

## MYOCARDIAL INFARCTION AND ITS RISK FACTORS IN WOMEN

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### Contribution

MZ conceived, designed and did statistical analysis & manuscript writing. JZ, RZ and MQ, did data collection and manuscript writing. MMK did review and final approval of manuscript

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### ABSTRACT

**Objectives:** To assess the frequency of various socio-demographic and other risk factors of myocardial infarction in female population.

**Methodology:** A cross sectional study was carried among the patients admitted in Combined Military Hospital, Ayub Teaching Hospital and District Headquarter Hospital, Abbottabad from 1st April to 31st August 2016. Female patients who were admitted in hospitals having myocardial infarction were included. Pre planned questionnaire including several variables like age, education status, occupation, and known risk factors of MI like hypertension, diabetes, family history was recorded. Data was collected and analyzed using SPSS 16.0.

**Results:** Out of total 87 (37.3%) female patients, 28.7 % were living in urban area, 75.9% of MI patients were between 50-70 years of age, 60% were married, 49.5% were taking regular exercise while 34.5% did not exercise at all. About 44.8% of females were using polyunsaturated, 25.3% saturated while 23% were using monounsaturated fats. About 48.3% of patients had emotional stress, 37.9% had history of hypertension while 62.1% had history of both hypertension and DM. About 28.7% had family history of heart diseases.

**Conclusion:** Traditional risk factors and certain socio-demographic variables like advanced age, sedentary life style, lesser education, stressful life and lack of exercise are linked to development of myocardial infarction.

**Key Words:** Myocardial infarction, risk factors, women, Abbottabad.

## INTRODUCTION

Myocardial infarction (MI) also commonly referred as "Heart attack" is a necrosis of heart muscle resulting from ischemia.<sup>1</sup> The term "Myocardial Infarction" focuses on the myocardium and its necrosis due to deprivation of blood usually due to the clogging of the artery.<sup>2</sup> Myocardial infarction occurs when ischemia exceeds a critical threshold and overwhelms myocardial cellular repair. Primary risk factors for development of atherosclerosis and MI are hyperlipidemia, diabetes mellitus, hypertension, tobacco use, male gender, and family history of atherosclerotic arterial disease.<sup>3</sup>

The leading cause of mortality among females of developing and developed country is coronary heart diseases (CHD).<sup>4</sup> Although incidence of CHD in females is lower than men before 50 years of age, after which incidence increases and approaches to that of men in eight decade.<sup>5,6</sup> INTERHEART study who included 6787 females (3000 cases) was the largest study done in order to know the risk factors of MI in females, and was the only study in which more patients were recruited from developing countries and non-European ethnic, and explained why females get MI later than men.<sup>7</sup>

Study conducted by Annald et al. showed that females on average get their first MI about 9 years later than men all around world.<sup>8</sup> Another study done on age and gender specific hospital mortality showed that women has higher in hospital mortality in old age group compare to men.<sup>9</sup>

Our research was carried out with an aim to assess the socio-demographic (age distribution, education status, profession variables, marital status, dietary habits, physical activity, emotional stress and sedentary lifestyle) and risk factors of myocardial infarction (hypertension, diabetes, family history, smoking, dyslipidemia:s) in females.

## METHODOLOGY

It was across-sectional study, which was conducted in three major hospital of Abbottabad i.e. Combined Military Hospital (CMH), Ayub Teaching Hospital (ATH) and District

Headquarter Hospital (DHQ) Abbottabad (Atd.) from 1st april to 31st August 2016. Consecutive female patients who were admitted with myocardial infarction in three hospitals during the study were included in sample.

Data collection tool was pre planned questionnaire including several variables like age, education status, occupation, marital status, emotional stress etc. and known risk factors of MI like hypertension, diabetes, family history and menstrual history. Data was collected and analyzed using SPSS 16.0. Frequencies and percentages were used for categorical variables, while in term of Mean  $\pm$  SD for continuous variables. Social factors were age, race, sex, genetics, gender, obesity, psychological stress, diet, physical activity, smoking and alcoholism, while demographic factor was residence of patients.

## RESULTS

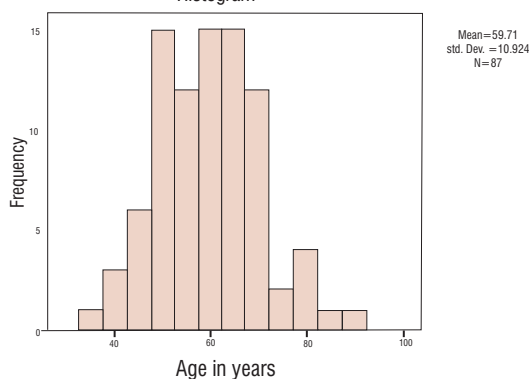
Out of a total 87 (37.3%) female patients, 71.3% patients were from Ayub Teaching Hospital, 17.2% from DHQ and 11.5% from CMH. Age wise distribution of patients is shown in Figure:1 in which 14.9% were in age group of 35-49 years, 75.9% were in age group of 50-70 years while 9.2% were in above 70 years of age with a mean age  $59.7 \pm 10.9$  years.

The demographic variables of study population like area of residence, education, profession, marital status, smoking status exercise etc. are given in Table 1. The type of meat taken by the patients showed that 35.6% of The dietary habits are shown in Figures: 2, in which 54% women used combination of vegetable, pulses and meat in their diet the women used combination of different meat and 25.3% used mostly beef while 25.3% used mostly mutton.

In fats intake of the showed that 39 (44.8%) women used polyunsaturated fats, 22 (25.3%) saturated fats and 26 (29.8%) were using monounsaturated fats in cooking.

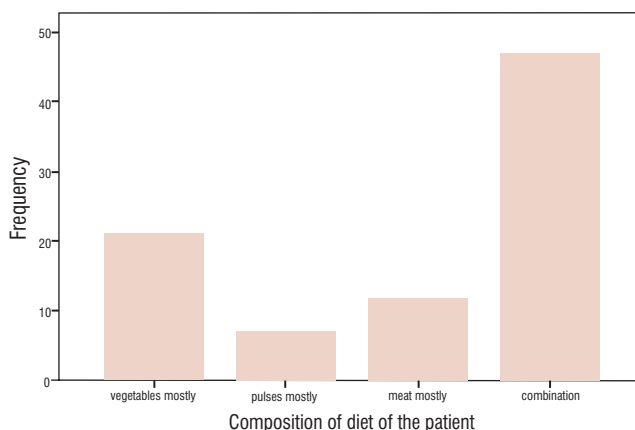
Other variables like sleep of patients, stress (emotional and physical stress), associated diseases (hypertension, diabetes and congenital heart diseases), gynecological pathologies, family history of heart diseases and its details are given in table 4, 5, 6, 7 and 8 respectively.

Figure 1: Age wise Distribution of Patients (n=87)  
Histogram



**Figure 2 : Dietary Habits of study population (n=85)**

Composition of diet of the patient



**Table 1: Demographic Variables of Study Population (n=87).**

Variable		Frequency(n)	Percentage (%)
Area of residence	Urban	25	28.7
	Pre urban	35	40.2
	Rural	27	31.1
Education Status	Educated	75	86.2
	Uneducated	12	13.8
Employment Status	Employed	5	5.7
	Unemployed	82	94.3
Marital status	Married	60	69
	Unmarried	13	14.9
	Widows	11	12.7
	Divorced	3	3.4
Smoking Status	Non - smoker	64	73.6
	Smoker	23	26.4
Exercise Habits	Regular Exercise	43	49.5
	Occasional Exercise	14	16
	No Exercise	30	34.5

**Table: 4: Sleep Pattern of Study Population (n=87)**

Variables		Frequency (n)	Percentages (%)
Daily sleep of patients	Less than 8 hours	45	51.7
	8 hours or more than 8hours	42	48.3
Type of sleep	Refreshing	27	31
	Not refreshing	40	46
	Seldom refreshing	20	23

**Table 5: Stress and Detail (n=85)**

Stress	Details	Frequency(n)	Percentage (%)
Emotional Stress	Stressful life	42	48.3
	Stress free life	45	51.7
Physical stress	No/negligible daily physical stress	43	49.5
	Moderate daily physical stress	35	40.2
	Excessive daily physical stress	9	10.3

**Table 6: Associated Diseases (n=85)**

Associated	Diseases	Frequency(n)	Percentage (%)
Associated disease	Hypertension alone	33	37.9%
	Hypertension and diabetes	54	62.1
Congenital heart diseases	Yes	3	3.5
	No	84	96.5

**Table 7: Gynecological History (n=85)**

Gynecological problem		Frequency(n)	Percentages (%)
Menstrual cycle	Regular	67	77.2
	Irregular	12	13.7
	Amenorrhea	8	9.1
Premature Menopause	No	16	18.4
	Yes	71	81.6
Contraception	Yes	14	16.1
	No	73	83.9
Any other Gynecological Problem	YES	12	13.8
	No	75	86.2

**Table 8: Family History (n=85)**

Family History of Heart Diseases		Frequency (n)	Percentage (%)
Heart Diseases in Family	Yes	25	28.7
	No	62	71.3
Any death in family due to heart disease	Yes	14	16.1
	No	73	83.9

## DISCUSSION

The cardiac health is influenced by lifestyle, socio-demographic factors and genetics in addition to physical health.<sup>10</sup> Our study design was designed keeping in mind the major risk factors particularly pertaining to dietary history, age, gender, family history, psychological issues and a healthy diet to that of risk of developing ischemic heart diseases.

About 75.9% patients were of the age group 50-70 years presenting with acute myocardial infarction. As per literature, this incidence is two-fold higher than that of younger age groups. The risk of heart diseases increases with age, but the increase is sharper in women.<sup>11</sup> Women experience myocardial infarction on average 9 years later than men. The incidence of heart disease is markedly lower among women than men prior to age of 50 years. It is generally believed that the later age of myocardial infarction in women is due to the

protective effect of female estrogen but differences in diet and smoking may also be important.<sup>12</sup>

Our study is in accordance with the above mentioned premise as the mean age of presentation of women with myocardial infarction is 59.71-+10.924. Only 14.9% belonged to the age group 35-49, whereas a total of 85.1% of the respondents were above 49 years of age.

Myocardial Infarction is more common in rural and peri-urban areas. This may be because they have lack of knowledge and their eating habits are unhealthy. Education plays a vital role in health.<sup>11</sup> Despite majority of the study population living in urban and peri urban areas (62%). In our research, the unprecedented majority of patients (83.9%) were uneducated and consequently lacked awareness.

.Most of the patients of myocardial infarction are overweight due to the lack of exercise. The lack of exercise is a predisposing factor in causing heart diseases. In our research, 79.3% of the women didnot do any daily exercise.

Smoking is one of the major risk factor in causation of coronary artery disease. Smoking causes damage to coronary arteries which causes myocardial infarction but in our research only few patients 23(26.4%) had link with smoking while non-smokers were in majority which are 64(73.6%) which may be because the habit of smoking is less frequent in females in our society.<sup>13</sup>

#### LIMITATIONS

Limitations of our study were small sample size, short duration and it was a retrospective study.

#### CONCLUSION

Risk factors for development of myocardial infarction are advanced age, sedentary life style, education, marital status, dietary factors, caffeine intake, stressful life, lack of exercise, associated diseases like hypertension and diabetes, oral contraceptives and family history.

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