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Research Article

**MODIFIABLE RISK FACTORS AFTER FIRST MYOCARDIAL  
INFARCTION IN YOUNG ADULTS**<sup>1</sup>Dr. Ashok Kumar, <sup>2</sup>Dr. Lajpat Rai, <sup>3</sup>Dr. Muhammad Aslam, <sup>4</sup>Dr. Altaf Hussain,  
<sup>5</sup>Dr. Jagat Ram<sup>1,2,4</sup>Consultant Cardiologist NICVD Hyder Abad,<sup>3</sup>Consultant Cardiologist NICVD Nawab Shah,<sup>5</sup>Consultant Cardiologist NICVD Larkana.**Article Received:** October 2019    **Accepted:** November 2019    **Published:** December 2019**Abstract:**

**Background:** Modifiable risk factors (RF) have a significant role in the prognosis and development of acute myocardial infarction (AMI).

**OBJECTIVE:** In this study, we determine the incidence of modifiable risk factors like, gender and race differences after 1<sup>st</sup> acute myocardial infarction.

**Study design:** A retrospective analysis.

**Place and Duration:** In the Department of Cardiology, NICVD Satellite Centre Nawab Shah for one year duration from January 2018 to January 2019.

**Materials and Methods:** In 2017–2018, adults aged 18 to 59 years old who have acute myocardial infarction for the first time were selected. In these patients, race, prevalence rates and gender variation as well as trends in diabetes, hypertension, smoking, obesity, drug abuse and dyslipidemia were examined.

**Results:** Among the authors, 400 young adults had initial AMI (mean age 50±7, 71.5% men, 19.2% were from 18 to 45 years and 80.8% were 45 and 60 years old. year. In the 18-45 age group, smoking was more frequent (57.2%), hypertension (46.2%) and dyslipidemia (52.2%), and 91.03% of patients had minimum one risk factor. In the 46-60 age group, dyslipidemia (56.9%), smoking (52.3%) and hypertension (60.02%) were most common risk factors, and 92.5% of patients had minimum one risk factor. Substantial differences in race and sex were observed in individual RF formations. The incidence of diabetes, hypertension and obesity is higher in women, and dyslipidemia, drug abuse and smoking are higher in men. The incidence of all these RF has increased temporarily, except for the recently decreasing dyslipidemia rate. Trends are generally consistent between sex and race groups.

**Conclusion:** During the 1<sup>st</sup> acute myocardial infarction in young adults in which precautionary measures are supposed to be very operative, modifiable risk factors increased with time and were more prevalent.

**Keywords:** acute myocardial infarction, modifiable risk factors, dyslipidemia.

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**INTRODUCTION:**

The development of coronary heart disease (CHD) is a chief source of morbidity and mortality related with the existence of modifiable risk factors (RF) <sup>1-2</sup>. Smoking, dyslipidemia, hypertension, diabetes and obesity are significant modifiable RF for the advancement of AMI<sup>3-4</sup>. Various analysis assess the occurrence of this RF in the first episode or any AMI episode and showed high incidence ratio of minimum one risk factor (about 86 to 91%) <sup>5</sup>. Drug misuse has also taken as a risk factor in the advancement and AMI prognosis. Differences in results were observed in gender groups after AMI and were associated with differential RF reference profiles. Although AMI rates in Pakistan have recently fallen, the spread of this modifiable RF during AMI is increasing<sup>6</sup>. This epidemiological data provides a significant basis for implementing primary and secondary preventive schemes to decrease CHD load in related inhabitants<sup>7</sup>. However, there is little research in the Pakistani population that would emphasis on modern transient trends in this incidence of RF during early acute myocardial infarction among young adults<sup>8</sup>. Precautionary actions may be particularly effective in this patient group<sup>9</sup>. Therefore, we try to determine the overall incidence of young adults in Pakistan, their sex and race differences, and their power trends for modifiable radio frequencies.

**METHODS:**

This retrospective analysis was held in the Department of Cardiology, NICVD Satellite Centre Nawab Shah for one year duration from January 2018 to January 2019. A total of 400 patients who were hospitalized for AMI in young adults aged 18 to 60 years were selected for the analysis. The first cases of AMI were recognized from the secondary by diagnosis of previous percutaneous coronary intervention, coronary artery grafting syndrome, chronic ischemic heart disease, and previous myocardial infarction (MI), recipient of a heart transplant and coronary artery bypass grafting. Cases

with values missing depending on gender and age were omitted from the study. As a result, patients who were immortal but not hospitalized for AMI were debarred from the study. Into 2 groups, patients were divided: from 19 to 45 years and from 46 to 60 years. RF was defined as current or old smokers and dyslipidemia. Data on hypertension, DM, drug abuse and obesity are excluded from data related with other diseases. Type AMI is defined as the height of the ST segment elevation MI. Mechanical revascularization is defined as coronary artery bypass or percutaneous coronary intervention. The main interesting results were the overall incidence of RF in age subgroups and gender variation in RF prevalence throughout the study period.

Differences in RF incidence between sexes and race groups were compared using a specific chi-square test for the Rao-Scott test for categorical variables and questionnaire design (reduction of layers, groups and weights). Qualitative variables are stated as mean SD and expressed as continuous variables. The tables give SE values for RF frequencies to measure the accuracy of the calculated ratio. Using SPSS Statistics version 25.0, Statistical analysis was performed.

**RESULT:**

Among the authors, 400 young adults had initial AMI (mean age  $50 \pm 7$ , 71.5% men, 19.2% were from 18 to 45 years and 80.8% were 46 and 60 years old. year. In the 18-45 age group, smoking was more frequent (57.2%), hypertension (46.2%) and dyslipidemia (52.2%), and 91.03% of patients had minimum one risk factor. In the 46-60 age group, dyslipidemia (56.9%), smoking (52.3%) and hypertension (60.02%) were most common risk factors, and 92.5% of patients had minimum one risk factor. Substantial differences in race and sex were observed in individual RF formations. The main features classified by AMI type are shown online in Table 1.

<b>TABLE 1</b> Baseline Characteristics of the Study Population			
	Overall	18- to 45-Year Group	46- to 60-Year Group
	400	19.20%	82.80%
Age, years			
AMI subtype STEMI			
STEMI	45.51	46.31	44.71
NSTEMI	46.6	46.6	46.43
Risk factors			
Diabetes mellitus	25.35	23.5	27.2
Dyslipidemia	54.55	52.2	56.9
Hypertension	53.11	46.2	60.02
Obesity	20.05	21.2	18.9
Smoking	54.75	57.2	52.3
Drug abuse	4	3	5
Number of risk factors			
0	8.3	9.6	7
1	91.54	91.03	92.05
2	68.96	66.9	71.02
3	39.05	38	40.1
4	13.7	13.9	13.5
5	2.75	3	2.5
6	0.2	0.1	0.3
Mechanical revascularization	71.35	70.4	72.3

Patients presenting NSTEMI were higher than all individually modified RF frequencies, except smoking, which was more usual in STEMI cases. The percentage of cases with minimum one risk factor was greater with NSTEMI (93.05%) than STEMI (91.02%). In STEMI patients (85.01%) mechanical revascularization was more common than NSTEMI (57.93%). DM and Obesity were noted in one in five patients with first AMI (Table 1). Hypertension (58.9%) was more common in the 45-60 age group, followed by smoking (50.91%) and dyslipidemia (56.05%), and 93% of patients had minimum one RF. During the first AMI, DM included obesity in 1 in 4 patients, obesity in 1 in 6 and drug abuse in 1 in 200 patients.

Risk factors alterations between genders are shown in Table 2. In gender analysis, women and men were similar in the first AMI (both 50 to 70 years old). In male sex, Smoking was more prevalent in the 18-45 age group, followed by dyslipidemia in males and hypertension in females. After the 1<sup>st</sup> AMI, females aged 18 to 45 were more likely to have diabetes mellitus (30.08% in females compared to 20.01%, obesity (27.08%) compared with 18.5% of males;  $p < 0.001$ ; rate) and hypertension (50.93% compared with 48.03% in males;  $p < 0.001$ ). Dyslipidemia was more common in men (55.4% vs. 43.01%;  $p < 0.001$ ; smoking (59.51% vs. 13.4% in females;  $p < 0.001$  and drug addiction 10.1% vs 3.2% in women.

TABLE 2 Sex Differences in the Prevalence of Modifiable Cardiac RFs During a First AMI						
	18- to 45-Year Group		p Value	46- to 60-Year Group		p Value
	Men	Women		Men	Women	
	[72.50%]	[26.50%]		[70.3%]	[29.7%]	
Age, years						
Risk factors						
Diabetes mellitus	20.01	30.08	<0.001	25	35.01	<0.001
Dyslipidemia	55.4	43.01	<0.001	59.09	53.91	<0.001
Hypertension	48.03	50.93	<0.001	57	62	<0.001
Obesity	18.5	27.08	<0.001	14.9	23.03	<0.001
Smoking	59.51	13.4	<0.001	53.08	13.06	<0.001
Drug abuse	10.1	3.2	<0.001	3.1	2.5	<0.001

In the 46-60 age group, hypertension followed by dyslipidemia were the most common RF in females, while in males, dyslipidemia was the most usual risk factor. During the 1<sup>st</sup> AMI, females aged 45 to 60 years more often have DM (35.01% compared with 25%;  $p < 0.001$ ) obesity (23.03% vs. 14.9%  $p < 0.001$ ) and hypertension (62% compared to 57.06% in males;  $p < 0.001$ ). Men more often had dyslipidemia (59.09% vs. 53.91%;  $p < 0.001$ , smoking (53.08% vs 13.06%;  $p < 0.001$ ).

### DISCUSSION:

In Pakistan, the frequency of modifiable RF were very high and 91% of patients had minimum one risk factor<sup>9-10</sup>. These proportions have steadily increased in 2014–2018, excluding dyslipidemia, which has slightly reduced. Gender variation were seen in some RF frequencies, with a higher DM percentage, hypertension and obesity than men with smoking, dyslipidemia, and greater drug dependence. It should be noted that gender differences as some RF indicators decreases with time and age. There are significant racial differences in the incidence of RF in high obesity, drug abuse rates, hypertension and higher smoking<sup>11</sup>. These alterations continued over time. RFs have a vital role in the progression and development of chronic heart disease, and therefore require modifiable RF strategies that can be modified to reduce the CHD load<sup>12</sup>. In the Pakistan, annual AMI and AMI mortality recently decreased but recently these patients have increased the frequency of modifiable RF, particularly obesity, DM and hypertension<sup>13</sup>.

In first AMI study, a relatively young proportion of the Pakistani population have shown a significant change in RF load in approximately 92% of patients with at least 1 RF during AMI development. Although young AMI patients (18-45 years) generally had a healthy family history, 91% of these patients had minimum one modifiable RF and the most common dyslipidemia. More than half of the 1<sup>st</sup> acute myocardial infarction patients aged 45 to 60 years had dyslipidemia, smoking or hypertension<sup>14</sup>.

Racial differences in the incidence of COPD were significant. Some of the racial variances perceived in our analysis were constant with formerly stated high rates of DM, smoking and hypertension. In our study, the hypertension incidence was particularly high and 3 out of 4 patients aged 45-59 had hypertension. In this analysis, the dyslipidemia incidence was higher in patients and drug use during the first AMI was significantly higher in young adults. The alterations in RF incidence perceived between racial groups in our analysis may be useful for developing more operative and personalized risk avoidance tactics. Significantly, the gender differences detected across RF formations are normally dependable<sup>15</sup>. Health inequalities in CHD are very interesting because these variances can affect the prevalence, outcomes and medical care of congestive heart failure in various groups of population. Obtained data must assist considerate of sociodemographic and pathophysiological variances accountable for such inequalities to progress overall cardiovascular results. We are also focusing on the first AMI to better understand the variable RF load capacity that result in the progress of the first CHD event. To our information, this is the 1<sup>st</sup> and leading contemporary work that has reported these findings.

### CONCLUSION:

During the 1<sup>st</sup> acute myocardial infarction in young adults in which precautionary measures are supposed to be very operative, modifiable risk factors increased with time and were more prevalent. Modifiable atherosclerotic RFs were quite common in these young patients with effective preventive measures,

and these statistics help to design proper precautionary approaches in selected people to decrease the CHD burden.

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