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A Prospective Study On Impact Of Major Risk Factors On Myocardial Infarction And Patient Counselling To Reduce Further Complications

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Abstract

The purpose of the study is to assess the impact of major risk factors on myocardial infarction and patient counseling to reduce further complications. Myocardial infarction (MI), informally known as "heart attack," is caused by decreased or complete termination of blood flow to a portion of the myocardium. Myocardial infarction may be "silent," and go undetected, or it could be a catastrophic event leading to hemodynamic deterioration and sudden death. Most myocardial infarctions are due to underlying coronary artery disease, the leading cause of death in the United States. With coronary artery occlusion, the myocardium is deprived of oxygen. Prolonged deprivation of oxygen supply to the myocardium can lead to myocardial cell death and necrosis. Patients can present with chest discomfort or pressure that can radiate to the neck, jaw, shoulder, or arm. In this study, there so many kind of risk factors are there for myocardial infarction and generally they been differentiated as major risk factors and minor risk factors. As of this study concludes that when the people with negligence towards minors risk factors they will ready to prone and turns major risk factors which are causing the Myocardial infarction effectively.

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Keywords: Myocardial infarction, risk factors, hypertension, Diabetes mellitus, patient counseling, complications.

INTRODUCTION:

Myocardial infarction (MI), informally known as "heart attack," is caused by decreased or complete termination of blood flow to a portion of the myocardium. Myocardial infarction may be "silent," and go undetected, or it could be a catastrophic event leading to hemodynamic deterioration and sudden death.

ETIOLOGY:-

1.Oxidative Stress

Oxidative stress is caused by an imbalance between the production of reactive oxygen and a biological system's ability to readily detoxify the reactive intermediates or easily repair the resulting damage.

2. Atherosclerosis

Atherosclerosis is the condition in which an artery wall thickens as the result of a buildup of fatty materials such as cholesterol. It is a chronic inflammatory response in the walls of arteries, in large part due to the accumulation of macrophage white blood cells and promoted by low density lipoproteins (plasma proteins that carry cholesterol and triglycerides) without adequate removal of fats and cholesterol from the macrophages by functional high density lipoproteins (HDL).

SYMPTOMS:

The onset of symptoms in MI is usually gradual, over several minutes, and rarely instantaneous. Chest pain is the most common symptom of acute MI and is often described as a sensation of tightness, pressure, or squeezing. Other symptoms include diaphoresis (an excessive form of sweating), Shortness of breath (dyspnea), weakness, light-headedness, nausea, vomiting, and palpitations.

RISK FACTORS:

Generally the risk factors are classified as major and minor risk factors.
Major risk factors: hyper tension, diabetes mellitus, obesity, stress, coronary artery disease, lack of exercise, smoking, alcohol, genetics., etc.
Minor risk factors: Depression, kidney disease, mobile usage, caffeine usage, unhealthy diet, sleep apnea.

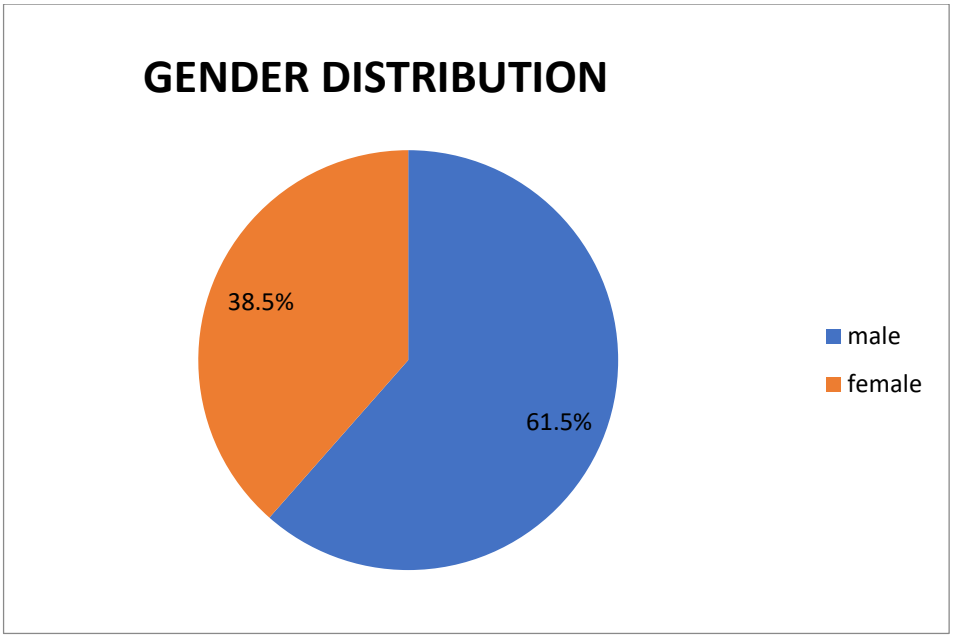
Materials and methods:

The current study is a prospective and observational study conducted over a period of 6 monthsfrom September 2023 to February 2024 at Lalitha Specialty Hospital in the in-patient cardiology department about the impact of risk factors on myocardial infraction and patient counselling to reduce further complications. The patients are included according to their interests and willingness to carry out the study. The sample size consists of 200 patients who are admitted to the Lalithasuper specialty hospital and all the patients age in between 25 to 85 .

Results and discussion:

1. GENDER DISTRIBUTION

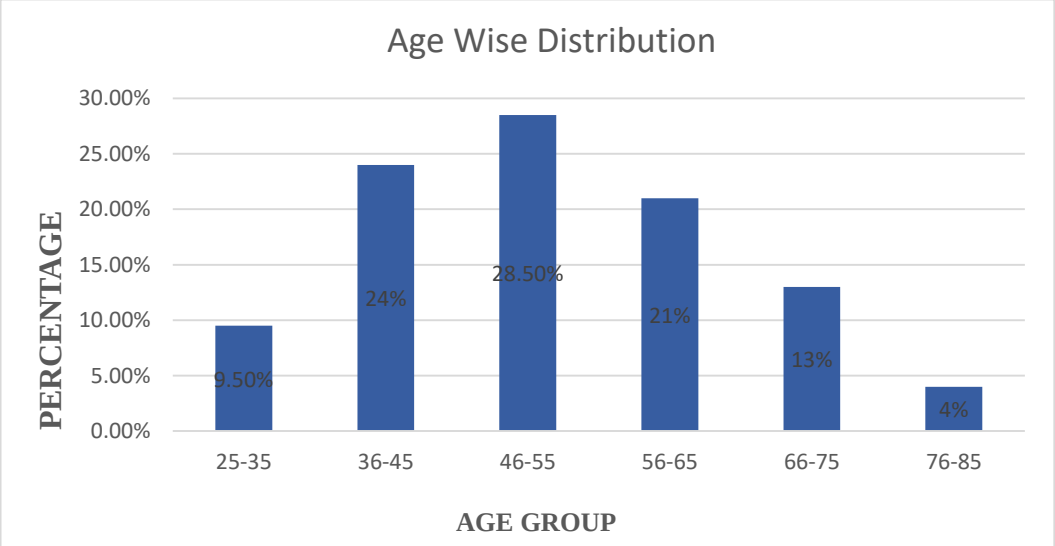
S.NO	GENDER	NO. OF PATIENTS (N=200)	PERCENTAGE
1.	Male	123	61.5%
2.	Female	77	38.5%



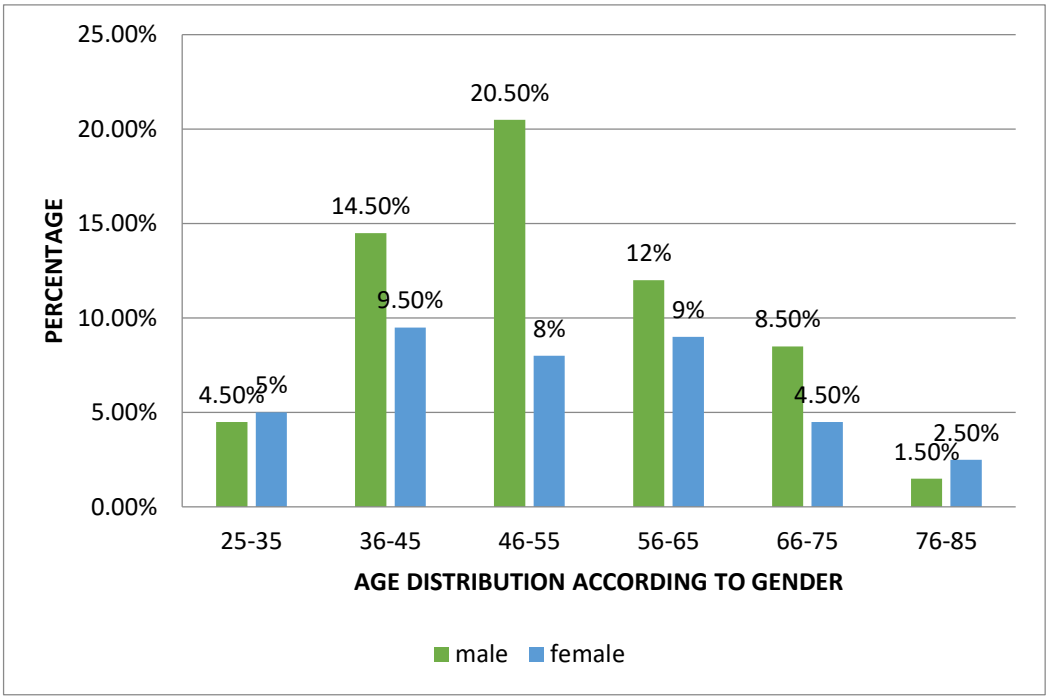
The overall patients demographics of gender distribution in the study are, 123 patients of 61.5% are males and the remaining 77 patients of 38.5% are females.

2.AGE DISTRIBUTION OF PATIENTS:

S.NO	Age in Years	No. of Patients (N=200)	Percentage
1.	25-35	19	9.5%
2.	36-45	48	24%
3.	46-55	57	28.5%
4.	56-65	42	21%
5.	66-75	26	13%
6.	76-85	8	4%



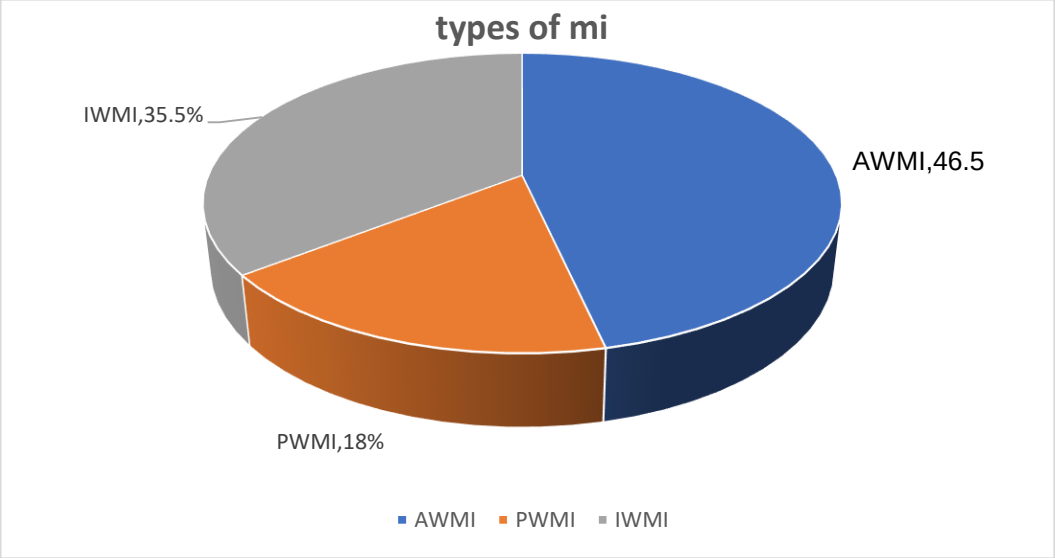
Age in Years	Males	Percentage	Females	Percentage
25-35	9	4.5%	10	5%
36-45	29	14.5%	19	9.5%
46-55	41	20.5%	16	8%
56-65	24	12%	18	9%
66-75	17	8.5%	9	4.5%
75-85	3	1.5%	5	2.5%



Patients of age group of 25-85 years were included in the study.

3.TYPES OF MYOCARDIAL INFARCTION

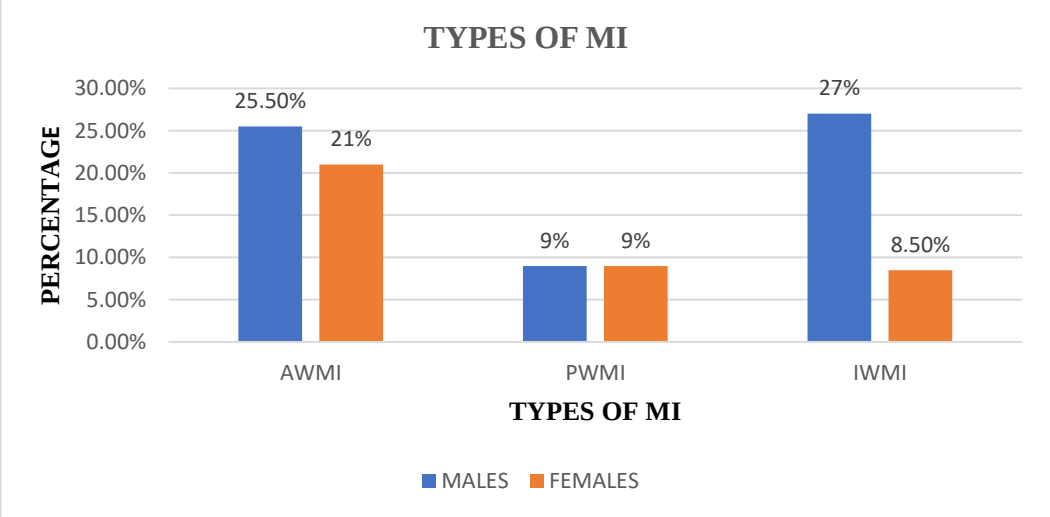
S. No	Types	No. of Patients (N=200)	Percentage
1	AWMI	93	46.5%
2	PWMI	36	18%
3	IWMI	71	35.5



Out of 200 patients 93 patients had AWMI (46.5%),36 patients had a PWMI (18%), and 71 patents had a IWMI (35.5%).

TYPES OF MI ACCORDING TO GENDER

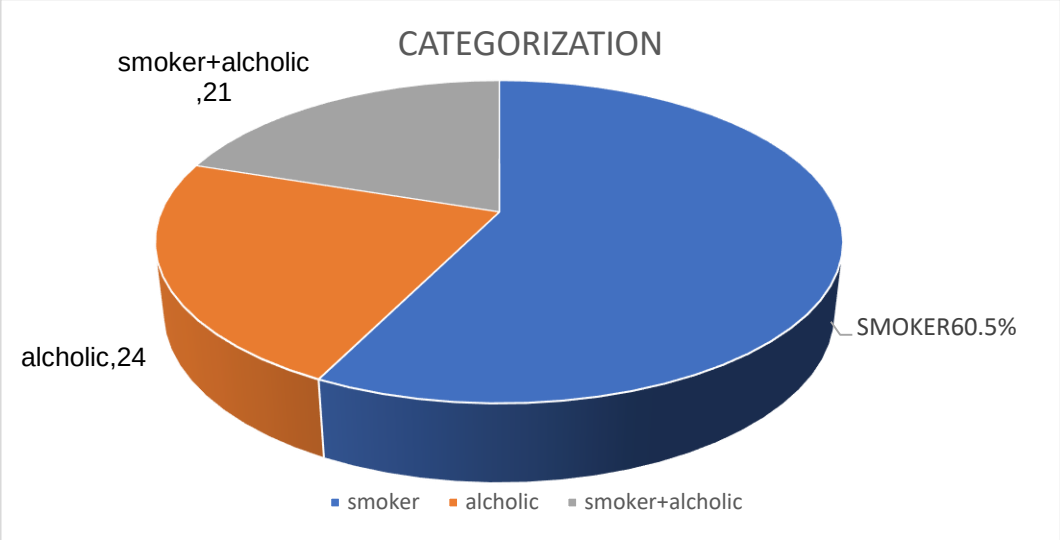
TYPES	Male	Percentage(%)	Female	Percentage(%)
AWMI	51	25.5	42	21
PWMI	18	9	18	9
IWMI	54	27	17	8.5



Out of 200 patients AWMI of male patients 51 (25.5%), female patients 42(21%), PWMI male patients 18(9%), female patients 18(9%), IWMI male pateints 54 (27%), female patients 17 (8.5%).

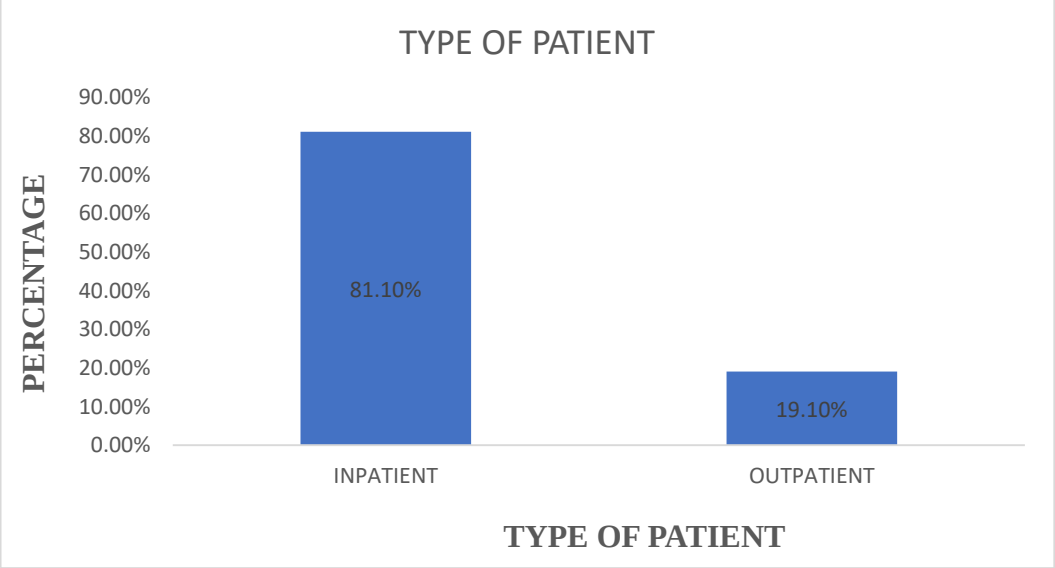
4. PATIENT CATEGORIZATION

Categorization	NO. of Patients	Percentage(%)
SMOKER	121	60.5
ALCHOLIC	48	24
SMOKER+ALCHOLIC	42	21



5.TYPE OF PATIENT

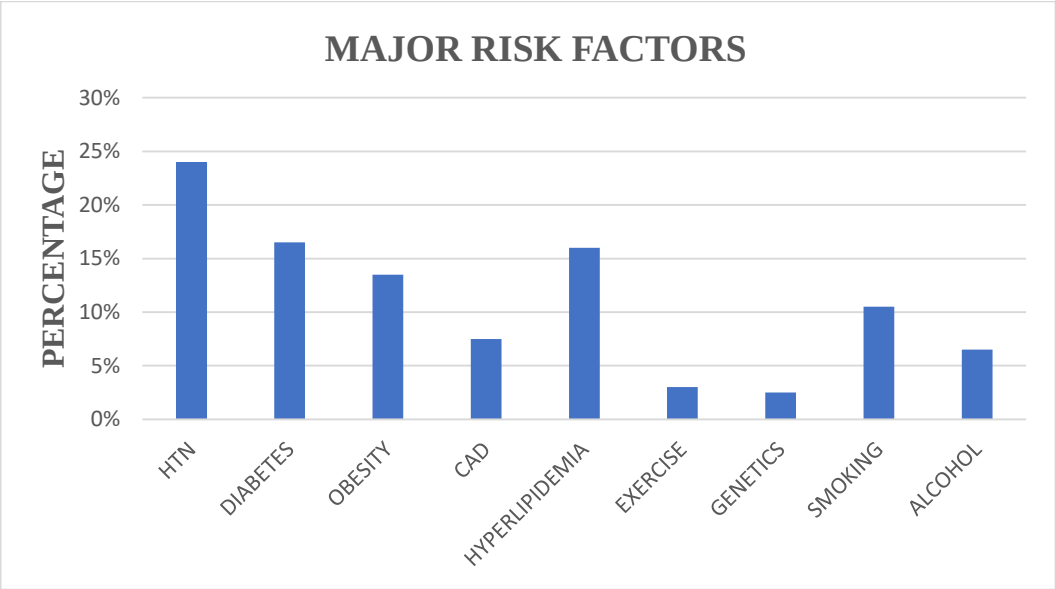
TYPE OF PATIENT	NO. of Patients	Percentage(%)
IN PATIENT	162	81.1
OUT PATIENT	38	19.1



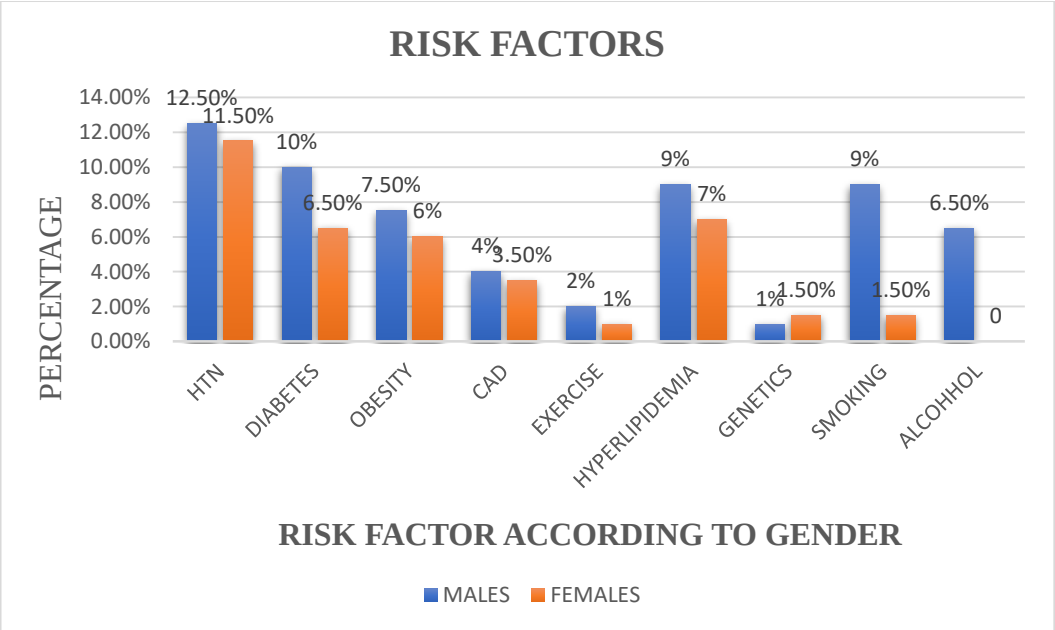
The number of In-patients was found to be 162 patients (81.1) and number of Out -patients was found to be 38 patients (19.1).

6. MAJOR RISK FACTORS FOR MYOCARDIAL INFARCTION

RISK FACTORS	NO. OF PATIENTS (N=200)	PERCENTAGE(%)
HYPERTENSION	48	24
DIABETES MELLITUS	33	16.5
OBESITY	27	13.5
CAD	15	7.5
HYPERLIPIDEMIA	32	16
EXERCISE	6	3
GENETICS	5	2.5
SMOKING	21	10.5
ALCOHOL	13	6.5



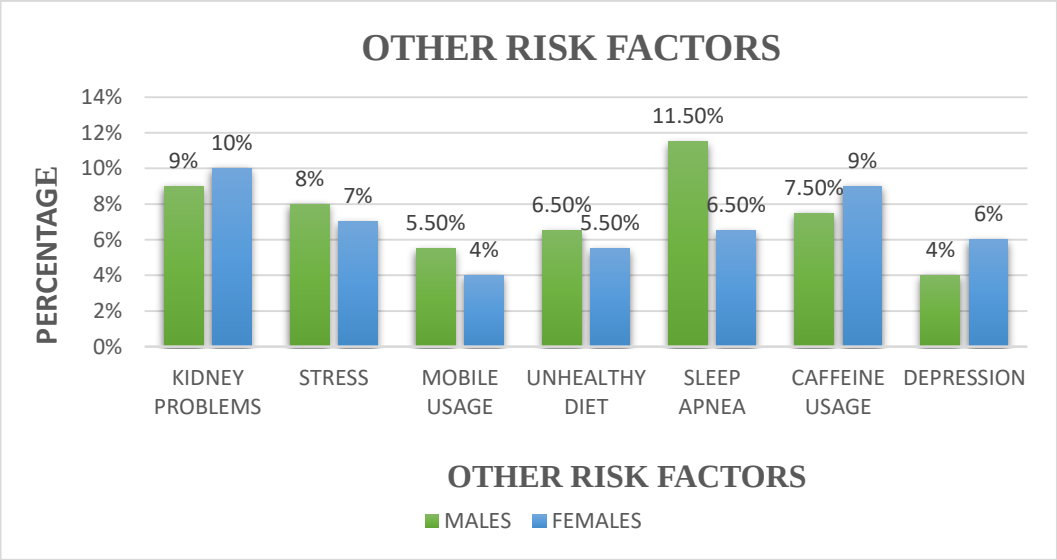
RISK FACTOR	MALES	PERCENTAGE(%)	FEMALES	PERCENTAGE(%)
HYPERTENSION	25	12.5	23	11.5
DIABETES	20	10	13	6.5
OBESITY	15	7.5	12	6
CAD	8	4	7	3.5
EXERCISE	4	2	2	1
HYPERLIPIDEMIA	18	9	14	7
GENETICS	2	1	3	1.5
SMOKING	18	9	3	1.5
ALCOHOL	13	6.5	0	0



The above graph explains that the major risk factors of myocardial infarction are hypertension 25 patients(12.5%) of males and females 23 patients(11.5%),diabetes males20 patents of(10%)and females 13 patients (6.5%) ,obesity male patients 15(7.5%) and females 12 patients of (6%),CAD male patients 8(4%),female patients 7(3.5%), exercise Male patients 4 (2%),female pateints 2(1%), hyperlipidemia male patients 18(9%),female patients 14(7%),genetics male patients 2(1%),female patients 3(1.5%),smoking male patients 18(9%),females patients 3(1.5%),alcohol male patients 13(6.5%) female patients 0(0%).

7. OTHER RISK FACTORS

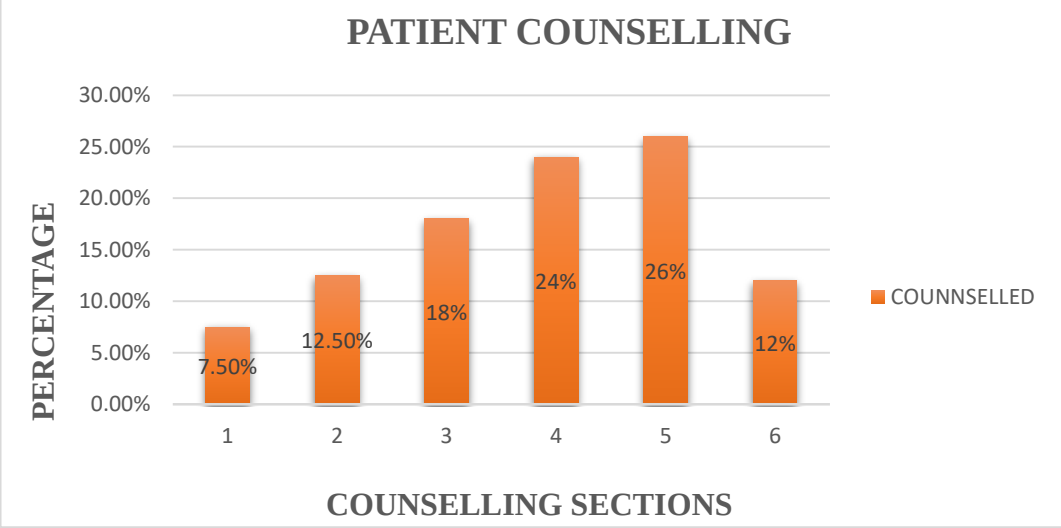
RISK FACTOR	MALES	PERCENTAGE(%)	FEMALES	PERCENTAGE(%)
KIDNEY DISEASES	18	9	20	10
STRESS	16	8	14	7
MOBILE USAGE	11	5.5	8	4
UNHEALTHY DIET	13	6.5	11	5.5
SLEEP APNEA	23	11.5	13	6.5
CAFFEINE USAGE	15	7.5	18	9
DEPRESSION	8	4	12	6



The graph shows other risk factors that cause myocardial infarction

8.PATIENT COUNSELLING

CONSELLING SECTION	NO. OF PATIENTS COUNSELLED(N=200)	PERCENTAGE(%)
1	15	7.5
2	25	12.5
3	36	18
4	48	24
5	52	26
6	24	12



The graph shows 200 patients were counselled according to the sections and it is used futher to reduce complicatins of myocardial infarction.

STATISTICAL TEST:

To Assess the impact of risk factors in myocardial infarction chi square test is performed.

NULL HYPOTHESIS:

There is no association between the impact of risk factors on myocardial infarction.

ALTERNATIVE HYPOTHESIS:

There is a significant association between the impact of risk factors in myocardial infarction.

RISK FACTOR	HTN	DM	OBESITY	CAD	EXERCISE	HYPERLIPIDEMIA	GENETICS	SMOKING	ALCOHOL	TOTAL
MALES	25	20	15	8	4	18	2	18	13	123
FEMALES	23	13	12	7	2	14	3	3	0	77
TOTAL	48	33	27	15	6	32	5	21	13	200

O	E	(O-E)	$(O-E)^2$	$(O-E)^2/E$
25	29.5	-4.5	20.2	0.68
20	20.2	-0.2	0.04	0.00
15	16.6	-1.6	2.56	0.15
8	9.2	-1.2	1.44	0.15
4	3.6	0.4	0.16	0.04
18	19.6	-1.6	2.56	0.13
2	3.0	-1	1	0.33
18	12.9	5.1	26.01	2.01
13	7.9	5.1	26.01	3.29
23	18.4	4.6	21.16	1.15
13	12.7	0.3	0.09	0.00
12	10.3	1.7	2.89	0.28
7	5.7	1.3	1.69	0.29
2	2.3	-0.3	0.09	0.03
14	12.3	1.7	2.89	0.23
3	19	1.1	1.21	0.63
3	8.0	-5	25	3.12
0	5.0	-5	25	5

$(\%)^2 = \sum(\underline{\text{OBSERVED VALUE-EXPECTED VALUE}})^2$

EXPECTED VALUE

$[x^2]$ calculated value is 17.51
$[X^2]$ tabulated value is 15.50
The X^2 calculated value(17.51) is greater than X^2 tabulated value(15.50) null hypothesis was rejected. alternative hypothesis was accepted.
There is significant association between impact of major risk factors in myocardial infarction.

TYPES OF MI	AWMI	PWMI	IWMI	TOTAL
MALES	51	18	54	123
FEMALES	42	18	17	77
TOTAL	93	36	71	200

O	E	(O-E)	$(O-E)^2$	$(O-E)^2/E$
51	57.1	-6.1	37.2	0.65
18	22.1	-4.1	16.8	0.76
54	43.6	10.4	108.1	2.47
42	35.8	6.2	38.4	1.07
18	13.8	4.2	17.6	1.27
17	27.3	-10.3	106.0	3.88

[X^2] CALCULATED VALUE IS 10.1
[X^2] TABULATED VALUE IS 5.99
The[X^2] CALCULATED VALUE IS 10.1 is greater than (X^2] TABULATED VALUE is 5.99 so the null hypothesis is rejected. The alternative hypothesis is accepted.
So, there is a significant relation between types of myocardial infarction.

CONCLUSION:

The aim of the study is to find out the impact of risk factors on myocardial infraction. We counselled about 200 patients through face-to-face interaction and collected the background information related to the comorbidities, habits and life style of the patients. Out of 200 patients, people suffering from hypertension 48 members, diabetes 33members, obesity 27 members, coronary artery disease 15 members, hyperlipidemia 32 members and people prone with myocardial infraction like alcoholism about 48 members, smoking about121 members and compared with both are about 43 members. This study also focused on minor risk factors of the myocardial infraction like kidney diseases, sleep apnea, depression, duration of mobile usage, caffeine usage and unhealthy diet are also promoting the cause of myocardial infarction. We counselled 200 patients and provided information regarding the severity of diseased state, risk factors and life style modifications which are different from one to other based on their background information of patient. In this study, there so many kind of risk factors are there for myocardial infarction and generally they been differentiated as major risk factors and minor risk factors. As of this study concludes that when the people with negligence towards minors risk factors they will ready to prone and turns major risk factors which are causing the Myocardial infarction effectively.

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