic knowledge level, to check their attitude towards the disease management and also practice. The study was conducted for a period of 6 months. Both pre and post study assessment was done. The main intention of the study was to check if there is any significant impact upon the pharmacist intervention. Followed by the KAP

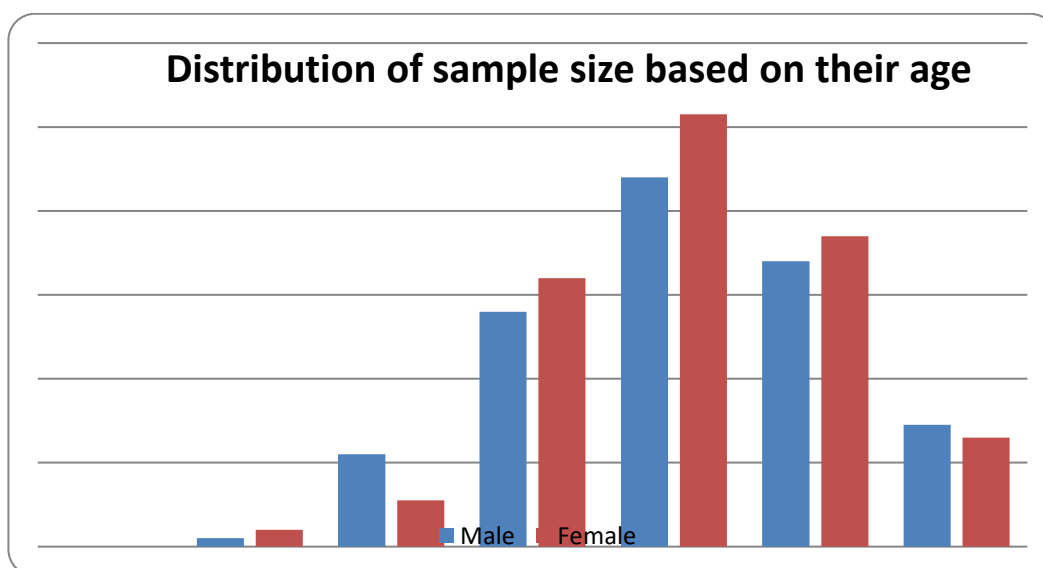
STUDY, all the patients fitting into the study criteria were enrolled for studying the prescribing pattern for diabetes management. This phase of study was carried out for 6 months. All the patients taking medications except only insulin were enrolled. The safety and efficacy of the antidiabetic drugs was also studied simultaneously for 6 months. Drug usage pattern and adverse drug reaction(s) if any were monitored and notified to the physician and also to the PvPI. Next phase of the study was assessing the risk for cardiovascular patients by using UKPDS SCALE. The study was carried for 6 months. The main objective of this study was to find out the risk of cardiovascular disease and also to check the effect of controlled diabetes on the newly occurring cardio vascular diseases. The last phase of the study is about assessing the incidences of major cardiovascular events. This phase has been carried for 18 months.

All the results were assimilated and put for statistical evaluation by using various tools such as SPSS, P TEST, T TEST,etc.

**RESULTS AND DISCUSSION**

**Table 1:** Relation among Age, Gender and Duration of Diabetes

Age Interval (yrs)	Male	Female	N	Percentage (%)	Average duration of DM (yrs)		
					M	F	P Value
21-30	2 (32%)	4 (68%)	6	1	8	5	0.3758
31-40	22 (67)	11 (33)	33	6	6	8	
41-50	56 (47)	64 (53)	120	22	7	8	
51-60	88 (46)	103 (54)	191	35	10	10	
61-70	68 (48)	74 (52)	142	26	11	11	
71-80	29 (53)	26 (47)	55	10	17	14	



**Figure 1:** Distribution of study sample based on their age

The above table no: 1 show that females are more (103)54% in the age group of 51-60 followed by (74)52% in the age group of 61-70. Among the

males as in the females most (88)46% of the subjects were observed in the age group of 51-60 followed by (68) 48% in the age group of 61-70.

**Table 2:** Distribution of sample based on their Social Habits

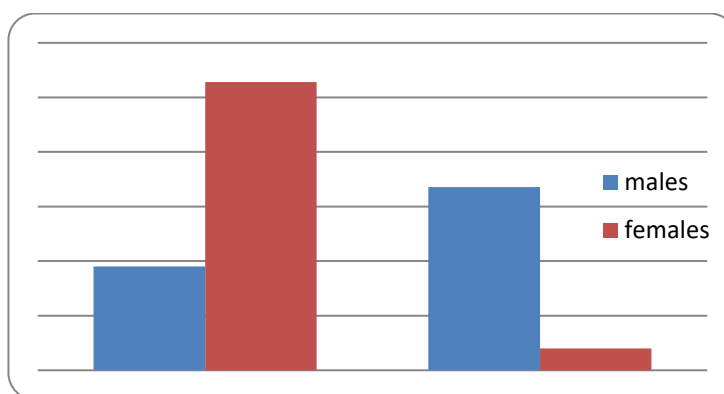
Gender	Social Habit		P value
	Smokers	Non-smokers	
Male	168	95	<0.0001
Female	20	264	
	Alcoholic	Non- Alcoholic	
Male	126	137	<0.0001
Female	0	284	

*P value calculated by chi-square test*

**Statistically significant difference was found.**

In this table no: 2 it is understood that there are a greater number of smokers in males 168 than non-smokers. Among the female’s nonsmokers are more 264 than smokers 20. Same observations

were drawn for alcoholics. Males were slightly high to non-alcoholics (137) than alcoholics (126). There were no alcoholics in our study.



**Figure 2:** Distribution of smokers and non-smokers in the study sample

**Table 3:** Relation between Smoking, Alcohol and Cardiac Event History

	Alcoholics	Non-Alcoholic	Smokers	Non-Smokers	Both Alcoholic and Smoking
	126	421	188	359	115
Cardiac Event History	110	124	148	190	104

Table no: 3 shows the relation between smoking and alcoholics and their association with cardiac event history. It is observed that among non-alcoholics 421, cardiac event history was found in (124) people. Among alcoholics (126), cardiac event history is seen in 110 which are relatively very high.

subjects are very high (148) among 188 smokers It also signifies that people who smoke and consume alcohol will have a positive association of cardiac event. It is evident that among the subjects those who smoke and also consume alcohol, 115 majorities (104) have a cardiac event history.

While nonsmokers 359 there are (190) people with cardiac events and also the number of

**Table 4:** Distribution of sample size based on HbA1c levels

HbA1c	Total		Male		Female		P Value
	N	%	N	%	N	%	
Controlled	153	28	65	42.4	88	57.6	0.1329
Uncontrolled	394	72	194	49.2	200	50.8	

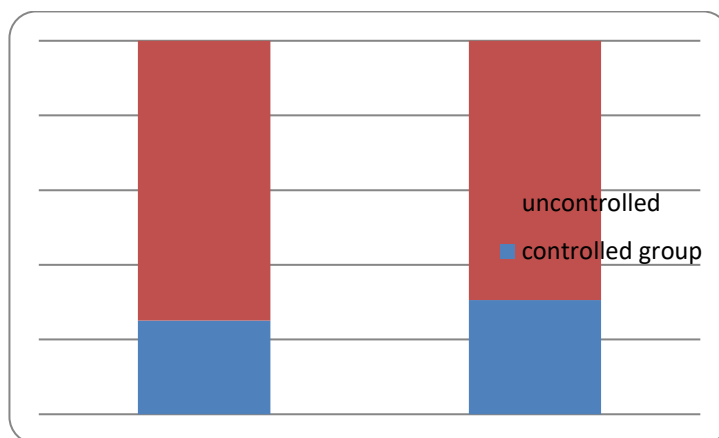


Figure 3: Distribution of sample size based on their HbA1C

In this table no: 4 represents the distribution of study subjects based on their HbA1C. In Controlled group most of them were females 88 (57%) while in males 65(42%). Among

uncontrolled subjects in females 200 (51%) and males were 194(49%).

Table 5: Distribution of sample size based on Duration of Diabetes (in years)

Duration of Diabetes (years)	Controlled Diabetes (153)			Uncontrolled Diabetes (394)		
	M	F	%	M	F	%
>5	29	18	25	73	49	31
6 – 10	28	39	44	65	97	41
11-15	8	27	22	28	29	15
16 – 20	4	2	4	19	17	9
21 – 25	2	2	2	7	4	3
26-30	4	0	3	2	4	1

In this table no: 5, total number of patients were divided into controlled group and uncontrolled groups. Subjects with more than 6-10 years of diabetes are high i.e. 44% in controlled group. Surprisingly, same duration of diabetes showed

more 41% in uncontrolled group. In controlled group subjects with 20 -25 years of diabetes duration had very least (2%) whereas in uncontrolled group had (1%) with 26-30 year duration of diabetes.

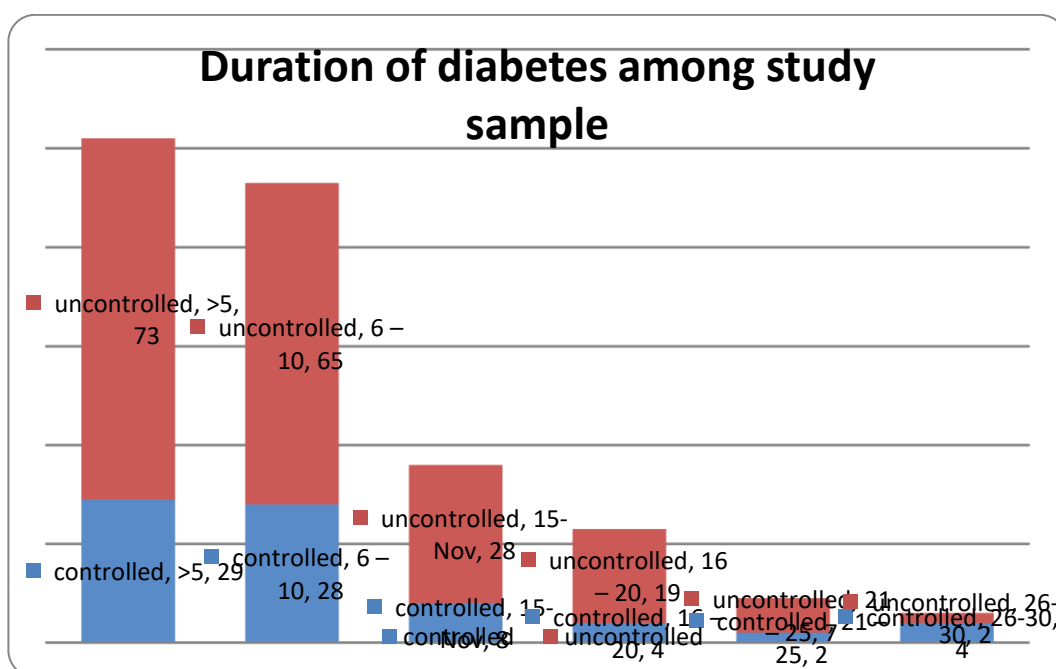


Figure 4:Duration of diabetes among the study sample

**Table 6:** Relation between Hypertension, Total Cholesterol and Symptoms of MACE among males and females

SYMPTOMS OF MACE	Males (out of 263)	Females (out of 284)
SOB, Chest Pain, Heart burn	09	131
SOB, Palpitations, Chest pain	108	100
Chest pain, Night sweats	09	11
Palpitations, Light headedness	02	00
Chest pain, Tachycardia	07	07
Chest pain, Tachycardia, Pedal edema	07	13
Claudication, Neck pain, Pedal edema	02	07
Left limb pains, SOB, Chest pain	02	00
Bradycardia, Palpitations	02	00

Table no: 6 Depicts the relation between hypertension and cholesterol among males and females. In both controlled group females dominated males, where in controlled group females were 99 and in uncontrolled group females were 301.

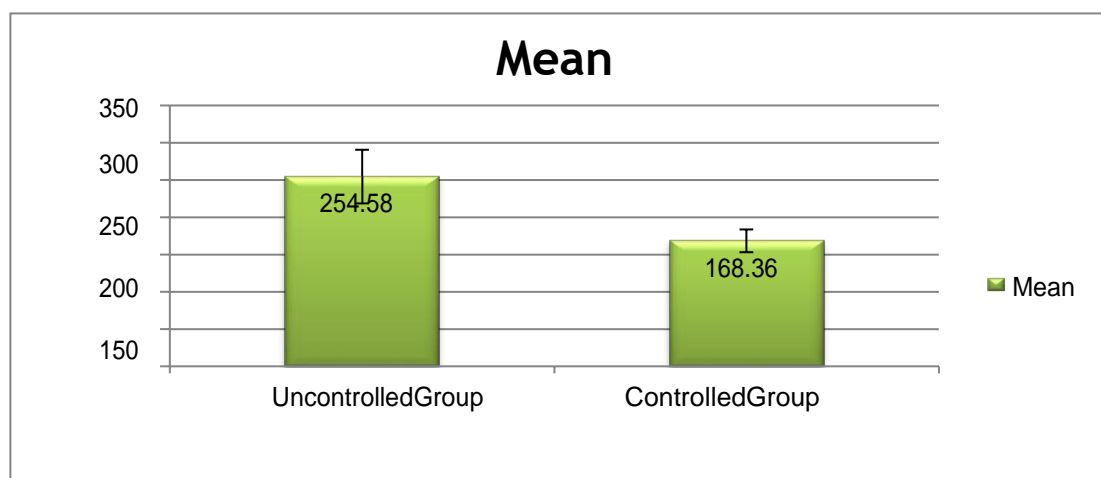
The cholesterol readings were divided into three categories, such as desirable, borderline and high risk. The results were, both 88 males and females 95 fall under uncontrolled and with desirable levels of cholesterol. Whereas 95 females and 92 males were in borderline cholesterol, while in controlled group 39 were females and 24 males with borderline cholesterol. Patients with high-risk cholesterol are 7 males followed by 5 females

in controlled group. Males were 14 followed by females 10 in uncontrolled group respectively.

Table no:6 Symptoms of MACE such as heart burn, Shortness of breath and chest pain were observed among females in high number 131 where symptoms like claudication, neck pain and pedal oedema and chest pain and tachycardia were observed in 7 patients each respectively. Symptoms such as SOB, palpitations and chest pain in 108 patients and least i.e. 2 patients in each had complains of bradycardia, palpitations, left limb pains and claudication, neck pain along with pedal edema were observed.

**Table no: 7** Compare the PLBS Levels in both groups (Uncontrolled Group and controlled Group)

Sl.No	Postprandial Blood Glucose (mg/dL)		
		Mean	Standard deviation(Sd)
1	<b>Uncontrolled Group</b>	342.25	56.44
2	<b>Controlled Group</b>	195.25	20.47



**Figure No: 5** comparison of PLBS levels in both groups

Table no: 7 and Figure no: 5 reveals that PLBS levels in Uncontrolled Group and controlled Group were 342.25 +56.44 (mean +SD) and Eur. Chem. Bull. 2023, 12(Special Issue 5), 1147 – 1162

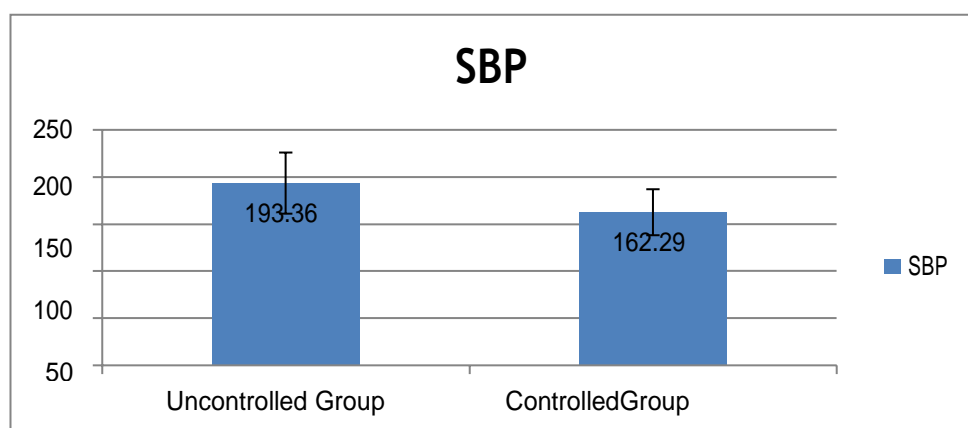
195.25 +20.47 (mean +SD) respectively. The difference between Uncontrolled Group and controlled Group as calculated by t-value (t-value

-21.23, P- Value <0.0001) it's shown highly statistically significant. In both groups severity of Shortness of Breath and Chest Pain were assessed and conducted mean, standard deviation and compare the severity by using paired t-test. On examination of patients their systolic blood

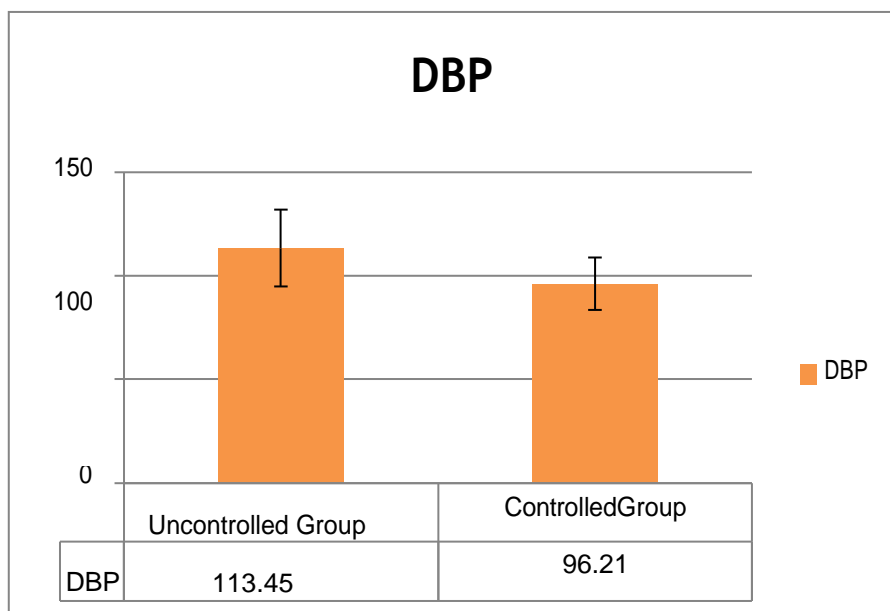
pressure; diastolic blood pressure and pulse measured then calculated means, standard deviation and compare in both groups by using paired- t test.

**Table No: 8** Comparison of the blood pressure in both groups

S.no	Blood Pressure	Uncontrolled Group Severity (Mean ± Sd)	Controlled Group Severity (Mean ± Sd)	T-Value/ P-Value	Confidences Interval at 95%
1	S BP	193.36 ± 32.48	162.29± 24.43	-09.84/ <0.0001	-37.27 to -24.86
2	D BP	113.45±18.56	96.21±12.62	-09.78/ <0.0001	-20.70 to -13.77



**Figure 6:** Compare the Systolic blood pressure in both groups



**Figure 7:** Compare the Diastolic blood pressure in both groups

The systolic blood pressure means ± standard deviation of uncontrolled group and controlled groups was calculated 193.36±32.78 and 162.29± 24.43 respectively. Systolic blood pressure low in controlled group then uncontrolled group and it is found to be statically significant (T- Value -09.84, Eur. Chem. Bull. 2023, 12(Special Issue 5), 1147 – 1162

P-Value <0.0001) at 95% of confidence interval - 37.27 to -24.86. The Diastolic blood pressure mean ± standard deviation of uncontrolled group and controlled groups was calculated 113.45± 18.56 and 96.21± 12.62 respectively. Diastolic blood pressure is low in controlled group

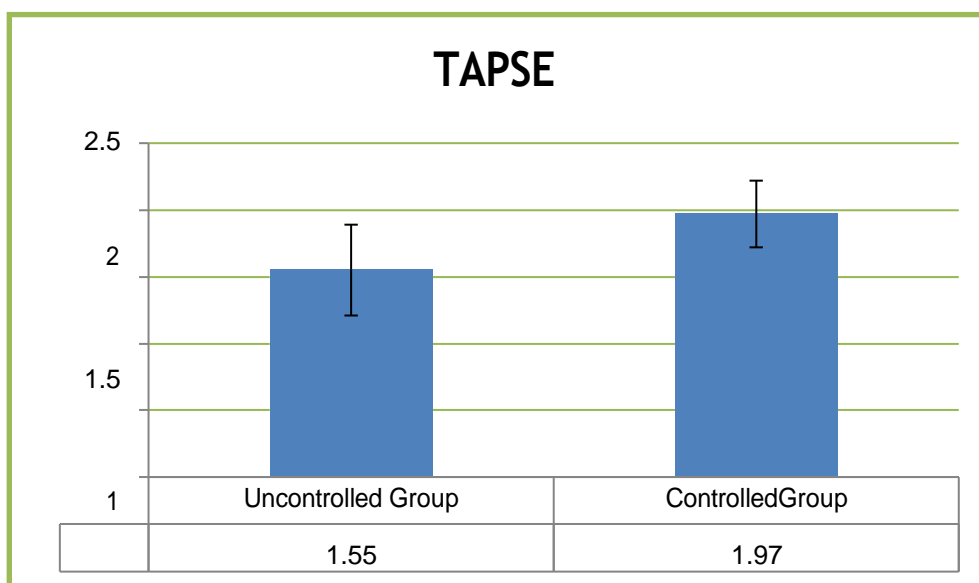


compared to uncontrolled group and it is showed statically significant (T- Value -09.78, P-Value

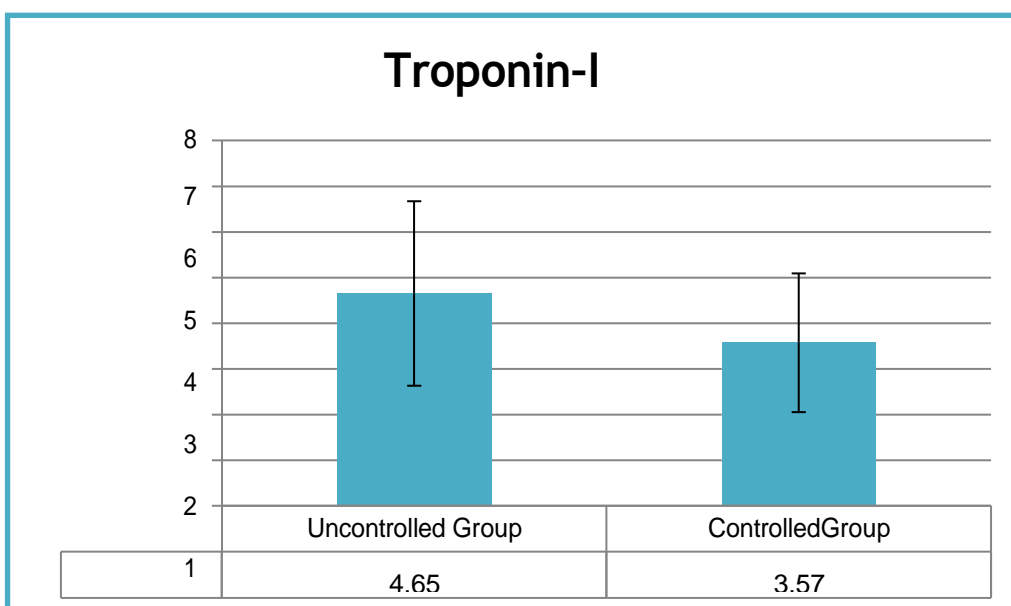
<0.0001) at 95% of confidence interval -20.70 to -13.77.

**Table No: 9** Comparison of the Cardiac enzymes and markers in both controlled and uncontrolled groups

S.No	Cardiac enzymes	Uncontrolled Group Severity (Mean± S d)	Controlled Group Severity (Mean±S d)	T- Value/ P-Value	Confidences Interval at 95%
1	CKMB	61.34 ± 15.64	48.34 ± 10.57	-06.19/<0.0001	-17.14 to -08.85
2	Troponin-I	04.65 ± 02.02	03.57 ± 01.52	-03.56/<0.0004	-01.67 to -00.48
3	TAPSE	01.55 ± 00.34	01.97 ±00.25	05.90/<0.0001	00.27 to -00.56

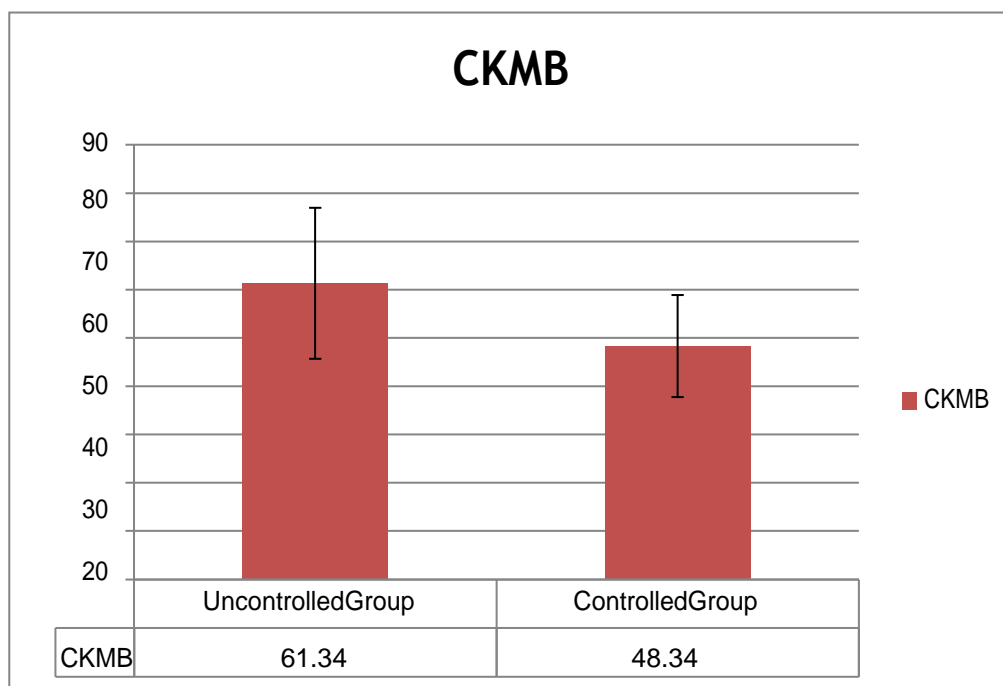


**Figure 8:** Compare the TAPSE both groups



**Figure 9:** Compare the Troponin-I both groups





**Figure 10:** Compare the CKMB in both groups

The CK-MB mean ± standard deviation of uncontrolled group and controlled groups was calculated 61.34±15.64 and 48.34±10.57 respectively. CKMB levels are high in uncontrolled group then controlled group and it's showed statically significant (T- Value -06.19, P- Value <0.0001) at 95% of confidence interval - 17.14 to -08.85. The Troponin-I mean ± standard deviation of uncontrolled group and controlled group were calculated 04.65±02.02 and 03.57 ± 01.52 respectively. Troponin-I levels are high in uncontrolled group then controlled group and it's

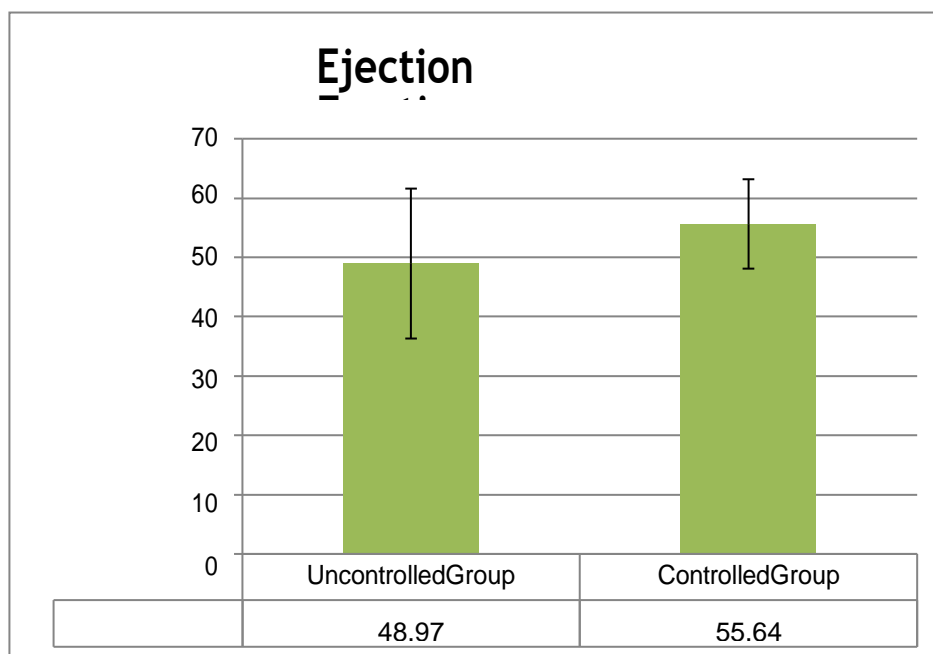
showed statically significant (T- Value -03.56, P- Value <0.0004) at 95% of confidence interval - 01.67 to -00.48. The TAPSE mean ± standard deviation of uncontrolled group and controlled groups was calculated 01.55 ± 00.34 and 01.97 ±00.25 respectively. TAPSE levels are low in uncontrolled group then controlled group and it's showed statically significant (T- Value -05.90, P- Value <0.0001) at 95% of confidence interval 00.27 to 00.56.

**Table No: 10** Compare the Ejection Fraction percentage in both groups

S.No	Lab test	Uncontrolled Group Severity (Mean ± S d)	Controlled Group Severity (Mean ±S d)	T- Value P-Value	Confidences Interval at 95%
1	Ejection Fraction	48.97 ±12.64	55.64 ± 07.54	05.55 to <0.0001	04.30 to 09.03

The Ejection Fraction mean ± standard deviation of uncontrolled group and controlled groups was calculated 48.97 ±12.64 and 55.64 ± 07.54 respectively. Ejection Fraction is low in

uncontrolled group then controlled group and it is showed statically significant (T- Value 05.55, P- Value <0.0001) at 95% of confidence interval 04.30 to 09.03



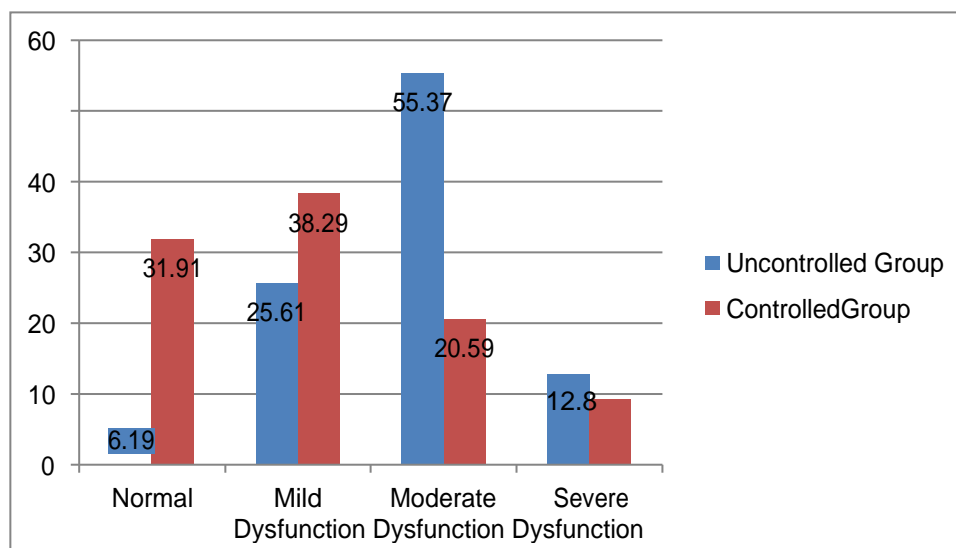
**Figure: 11** Compare the Ejection Fraction percentage in both groups

**Table 11:** Compare the Left Ventricular (LV) function in MACE patients in both groups

Left Ventricular(LV) function	Uncontrolled Group No. of Patients 23 (%)	Controlled Group No. of Patients 10 (%)
Normal	2 (8.6)	1 (10)
Mild Dysfunction	9 (39.4)	4(40)
Moderate Dysfunction	8 (34.6)	3 (30)
SevereSeSevere dysfunction	4 (17.4)	2 (20)

Left Ventricular (LV) function was assessed in both groups 06.19% (15) in Uncontrolled Group and 31.91% (45) patients were in controlled Group have normal LV function, the ratio between these groups is 1:5.15 (Uncontrolled Group: Controlled Group) it indicated that LV function normal five more in controlled group than uncontrolled group. In dysfunction patients mild dysfunction was observed 25.61% (62) patients and 38.29 % (54) patients in controlled group, the ratio between these groups is 1:1.49 (Uncontrolled Group: Controlled Group), it's shown controlled patients are more in mild dysfunction. Moderate dysfunction was observed

55.37% (134) patients and 20.59 % (29) patients in controlled group, the ratio between these groups is 2.68:1 (Uncontrolled Group: Controlled Group), it's shown uncontrolled diabetes patients are 1.68 time are more risk to develop Moderate dysfunction LV dysfunction then controlled diabetes patients. Severe dysfunction was observed 12.80% (31) patients and 09.21 % (13) patients in controlled group, the ratio between these groups is 1.38:1 (Uncontrolled Group: Controlled Group), it's shown uncontrolled diabetes patients are 38% time are more risk to develop Moderate dysfunction LV dysfunction then controlled diabetes patients.



**Figure12:** Compare the Left Ventricular (LV) function in both groups

**CORONARY ANGIOGRAPHY**

**Table No: 12** Compare the Number of blood vessels affected in both groups

No. of blood vessels Effected	Uncontrolled Group No. of Patients 394 (%)	Controlled Group No. of Patients 153 (%)
Single Vessel Disease	84 (21.38)	67 (44.82)
Double Vessel Disease	111 (28.34)	50 (32.18)
Triple Vessel Disease	167 (42.19)	29 (18.39)
More than triple vessels	32 (08.09)	07 (04.59)

Single Vessel Disease was experienced by 37 (21.38%) in Uncontrolled Group and 39 (44.82%) patients were experienced in controlled Group, the ratio between these groups is 1:0.4 (Uncontrolled Group: Controlled Group) followed by Double Vessel Disease was experienced by 49 (28.32%) in Uncontrolled Group and 28 (32.18%) patients were experienced in controlled Group, the ratio between these groups is 1:0.8, Triple Vessel Disease was experienced by 73 (42.19%) in Uncontrolled Group and 16 (18.39%) patients were experienced in controlled Group, the ratio between these groups is 1:2.2 and More than triple

vessels was experienced by 14 (08.09%) in Uncontrolled Group and 04 (04.59%) patients were experienced in controlled Group, the ratio between these groups is 1:1.7. this table shown that Triple Vessel Disease and More than triple vessels disease patient almost double in uncontrolled diabetes patients then controlled diabetes patients followed by Double Vessel Disease and single Vessel Disease more in controlled group then uncontrolled group.

**Table No: 13** Distribution of diagnosis among study sample

Diagnosis	Uncontrolled Group Severity Frequency 394 (%)	Controlled Group Severity Frequency 153 (%)
AWMI	66 (16.66)	35 (23.07)
IWMI	44 (11.30)	15 (09.89)
STABLE ANGINA	101 (25.59)	58 (37.38)
UNSTABLE ANGINA	145 (36.90)	37 (24.17)
PWMI	38 (09.55)	08 (05.49)

AWMI was diagnosed in both groups 16.66% (28) in Uncontrolled Group and 23.07% (21) patients were in controlled Group, the ratio between these groups is 1:0.7 (Uncontrolled Group: Controlled Group) it indicated that AWMI 30% less risk in controlled group then uncontrolled group. IWMI was diagnosed in both groups 11.30% (19) in Uncontrolled Group and 09.89% (09) patients were in controlled Group, the ratio between these groups is 1:1.1 (Uncontrolled Group: Controlled Group) it indicated that nearly both groups equally risk to develop the IWMI.

Stable Angina was diagnosed in both groups 25.59% (43) in Uncontrolled Group and 37.36% (34) patients were in controlled Group, the ratio between these groups is 1:0.6 (Uncontrolled

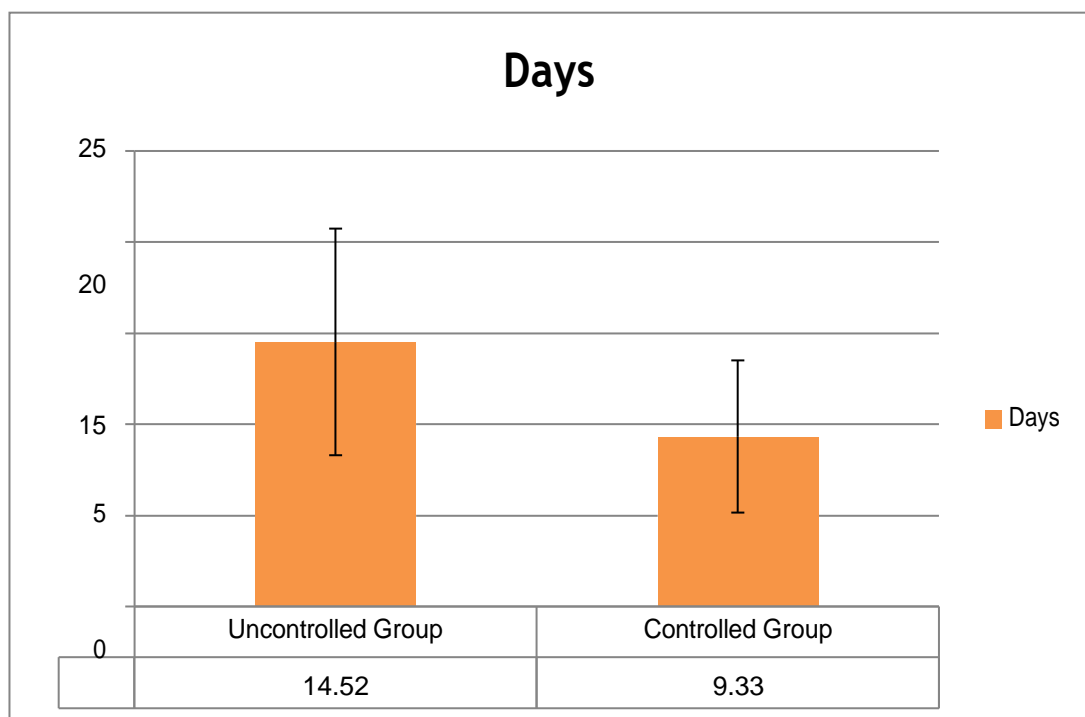
Group: Controlled Group) it indicated that Stable Angina 40% less risk in controlled group then uncontrolled group. Unstable Angina was diagnosed in both groups 36.90% (62) in Uncontrolled Group and 24.17% (22) patients were in controlled Group, the ratio between these groups is 1:1.52 (Uncontrolled Group: Controlled Group) it indicated that unstable Angina more risk in uncontrolled group then controlled group. PWMI was diagnosed in both groups 09.52% (16) in Uncontrolled Group and 05.49% (05) patients were in controlled Group, the ratio between these groups is 1:1.7 (Uncontrolled Group: Controlled Group) it indicated that unstable angina more risk in uncontrolled group than in controlled group.

**Table No: 14** Compare Length of Hospital Stay in Hospital in both groups

Length of Hospital Stay (in Days)	Uncontrolled Group Severity (Mean± S d)	Controlled Group Severity (Mean±S d)	T- Value/ P-Value	Confidences Interval at 95%
Days	14.52 ± 06.22	09.33 ± 04.18	-8.81/<0.0001	-6.34 to -4.03

The length of hospital stays in days, mean ± standard deviation of uncontrolled group and controlled groups was calculated 14.52 ± 06.22 and 09.33 ± 04.18 respectively. Length of hospital stay is very high in uncontrolled group then

controlled group and it is statically significant (T-Value -08.81, P-Value <0.0001) at 95% of confidence interval -06.34 to -04.03.



**Figure 13:** Compare Length of Hospital Stay in Hospital in both groups

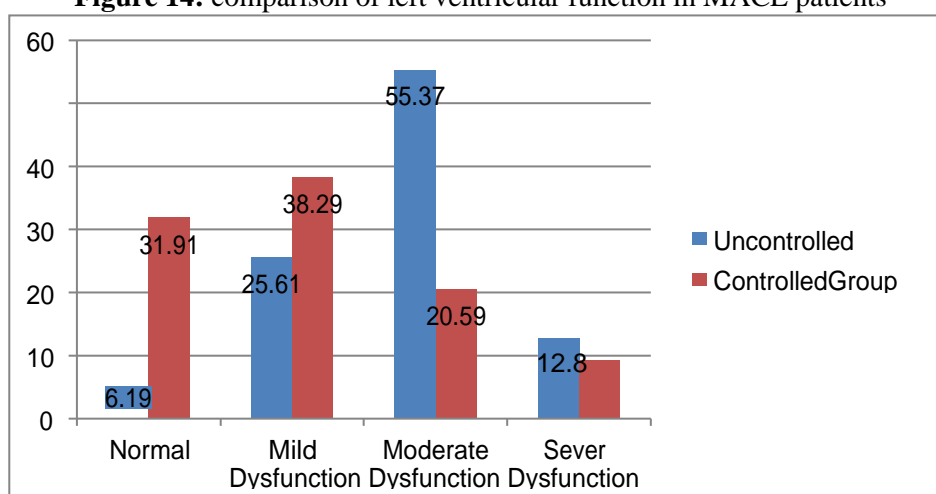
**Table No: 15** Compare the Left Ventricular (LV) function in MACE patients in both groups

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Severe Dysfunction	4 (17.4)	2 (20)

Left Ventricular (LV) function was assessed in both groups 06.19% (15) in Uncontrolled Group and 31.91% (45) patients were in controlled Group have normal LV function, the ratio between these groups is 1:5.15 (Uncontrolled Group: Controlled Group) it indicated that LV function normal five more in controlled group then uncontrolled group. In dysfunction patients mild dysfunction was observed 25.61% (62) patients and 38.29 % (54) patients in controlled group, the ratio between these groups is 1:1.49 (Uncontrolled Group: Controlled Group), it's shown controlled patients are more in mild dysfunction. Moderate dysfunction was observed 55.37% (134) patients and 20.59 % (29) patients

in controlled group, the ratio between these groups is 2.68:1 (Uncontrolled Group: Controlled Group), it's shown uncontrolled diabetes patients are 1.68 time are more risk to develop Moderate dysfunction LV dysfunction then controlled diabetes patients. Severe dysfunction was observed 12.80% (31) patients and 09.21 % (13) patients in controlled group, the ratio between these groups is 1.38:1 (Uncontrolled Group: Controlled Group), it's shown uncontrolled diabetes patients are 38% time are more risk to develop Moderate dysfunction LV dysfunction then controlled diabetes patients.

**Figure 14:** comparison of left ventricular function in MACE patients



**CORONARY ANGIOGRAPHY**

**Table No: 16** Compare the Number of blood vessels effected in both groups

No. of blood vessels Effected	Uncontrolled Group No. of Patients 394 (%)	Controlled Group No. of Patients 153 (%)
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Double Vessel Disease	111 (28.34)	50 (32.18)
Triple Vessel Disease	167 (42.19)	29 (18.39)
More than triple vessels	32 (08.09)	07 (04.59)

Single Vessel Disease was experienced by 37 (21.38%) in Uncontrolled Group and 39 (44.82%) patients were experienced in controlled Group, the ratio between these groups is 1:0.4 (Uncontrolled Group: Controlled Group) followed by Double Vessel Disease was experienced by 49 (28.32%) in Uncontrolled Group and 28 (32.18%) patients were experienced in controlled Group, the ratio between these groups is 1:0.8, Triple Vessel Disease was experienced by 73 (42.19%) in Uncontrolled Group and 16 (18.39%) patients were experienced in controlled Group, the ratio

between these groups is 1:2.2 and More than triple vessels was experienced by 14 (08.09%) in Uncontrolled Group and 04 (04.59%) patients were experienced in controlled Group, the ratio between these groups is 1:1.7. this table shown that Triple Vessel Disease and More than triple vessels disease patient almost double in uncontrolled diabetes patients then controlled diabetes patients followed by Double Vessel Disease and single Vessel disease more in controlled group then uncontrolled group.

**Table 17:** Compare the Diagnosis disease in both groups

Diagnosis	Uncontrolled Group Severity Frequency 394 (%)	Controlled Group Severity Frequency 153 (%)
AWMI	66 (16.66)	35 (23.07)
IWMI	44 (11.30)	15 (09.89)
STABLE ANGINA	101 (25.59)	58 (37.38)
UNSTABLE ANGINA	145 (36.90)	37 (24.17)
PWMI	38 (09.55)	08 (05.49)

AWMI was diagnosed in both groups 16.66% (28) in Uncontrolled Group and 23.07% (21) patients were in controlled Group, the ratio between these groups is 1:0.7 (Uncontrolled Group: Controlled Group) it indicated that AWMI 30% less risk in controlled group then uncontrolled group. IWMI was diagnosed in both groups 11.30% (19) in Uncontrolled Group and 09.89% (09) patients were in controlled Group, the ratio between these groups is 1:1.1 (Uncontrolled Group: Controlled Group) it indicated that nearly both groups equally risk to develop the IWMI. Stable

Angina was diagnosed in both groups 25.59% (43) in Uncontrolled Group and 37.36% (34) patients were in controlled Group, the ratio between these groups is 1:0.6 (Uncontrolled Group: Controlled Group) it indicated that Stable Angina 40% less risk in controlled group then uncontrolled group. Unstable Angina was diagnosed in both groups 36.90% (62) in Uncontrolled Group and 24.17% (22) patients were in controlled Group, the ratio between these groups is 1:1.52 (Uncontrolled Group: Controlled Group) it indicated that unstable Angina more risk in uncontrolled group then controlled group. PWMI was diagnosed in both groups 09.52% (16) in Uncontrolled Group and 05.49% (05) patients were in controlled Group, the ratio between these groups is 1:1.7 (Uncontrolled Group: Controlled Group) it indicated that unstable angina more risk in uncontrolled group then controlled group.

## SUMMARY AND CONCLUSION

Based on the results obtained, our study reveals that males have elevated risk (15 to 30%) and

females have average risk (<15%) in percentage of developing major adverse cardiovascular events in the following 10 years using UKPDS scale. Our study unfolds that as the age increases uncontrolled diabetic groups are more at risk of developing cardiovascular disease. The present study shows that both males and females under uncontrolled diabetic population had coronary artery disease as the major cardiovascular disease. The present study also shows that verbal counseling was more effective than counseling through Patient Information Leaflets. The study results conclude that the patient's knowledge, attitude and practice on diabetes were improved by means of patient counseling. It is also understood and revealed that despite of hypertension being proved a major risk factor for the development of cardiovascular diseases, its presence with diabetes aggravates the incidence of cardiovascular diseases. Among diabetic patients a careful follow up of their disease management and monitoring of non fatal MACE symptoms had a greater impact on the quality of life of patient. Predictors such as positive family history, poor knowledge, availability of immediate health care facilities could decrease the incidence of MACE related deaths. Controlled diabetes decreases the severity of symptoms in contrary to the uncontrolled diabetic subjects. It should be made mandatory that all the diabetic people should undergo HbA1C checkup and strict monitoring of blood pressure and lipid profile. Lifestyle changes if inculcated can reduce the disease progression and also enables the patients to lead a quality life. Both males and females are observed to be at equal risk after the age 50 years among



uncontrolled diabetes group. Knowledge on disease management and strict adherence and involvement in an active life style had shown a steep decrease in the incidence of MACE.

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