

To Study the Risk Factors Associated with Myocardial Infarction among Youngsters

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Abstract

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Background: Myocardial infarction among youngsters with certain risk factors frequently presenting in Emergency room and CCU. Modifiable risk factors are still significant issue in contemporary public health. Young patient are at higher risk who have certain modifiable risk factors. Prompt diagnosis and clinical interventions are the key to young patient survival there is a little data on myocardial infarction among youngsters with certain risk factors. **Methodology:** This study aims to investigate the association of risk factors

with myocardial infarction focusing on factors such as age, weight, family history of myocardial infarction, hypertension, family history of hypertension, obesity, smoking, hyperlipidemia, sedentary life style, irregular sleep pattern, diabetes and family history of diabetes. The dataset for this study comprises 50 young participants male and female suffer from myocardial infarction. Statistical analysis including correlation and chi-square test were conducted to understand the relation between variable. **Results:** The study examined the association of risk factors with myocardial infarction among youngsters, focusing on factors such as age, bodyweight, family history of MI, hypertension, family

history of hypertension, and duration of hypertension, hypertension not following up, obesity, family history of obesity, smoking, hyperlipidemia, sedentary life style, workload, working time hours, about sleep, diabetes and family history of diabetes. The dataset include 50 participants, and statistical analysis was conducted to explore the relationship between these variables. Out of these participants 76% (38) were male and 24% (12) were females. The analysis showed that age and certain risk factors were correlated with myocardial infarction among young individuals. Our study showed that the patients have above 80 kg with hypertension and hyperlipidemias are at higher risk of being affected from myocardial infarction in young age. Chi-square test also revealed the significant association of MI with risk factors in young age. Additionally irregular sleep and workload have significant role in MI in younger age. Smoking has no significant role in myocardial infarction in youngsters. **Conclusion:** The study findings suggest that young individuals with certain risk factors are at higher risk of developing myocardial infarction. Furthermore, the study highlights the importance of lifestyle modification and interventions management to reducing the risk of myocardial infarction among young individuals because in early age it affects mental health and also difficult for person to maintain routine activities of life. These findings call for further research and targeted preventions to develop strategies for managing risk factors of MI and further complications.

Keywords: Age, bodyweight, hypertension, hyperlipidemia, proper sleep, workload.

Introduction

A myocardial infarction, also referred to as a heart attack, happens when blood supply is restricted to a portion of the heart, which causes the heart muscle to get damaged or die from a lack of oxygen. A tiny percentage of patients with acute myocardial infarction (AMI) are young adults. According to estimates from earlier research, young patients (less than 40 years old) account for 2% to 6% of all cases of AMI [1, 2]. The features of AMI in younger patients differ from those in older people. A myocardial infarction can occur in young adults with or without atherosclerosis. Notably, because they are less likely to have traditional coronary risk factors, younger patients are more likely to receive a false diagnosis [3]. Young individuals with acute myocardial infarction have been found to have a relatively high frequency of single-vessel disease, non-obstructive stenosis, and normal coronary arteries by the use of coronary angiography (CAG) [1, 4, 5]. Young AMI patients have a significant prevalence of hyperlipidemia, current smoking, and family history, according to risk factor analysis [6, 7].

The primary cause of illness and death globally is ischemic heart disease (IHD) [8]. Every year in the United States, about 650,000 people suffer a new acute myocardial infarction

(AMI) and 450,000 suffer a recurrent MI [9]. Every year, coronary artery disease accounts for 180,000 hospital admissions in the United Kingdom. The symptoms of atherosclerotic coronary artery disease (CAD), which results in myocardial ischemia, can include exertion angina, unstable angina, or AMI. The one that poses the greatest risk to life is AMI [10]. Because thrombus formation is frequently the source of vessel obstruction, prompt thrombolytic medication treatment, such as the use of streptokinase, has been shown to improve both the short- and long-term outcomes after AMI [11].

IHD ranks high among the causes of death in Asian nations, including Pakistan, much like it does worldwide [12, 13]. In our demographic, the incidence of AMI is rising in young population [10]. IHD was once thought to be a disease mostly affecting the middle and elderly, but in more recent times, AMI has been identified in younger age groups more frequently [14, 15]. Approximately 19% of incidents of AMI are in people under 40 years of age [16]. In Pakistani populations, ischemia events occur ten years earlier than in developed world populations, suggesting that the disease progresses more quickly [12].

Due to the disease's serious impact on young patients' more active lifestyles, IHD in young individuals poses a significant challenge for both the patient and the treating physician. There are several risk factors linked to the CAD development process. Certain characteristics such as age, gender, race, and family history cannot be altered and are referred to as "fixed factors," but significant risk factors such as blood pressure, diabetes, smoking, and serum cholesterol can be altered [17]. Young MI patients typically have a number of IHD risk factors. Up to 90–97% of participants in several trials met one or more of the conventional risk factors for IHD [18]. The most prevalent and controllable risk factor for young patients is cigarette smoking [16, 19, 20]. Additionally, it was observed that younger patients had a higher rate of positive family history [21, 22]. Although hypercholesterolemia is widespread in younger IHD patients, its frequency is comparable to that of older patients [22]. It seems that obesity is a separate risk factor for IHD in young males [23, 24].

Cardiovascular disease is one of the main causes of death in Pakistan and around the world [25]. Pakistanis are more likely to suffer from coronary artery disease (CAD) since the condition's symptoms start to show up 10 years earlier there than in the west [26]. Acute coronary syndrome (ACS), which includes unstable angina, ST-segment elevation myocardial infarction (STEMI), and non-STEMI (NSTEMI), is one of the most common signs of coronary artery disease (CAD) [27]. Adults under the age of thirty rarely have ACS. In Pakistan, the prevalence of acute myocardial infarction (AMI) is less

than 2% in this population [28]. A related study found that 0.4% of patients presenting with ACS were in the age range of ≤ 30 [29]. ACS has a significant psychological impact on patients and raises their risk of morbidity and financial burden when it manifests so early in the disease process [30].

Significance

- The significance of study the risk factors of myocardial infarction in youngsters can help public health efforts focus on prevention and management.
- It helps to identify life style, genetic and modifiable risk factors contributing heart attacks in younger age.
- This study can guide public health initiative to educate and promote healthier habits among younger populations ultimately reducing the risk of heart disease and its consequences in the future.
- It can inform health care guidelines and strategies to reduce the burden of the heart disease in younger population.

Aims and Objectives

- To determine the current risk factors of myocardial infarction (heart attack) among individuals aged 18-38 years.
- To investigate the association of the risk factors with myocardial infarction among young adults.
- To evaluate any interaction between these risk factors in increasing the prevalence of myocardial infarction among young individuals.

Materials And Methods

Study Design: The current study was observational data was collected for only those patient who had confirmed diagnosed with myocardial infarction information about certain risk factors and age associated with MI was collected based on a pre-structured questionnaire.

Study Setting: This study was conducted at the District headquarter (DHQ) Kohat.

Study Duration: The study was conducted For 4 months.

Study Population: The study was conducted from Emergency and CCU young patients who had confirmed diagnosed with myocardial infarction of District headquarter (DHQ) Kohat.

Sample Size:

Total sample size for this study was 50 subjects comprised of both male and female patients.

Sampling Techniques:

- A non-probability convenient sampling technique was used

Data Collection Procedure:

➤ Data was collected through non probability convenient sampling on a self-made questionnaire consisting of 29 questions for analysis.

Results and Discussion

Demographics:

We conducted a retrospective analysis of 50 young patients who were diagnosed with myocardial infarction. Our study aimed to identify the association of certain risk factors with myocardial infarction in youngsters. Out of these patients 76% (38) were males and 24% (12) were females.

➤ Our analysis revealed that the risk factors associated with myocardial infarction in youngsters was more significant in male patient than in female patients.

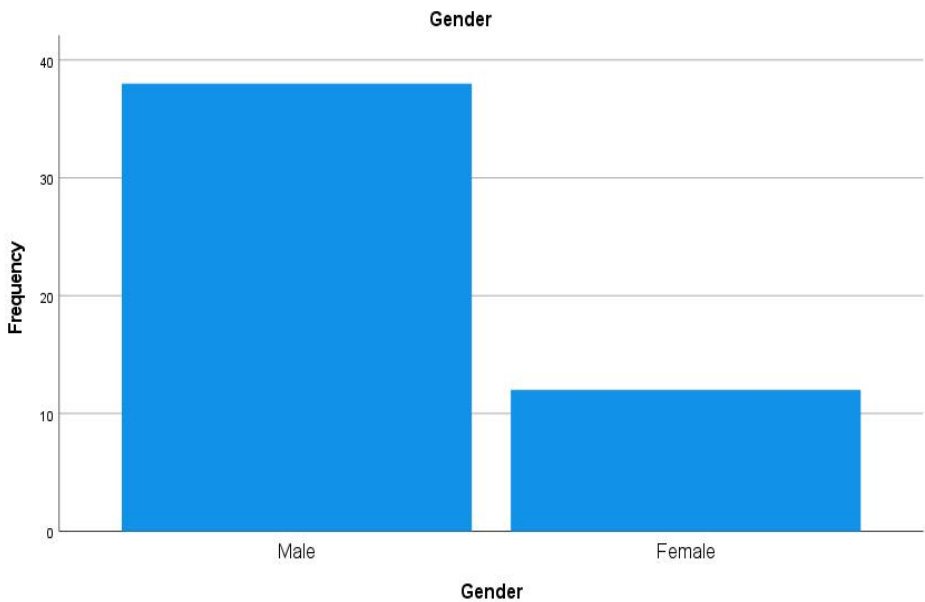


Figure 1: Gender distribution among patients having MI

Table 1: Age distribution among youngsters having MI

Age		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-25 years	5	10.0	10.0	10.0
	25-30 years	6	12.0	12.0	22.0
	30-35 years	26	52.0	52.0	74.0
	35-40 years	13	26.0	26.0	100.0
	Total	50	100.0	100.0	

After analyzing 50 patients who were diagnose with myocardial infarction with certain risk factors, we divided into four age groups. Our study shows that patients between the ages of 30-35 years have higher chances suffering from myocardial infarction with certain risk factor, with a frequency of 52% (26). Patients between the ages 18-25 were less likely years to be affected, with a frequency of only 10% (5). In conclusion our analysis suggest that patient between 30-35 years have a higher risk of being affected with myocardial infarction who had certain risk factors.

Table 2: *Analysis of young patient body weight with MI*

Body Weight		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	65-70 KG	1	2.0	2.0	2.0
	70-80KG	11	22.0	22.0	24.0
	Above 80 KG	38	76.0	76.0	100.0
	Total	50	100.0	100.0	

Analyzing 50 young patients we concluded with that above 80 kg patients have a higher chance suffering from MI with a frequency 76%(38) and those patient between the weight of 65-70 kg were less likely to be affected with frequency of 2%(1). Our analysis suggests that over-weight young people are at higher risk of being affected with MI.

Table 3: *Analysis of family history among young MI patients*

Family History Of MI		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	23	46.0	46.0	46.0
	Yes	27	54.0	54.0	100.0
	Total	50	100.0	100.0	

This study suggests that the previous family history of MI have significant role in causing MI in their generation. The study suggest that 54% (27) affected by MI in young individuals who have positive family history of MI.

Table 4: *Analysis of hypertension among young patients with MI*

Hypertension		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	10	20.0	20.0	20.0
	Yes	40	80.0	80.0	100.0
	Total	50	100.0	100.0	

Hypertension is the major and most common risk factor causing MI among young individuals. Our study suggests that 80% (40) young people affected by MI have hypertension.

Table 5: *Analysis of family history of hypertension in young patients with MI*

Family History Of Hypertension					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	4	8.0	8.0	8.0
	Yes	46	92.0	92.0	100.0
	Total	50	100.0	100.0	

The serve data indicate that family history have a crucial role in causing myocardial infarction among young individuals out of 50 patients 92%(46) have a family history of hypertension, and 8%(4) have no positive family history of hypertension.

Table 6: *Analysis of duration of hypertension in young patient with MI*

Duration Of Hypertension					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NO	10	20.0	20.0	20.0
	1-2 YEARS	13	26.0	26.0	46.0
	2-3 YEARS	4	8.0	8.0	54.0
	3-4 YEARS	11	22.0	22.0	76.0
	ABOVE 4 YEARS	12	24.0	24.0	100.0
	Total	50	100.0	100.0	

In our study we divide the duration of hypertension into four groups. Out of 50 patients 1-2 year of patient are mostly affected from MI with frequency of 26%(13).out of 50 patients between the age of 2-3 years are less affected with MI with the frequency of 8%(4).

Discussion

A myocardial infarction, also referred to as a heart attack, happens when the blood supply is restricted to a portion of the heart, which causes the heart muscle to get damaged or die from a lack of oxygen. A tiny percentage of patients with acute myocardial infarction (AMI) are young adults[1].

Heart attacks sometimes referred to as myocardial infarctions, have long been linked to elderly people, especially those with underlying cardiovascular risk factors. Nonetheless, a worrying pattern of younger patients experiencing myocardial infarction has surfaced in recent years. Significant concerns concerning the underlying causes, consequences, and preventive actions related to heart attacks in this population are brought up by this shift in demographics.

This study explores the link between the risk factors associated with MI among youngsters. Focusing on how the risk factor impacts MI among youngsters. As risk factors are a growing threat to global health, understanding their correlation with MI among youngsters is crucial. The study examines how different risk factors contribute to higher MI complications among youngsters. This research is significant for healthcare professionals as it helps in personalized clinical management and targeted preventive strategies. Identifying high-risk populations based on risk factors allows for efficient healthcare planning and interventions. The study's findings can also provide insights into long-term health outcomes for individuals with diabetes, which can inform public health policies.

CONCLUSION AND RECOMMENDATION

In our study of myocardial infarction among youngsters, young patients was presenting with MI. We found that in male gender that were overweight, suffer from hypertension and hyperlipidemia myocardial infarction occur mostly in these patients. Occurrence of myocardial infarction in young female patients also observed. Smoking has no significant role in myocardial infarction in youngsters. Family history of hypertension and diabetes are common risk factors of MI in youngsters. Furthermore, the study highlights the importance of lifestyle modification and interventions management to reducing the risk of myocardial infarction among young individuals because in early age it affects mental health and also difficult for person to maintain routine activities of life.

Recommendation:

- These findings call for further research and targeted preventions to develop strategies for managing risk factors of MI and further complications.
- These findings bring awareness in young population to change life style and health professional to educate people about these risk factors.

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