



## “CLINICAL STUDY ON MODIFIABLE RISK FACTORS IN POST MYOCARDIAL INFARCTION PATIENTS.”

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### ABSTRACT

**Background:** MI is one of the major complication and burden now a day. So it is necessary to assess the risk factors and complications of MI and take necessary precautionary steps to delay the onset of cardiac failure, if possible to prevent future it and other complications. The main objective was to assess the effect of modifiable risk factors in post myocardial infarction patients.

**Materials and Methods:** The present study comprises of 50 cardiac failure patients with history of MI in the past and who presented with myocardial infarction with cardiac failure were included in this study. This study was conducted at Rajiv Gandhi Institute of Medical Sciences (RIMS) Ongole, Prakasam Dist, Andhra Pradesh. The study was carried out for a period of 1 year and permission from Institutional Ethics Committee was obtained. From each and every patient included in the study, pre informed consent was taken.

**Results:** Incidentally in this study only 8 (16%) patients are pure vegetarian. Among 42 male patients 28 are having WHR > 0.9.out of 8 female patients, WHR of all 8 is > 0.8 which is quite significant. Maximum number 41(82%) are with history of one attack. 7(14%) patients are with two episodes. Only 2(4%) patients presented with history of three episodes. Unfortunately those two patients expired.

**Conclusion:** Lifestyle is one of the main modifiable risk factor. Sedentary life style (60%) and mixed diet (84%) have positive effect on post MI cardiac failure when compared to non-sedentary lifestyle (18%) and vegetarians (16%).Personal habits like alcohol (64%); smoking (74%), have linear relationship on post MI cardiac failure.

**Key words:** Modifiable Risk Factors, Post Myocardial Infarction, Cardiac Failure.

### INTRODUCTION

MI is one of the major complication and burden now a day. So it is necessary to assess the risk factors and complications of MI and take necessary precautionary steps to delay the onset of cardiac failure, if possible to prevent future it and other complications. If the patient is already presents with cardiac failure steps to improve his general condition and delay progression by non-pharmacological methods like life style modifications and by pharmacological methods.

Previously MI was the most powerful predictor of systolic dysfunction. A high prevalence of systolic dysfunction also occurred in groups with angina and Diabetes. [1].

Mitral regurgitation can complicate MI, is often unrecognized clinically, and has been reported to increase the risk of death after MI. Mitral regurgitation is frequent and often silent after MI. It carries information to predict heart failure or death among 30 day survivors independent of age, gender, EF and Killip class [2]

Diet – advice patients to avoid high salt content foods and not to add salt (Particularly in severe cases of congestive heart failure) restriction to 2gms of sodium.

Fluid – urge overloaded patients and those with severe heart failure to restrict their fluid intake (1.5–2 liters)  
 Alcohol – advice moderate alcohol consumption (abstinence in alcohol related cardiomyopathy) Smoking – avoid smoking

Exercise – regular exercise should be encouraged. [3]

There are several situations in which one can identify high – risk patients with ST segments elevation myocardial infarction. These include Presence of a large amount of necrosis, that is, marked ST- segment elevation, marked troponin T elevation, or multiple lead ECG changes, and extensive LV dysfunction as measured by BNP or echocardiography, Patients with diabetes and abnormal glycosylated haemoglobin tests, Renal disease manifested by elevated creatinine or micro albuminuria and On-going inflammation as manifested b CRP.[4]

Smoking is one of the risk factors for many diseases apart from MI and cardiac failure; smoking appears to be a major risk factor for vasospastic angina without significant coronary narrowing. [5]

**METHODS**

The present study comprises of 50 cardiac failure patients with history of MI in the past and who presented with myocardial infarction with cardiac failure were included in this study. This study was conducted at Rajiv Gandhi Institute of Medical Sciences (RIMS) , Ongole, Prakasam District, Andhra Pradesh. 50 cases of post myocardial infarction with failure were selected who attended medical and cardiology OPD and admitted in medicine and cardiology wards between SEP 2011- AUG 2012.

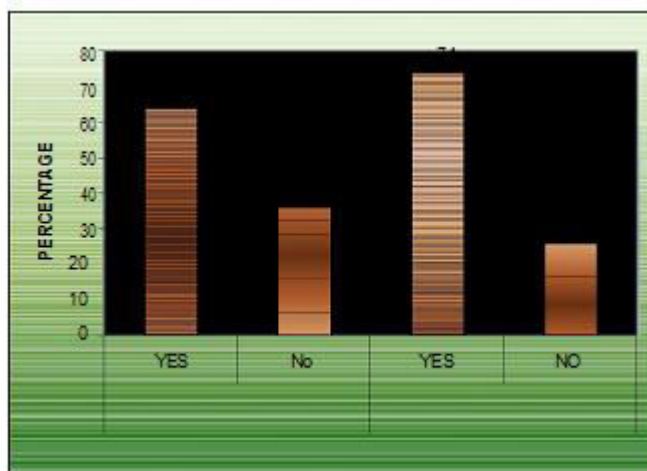
Detailed medical history, general, physical and systemic examinations were noted. Along with above criteria Life style, Waist Hip Ration (WHR), BMI and Number of episodes also noted.

Evaluation and Investigations required: Blood investigation – Biochemical and other routine, Urine routine, Lipid Profile, ECG, Chest X- Ray, 2D ECHO, and TMT if required.

The study was carried out for a period of 1 year and permission from Institutional Ethics Committee was obtained. From each and every patient included in the study, Pre informed individual consent was taken.

**RESULTS:**

**Graph 1:** Influence of personal habits and diet on post MI cardiac failure **Personal Habits**

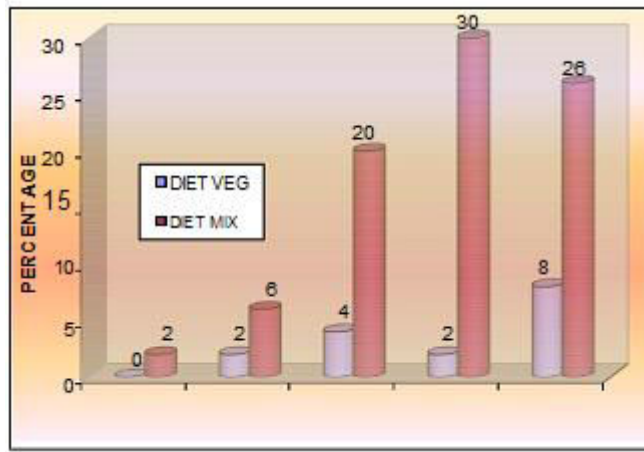


The study showed nearly 74% are a smoker which is significant compared to non-smokers (26%).

People who eat more of animal products or mixed food are prone for cardiac complications than people eating food of vegetable origin. Incidentally in this study only 8(16%) patients are pure vegetarian.

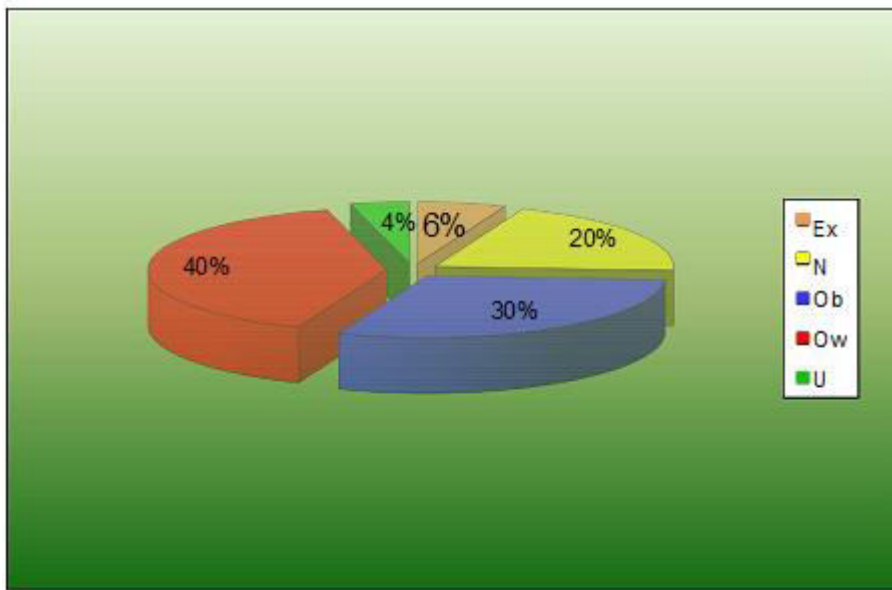
**DIET**

AGE	VEG	%	MIX	%
21-30	0	0	1	2
31-40	1	2	3	6
41-50	2	4	10	20
51-60	1	2	15	30
61-70	4	8	13	26
Total	8	16	42	84



**Graph 2:** Effect of BMI & WHR in post MI cardiac failure in the study group

**Body Mass Index (BMI):**



Body Mass Index (BMI) – U – Underweight - < 18.5 kg/m<sup>2</sup>  
 N – Normal 18.5-24.9 kg/m<sup>2</sup>  
 Ow – Over Weight – 25-29.9 kg/m<sup>2</sup>  
 Ob – Obesity – 30-39.9 kg/m<sup>2</sup>  
 Ex – Extreme Obese - ≥40 kg/m<sup>2</sup>

In our study a significant number of patients (38) have BMI >25kg/m<sup>2</sup> i.e. overweight. At the same time patients with normal BMI and underweight are also at risk.

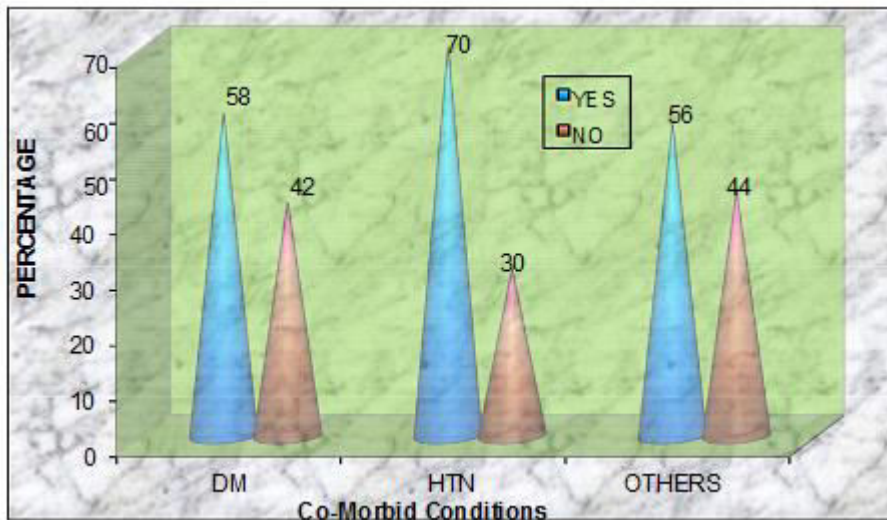
Among 42 male patients 28 are having WHR > 0.9.out of 8 female patients, WHR of all 8 is > 0.8 which is quite significant.

**WHR**

Males		
WHR	Number	%
≤0.9	14	33.33
>0.9	28	66.67

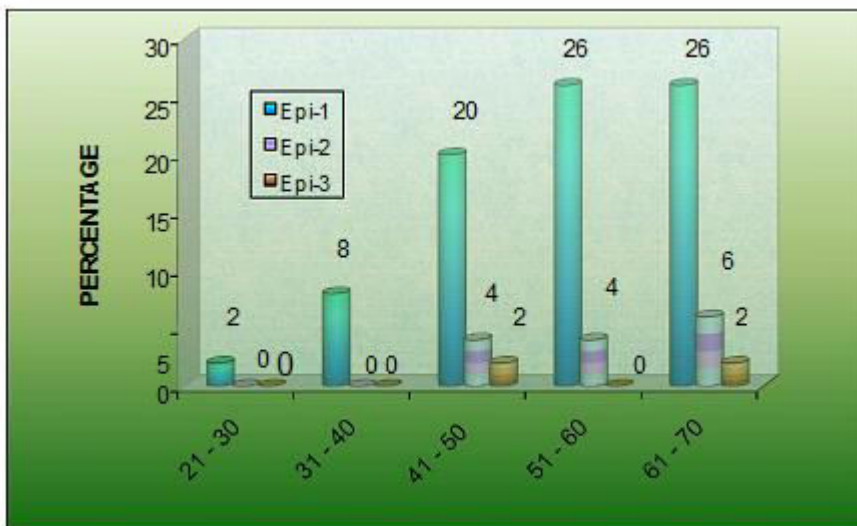
Females		
WHR	Number	%
≤0.8	0	0
>0.8	8	100

**Graph 3:** Showing the distribution according to Co-morbidity conditions in the study group



In my study 29(58%) patients are DM and 35(70%) are HTN and only 6(12%) patients are neither DM, nor HTN. But share some of the risk factors like COPD.

**Graph 4:** Showing the distribution according to History of MI – Number of episodes in the study group



In substantial number of cases failure is due to either with history of one episode or repeated attacks. Patients with repeated attacks or multiple attacks are having high incidence of mortality. In our study maximum number 41(82%) are with history of one attack. 7(14%) patients are with two episodes. Only 2(4%) patients presented with history of three episodes. Unfortunately those two patients expired.

**DISCUSSION**

In 1970, Burch and colleagues first used the term ischemic cardiomyopathy to describe the condition in which CAD results in severe myocardial dysfunction with clinical manifestation often indistinguishable from those of primary dilated cardiomyopathy. It is important to recognize hibernating myocardium in patients with ischemic cardiomyopathy. [6]

Results of European Fat Distribution Study and Paris Prospective Study Demonstrated importance of abdominal fat and greater WHR in cardiovascular and Coronary Heart Disease mortality. There is a continuous positive relationship of all markers of obesity (BMI, waist size, WHR) with major coronary risk factors- HTN, DM, and metabolic syndromes, while WHR also correlates with lipid abnormalities. [7].

Over the past 20 years RV infarction became more with the advent of radio nucleotide, ventriculography, 2D ECHO, electrocardiography with right sided leads RV<sub>3</sub>, RV<sub>4</sub>, RV<sub>5</sub> infarction is demonstrated in 40% Of IWMI.

Proximal left coronary artery occlusion is virtually the cause of RV infarction in every case, clinically they present with retrosternal chest discomfort nausea, vomiting diaphoresis. On examination elevated JVP, Kussmaul's sign, low BP, RV S holosystolic murmur of tricuspid origin, pulsus alternans, rapidly developing Peripheral edema with clear lung fields. [8]

The compensatory neurohormonal mechanisms provide valuable support for the heart in normal physiological circumstances; they also have a fundamental role in the development and subsequent progression of Chronic Heart Failure. [9]

#### FRAMINGHAM CRITERIA FOR HEART FAILURE:

Major Criteria :Paroxysmal Nocturnal Dyspnoea or Orthopnoea, Neck vein distension, Radiographic cardiography, Acute pulmonary, edema S<sub>3</sub> gallop, Increased central venous pressure >16 cm, H<sub>2</sub>O Circulation time ≥ 25 sec, Hepatojugular reflux, Pulmonary edema, visceral congestion, or cardiomegaly at autopsy, Weight loss ≥ 4.5 Kg in 5 days in response to treatment of heart failure.

Minor Criteria: Bilateral ankle edema, Nocturnal cough, Dyspnea, Hepatomegaly, Pleural effusion, Decrease in vital capacity by one third from maximal value recorded.[10]

#### CONCLUSION

Lifestyle is one of the main modifiable risk factor. Sedentary life style (60%) and mixed diet (84%) have positive effect on post MI cardiac failure when compared to non-sedentary lifestyle (18%) and vegetarians (16%).

Personal habits like alcohol (64%); smoking (74%), have linear relationship on post MI cardiac failure.

Patients with high WHR i.e. >0.9 in males are 28(56%) and >0.8 in females are 8(16%) and BMI >25 kg/m<sup>2</sup> are 38(76%).

Patients with DM (58%), HTN (70%), and others (including COPD, PT, CRF, etc.) (56%) increase the risk of post MI cardiac failure.

There is a positive relationship between BMI, WHR with coronary artery disease and its complications. Most of the patients have associated co-morbid conditions.

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