



CODEN [USA]: IAJPBB

ISSN : 2349-7750

**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**

SJIF Impact Factor: 7.187

<http://doi.org/10.5281/zenodo.4016114>Available online at: <http://www.iajps.com>

Research Article

**RISK FACTORS OF ACUTE MYOCARDIAL INFARCTION
AMONG YOUNG PATIENTS IN PUNJAB INSTITUTE OF
CARDIOLOGY**¹Dr khurram Irshad, ²Dr Fahad Liaqat ³Dr Ibtisam Ilahi
Punjab Institute of Cardiology Lahore**Article Received:** July 2020 **Accepted:** August 2020 **Published:** September 2020**Abstract:**

Introduction: Ischemic heart disease is the leading cause of death worldwide. In recent years, CAD has been more frequently recognized among younger age groups. There is very limited data available on the incidence of various risk factors in our younger patients, so this study was scheduled. The aim of the study was to search for risk factors most frequently occurring in our young patient with the first acute myocardial infarction. And also, to check the number of risk factors present in each patient.

Place and Duration: The descriptive cross-sectional study was conducted at the Punjab Institute of Cardiology Lahore for one-year duration from April 2019 to April 2020.

Methods: 100 consecutive patients 16–45 years of age with first acute MI were studied. Twelve risk factors were examined namely gender, family history of premature coronary artery disease, smoking hypertension, diabetes, dyslipidemia, obesity, mental stress (Type A personality), alcohol, oral contraceptive pills (OCP), exercise and diet. We divided the patients into two groups. Group A with patients up to 35 years of age and group B with patients aged 36–45 years. All risk factors in both groups were compared.

Results: Smoking, diabetes, dyslipidemia, and hypertension were statistically different in the two groups. Risk factors related to frequency were ranked as male (91%), Diet (66%), dyslipidemia (62%), smoking (46%), personality type A (46%), family history (32%), diabetes (28%), sedentary lifestyle (26%), hypertension (22%), obesity (17%), alcohol (3%) and OCP (0%) The majority of patients, 94%, had 3 or more risk factors.

Conclusion: Smoking, hypertension, diabetes, and dyslipidemia are the main modifiable risk factors in our young adults. Coronary heart disease is always suspected if a young male smoker or young female diabetic comes to the ER with chest pain. Other conventional risk factors are also common, but alcohol and OCP are not a major health problem for us.

Key words: risk factors, young patients, acute myocardial infarction.

Corresponding author:

Dr khurram Irshad,
Punjab Institute of Cardiology Lahore.

QR code



Please cite this article in press Farwa Islam et al, *Systematic Review Of Medication Probiotics Acute Diarrhea In Children In The Group.*, Indo Am. J. P. Sci, 2020; 07(09).

INTRODUCTION:

Coronary artery disease (CAD) is the leading cause of death worldwide. The incidence of coronary heart disease has halved in the west over the past 3 years, but has doubled in the subcontinent¹⁻². In addition, people in our part of the world suffer from CAD at a relatively younger age, i.e. About half of MI occur under the age of fifty³⁻⁴. The only way to avoid this problem is to evaluate the risk factors and try to modify them. The presence of major risk factors leads to advanced coronary artery disease in 2% of men aged 15–19 years and 0% of women⁵⁻⁶. This number increases to 20% and 8%, respectively, in the presence of these risk factors by the age of 30–34. These facts clearly demonstrate that early atherosclerosis is influenced by risk factors for clinical CAD, so long-term prophylaxis must begin in early adulthood⁷⁻⁸. There is very limited data available on the incidence of various risk factors for MI in our younger patients. With these facts in mind, a study of risk factors in young patients with acute MI is planned.

MATERIAL AND METHODS:

It is a descriptive cross-sectional study. A total of 100 consecutive patients with first acute MI were examined. The study was conducted at the Punjab Institute of Cardiology Lahore for one-year duration from April 2019 to April 2020. The diagnosis of MI was based on WHO criteria for chest pain, ECG changes, and increases in cardiac enzymes. We divided patients into 2 groups. Thirty patients were in group A (aged 16–35) and 70 patients in group B (aged 36–45). According to the Framingham Adjusted Score, age under 35 is negatively associated with IHD, and age above this level itself becomes a risk factor for CAD. Thus, it was taken as a cut-off point between the 2 groups and the significance of each risk factor between groups was examined. The study included all patients aged 16–45 years with the first acute myocardial infarction. All patients with stable or unstable angina, patients with old MI, and those younger than 16 or over 45 were excluded from the study. The risk factors for these patients were: myocardial infarction or sudden death before the age of 55 in a father or relative of a first-degree male or mother under 65, or in other first-degree relatives; currently smokes or quit smoking less than 3 months after diagnosis. Patients were considered hypertension if they had already been treated for antihypertensive therapy or were reported to have blood pressure greater than 140/90 mmHg on two or more occasions. Patients were admitted as diabetics if they had already been treated for diabetes or a fasting blood sugar level > 126 mg / dL or randomly > 200 mg / dL. The fasting lipid profile was investigated within 48 hours of acute MI, since the lipid profile changes with acute MI, it tends to lower HDL-C and

increase triglycerides. Total cholesterol > 240 mg / dL, triglycerides > 400 mg / dL, LDL cholesterol > 160 mg / dL was considered high risk. However, total cholesterol = 200–239 mg / dL, triglycerides = 200–400 mg / dL, LDL cholesterol = 130–159 mg / dL, HDL cholesterol < 35 mg / dL were considered borderline with high risk. Patients with a BMI \geq 30 kg / m² were considered obese and < 30 kg / m² were healthy. Personality traits were assessed by interviewing the patient and family members. Patients were asked whether they were on a diet high in fat or saturated fat, or on a diet containing less fat or saturated fat and a diet high in fiber. Patients were asked about the number of eggs they eat in a week and how many fruits and vegetables they use in their diet. The patients were asked about the type and amount of alcohol consumed. The consumption of alcohol must not exceed 1–2 ounces of ethanol per day, which corresponds to 2–4 ounces of whiskey per day, 8–16 ounces of wine per day, 24–48 ounces of beer per day. Patients were asked about the current status of OCP oral contraceptive pill use (currently using or left for less than 3 months after diagnosis of MI). Patients walking 4 km a day for 5 times a week were marked as physically active and patients walking less than this as physically inactive or sedentary. We divided the patients into two groups, and the significance of each risk factor between the groups was calculated using the chi-square test, assuming $p < 0.05$ as significant. The percentage, frequency, and relative frequency of the risk factors were also calculated.

RESULTS:

The results obtained in this way showed that in this younger age group almost all patients were 91% male, compared to 9% female. The majority of patients (66%) were on a high-fat diet, therefore most patients (62%) had dyslipidemia. 46% of patients were smokers, and the same number of patients had type A personality disorder. Family history of premature coronary artery disease was present in 32% of cases. 28% of patients were diabetic. A sedentary lifestyle occurred in 26% of patients. 22% of patients had hypertension, 17% were obese, and 3% were alcoholics. None of the patients was taking oral contraceptives.

Table-1: Relative frequency of number of risk factors

Number of risk factors	Frequency	Relative frequency
0-2	6	0.06
3-5	77	0.77
6-8	16	0.16
9-11	1	0.01

This aggregation of risk factors is further illustrated in Table 1 which shows that the majority of patients, i.e. 77% of patients, had 3-5 risk factors. A comparison of the risk factors in both groups showed that smoking, diabetic dyslipidemia and hypertension had significant differences between the two groups. Other risk factors showed no significant difference between the two groups (Table 2).

Table-2: Comparison of risk factors in two groups

Risk Factor	Group A (n=30) (≤ 35 years)	Group B (n=70) (36-45 years)	p-value
Smoking	23 (76.66%)	23 (32.8%)	<0.0005
Diabetes	1 (3.33%)	27 (38.6)	<0.001
Dyslipidemia	13 (43.3%)	49 (70%)	<0.025
Hypertension	2 (6.6%)	20 (28.5%)	<0.05
Male Sex	29 (96.66%)	62 (88.5%)	>0.05
Diet	22 (73.33%)	44 (62.8%)	>0.05
Type A personality	12 (40%)	34 (48%)	>0.05
Family History	10 (33.33%)	22 (31.4%)	>0.05
Sedentary Lifestyle	12 (40%)	14 (20%)	>0.05
Obesity	2 (6.66%)	15 (21.4%)	>0.05
Alcohol	1 (3.33%)	2 (2.8%)	>0.05
OCPs intake	0	0	0

Male gender 91%, diet rich in fat 66%, dyslipidemia 62%, smoking 46%, personality type A 46%, family history of premature CAD 32%, Diabetes mellitus 28 %, sedentary 26%, hypertension 22%, obesity 17%, alcoholics 3% and OCP 0%. 1 risk factor was present in only one patient, 2 risk factors were present in 5 patients, 3 risk factors were present in 20 patients, 4 risk factors were present in 33 patients, 5 risk factors were present in 24 patients, 6 risk factors were present in present in 10 patients, 7 risk factors were present in 4 patients, 8 risk factors were present in 2 patients, 9 risk factors were present in 1 patient.

DISCUSSION:

Coronary artery disease remains the leading cause of death with severe social and economic consequences. Although CAD mortality rates are generally declining in the affluent world, these rates have declined less for younger people⁹⁻¹⁰. In recent years, IHD has been reported to be more common in the younger age group, but the risk definitely increases with age. According to the results of this study, there is a linear relationship between age and risk of IHD, with only 30 patients in group A (≤ 35 years), while 70 patients in group B (36–45 years)¹¹⁻¹². Male gender is an important risk factor for developing IHD, especially at an earlier age. The lifetime risk of developing CAD is one third of women, and the risk of developing CAD at 40 is 50% for men and 33% for women. Due to estrogen, coronary artery disease is significantly low in premenopausal women, but diabetes reduces this advantage. So a young diabetic woman always suspects CAD if they have chest pain¹³. Nevertheless, the risk of developing IHD in young women is quite low. In our study, 91% of patients were male. This finding is in line with the study by Akhtar *et al*, who found 85% of the men in their study. Male gender showed a slight difference between the two groups in our study. This is because the majority of patients in both groups were male as male remains a significant risk of developing IHD in this younger population. A family history of CAD is associated with an increased risk of premature coronary events. The latest results indicate that the risk may be higher in women than in men¹⁴. Our study found that 32% of patients had a family history of premature CAD, while Akhtar *et al*. Found that 57% of their patients had a positive family history of CAD. The difference between the results may be due to the difference between the selected age group. That's less than 40 years in the studies of Akhtar *et al*, and my study is up to 45 years. Smoking is the most important preventable cause of CAD. More than half of young men with IHD in Pakistan are smokers. In my study, 46% of patients were smokers, and more importantly 23 of 30 (76.6%) patients under the age of 36 were smokers. Smoking causes premature CAD due to a number of factors. It has an adverse effect on lipoproteins and lowers HDL. Smoking also increases the ability of platelets, promotes endothelial dysfunction, and causes coronary vasospasm. Its harmful effects are also seen in women who induce early menopause¹⁵. Studies by Akhtar *et al*. And Paisa *et al.*, Carried out in Pakistan and India, respectively, showed that a very high percentage of their patients were smokers, 42.8% and 55%, respectively. We therefore support the conclusion that tobacco control programs in Pakistan and other countries in the region can have a significant impact in reducing this deadly disease in our young

adults. Hypertension is a strongly recognized risk factor for IHD. In my study, 22% of patients had high blood pressure. However, a study by Akhtar *et al*. In 1993 on young patients with IHD in 47.6% of their hypertensive patients. This difference is due to two reasons. First, they selected all patients with IHD, and we selected only those who had MI, not stable or unstable angina. Second, because of their socioeconomic status, obesity is linked to hypertension as nearly half of their patients were obese. Our patients were of poor socioeconomic status (most of them) and only 17% were obese. Diabetes mellitus is also a major risk factor for IHD. In our study, we found that 28% of patients have diabetes. The cause of the higher prevalence of dyslipidemia is unknown, but genetic factors and eating habits appear to be important. Obesity is an independent risk factor for CAD in both men and women. Weight loss is associated with favorable changes in the lipid profile and blood pressure, thus reducing the risk of IHD. But in our study, only 17% of patients were obese, with no significant difference between the groups. This lower number is due to the fact that, in general, patients were of poor socio-economic status. Type A personality is also considered a risk factor for CAD. Socio-economic status and the growing level of education mean that more and more patients have a type. Personality, but its strong correlation with MI has yet to be proven. Many observational and epidemiological studies have shown that regular physical activity reduces the risk of IHD. A meta-analysis of studies has shown that the relative risk of dying from IHD is 1.9% for sedentary people compared to active people. We found that 26% of our patients lead a sedentary lifestyle, which is quite a significant number considering the younger population we selected for the study. Diet is also an important but less recognized risk factor for IHD in Pakistan. Diet predisposes to atherosclerosis not only directly, but also indirectly through obesity, hypertension, glucose intolerance and dyslipidemia. There is no concept of a balanced diet in our population. We found out that 66% of our patients are not following a risk-free diet, and most (51%) regularly take ghee (classified butter) in excessive amounts. Thomas *et al*. Described a high risk of IHD in Indians attributed to ghee consumption. Alcohol consumption and OCP are not significant risk factors in our society and our research proves that they are. It is well known that risk factors for IHD work together, and the grouping of risk factors is important in inducing premature CAD. In a study by Akhtar *et al*. 55% of patients had 3 or more risk factors, while 94% of patients in our study had 3 or more risk factors. The observed difference exists because we examined twelve risk factors versus the six risk factors studied by Akhtar *et al*. Therefore, we conclude that as the number of risk factors increases, a

person's risk of IHD also increases, and the patient develops IHD early in life.

CONCLUSION:

Smoking, high blood pressure, diabetes, and dyslipidemia are the main modifiable risk factors in our young adults. A cluster of risk factors, particularly three or more risk factors in an individual, predisposes to CAD at a relatively younger age. Coronary heart disease is always suspected if a young male smoker or young female diabetic comes to the ER with chest pain. Our young ischemic patients often have other conventional risk factors as well, but alcohol and OCP are not a major health problem for us.

REFERENCES:

1. Anjum, Muhammad, Muhammad Zaman, and Fareed Ullah. "Are Their Young Coronaries Old Enough? Angiographic Findings In Young Patients With Acute Myocardial Infarction." *Journal of Ayub Medical College Abbottabad* 31, no. 2 (2019): 151-155.
2. Gupta, Mohit, Vardhman Jain, Manjula Miglani, M. P. Girish, Q. Pasha, Salim S. Virani, and Ankur Kalra. "Telomere length in young patients with acute myocardial infarction without conventional risk factors: a pilot study from a South Asian population." *medRxiv* (2020).
3. Plakht, Ygal, Abeer Abu Eid, Harel Gilutz, and Arthur Shiyovich. "Trends of cardiovascular risk factors in patients with acute myocardial infarction: Soroka acute myocardial infarction II (SAMI II) project." *Angiology* 70, no. 6 (2019): 530-538.
4. Hermann, Matthias, Fabienne Witassek, Paul Erne, Hans Rickli, and Dragana Radovanovic. "Impact of cardiac rehabilitation referral on one-year outcome after discharge of patients with acute myocardial infarction." *European journal of preventive cardiology* 26, no. 2 (2019): 138-144.
5. Wang, Ping, Jianhua Yao, Yuan Xie, and Ming Luo. "Gender-specific predictive markers of poor prognosis for patients with acute myocardial infarction during a 6-month follow-up." *Journal of Cardiovascular Translational Research* 13, no. 1 (2020): 27-38.
6. Kumar, Naresh, Suresh Kumar, Anil Kumar, Tariq Shakoor, and Amber Rizwan. "Lipid Profile of Patients with Acute Myocardial Infarction (AMI)." *Cureus* 11, no. 3 (2019).
7. Ponomarenko, I. V., and I. A. Sukmanova. "Thrombosis risk factors and gene mutations in young age patients with acute coronary syndrome." *Kardiologiia* 59, no. 1S (2019): 19-24.
8. Yang, Hae Young, Min Joo Ahn, Myung Ho Jeong, Youngkeun Ahn, Young Jo Kim, Myeong Chan Cho, Chong Jin Kim, and Korea Acute Myocardial Infarction Registry Investigators. "Predictors of in-hospital mortality in Korean patients with acute myocardial infarction." *Chonnam Medical Journal* 55, no. 1 (2019): 40-46.
9. Kim, Yong Hoon, Ae-Young Her, Myung Ho Jeong, Byeong-Keuk Kim, Seung-Yul Lee, Sung-Jin Hong, Dong-Ho Shin et al. "Impact of renin-angiotensin system inhibitors on long-term clinical outcomes in patients with acute myocardial infarction treated with successful percutaneous coronary intervention with drug-eluting stents: Comparison between STEMI and NSTEMI." *Atherosclerosis* 280 (2019): 166-173.
10. Fukuoka, Shusuke, Tairo Kurita, Kaoru Dohi, Jun Masuda, Tetsuya Seko, Takashi Tanigawa, Yasuhiro Saito, Hitoshi Kakimoto, Katsutoshi Makino, and Masaaki Ito. "Untangling the obesity paradox in patients with acute myocardial infarction after primary percutaneous coronary intervention (detail analysis by age)." *International Journal of Cardiology* 289 (2019): 12-18.
11. Song, Chenxi, Rui Fu, Jingang Yang, Haiyan Xu, Xiaojin Gao, Lei Feng, Yang Wang et al. "The association between body mass index and in-hospital outcome among patients with acute myocardial infarction—Insights from China Acute Myocardial Infarction (CAMI) registry." *Nutrition, Metabolism and Cardiovascular Diseases* 29, no. 8 (2019): 808-814.
12. Faisal, A., A. Bander, A. Ali, M. Abadi, A. Ahmed, and A. Alsubaie. "Acute coronary syndrome among young patients in Saudi Arabia (Single center study)." *J Cardiol Curr Res* 12, no. 3 (2019): 60-63.
13. Kim, Yong Hoon, Ae-Young Her, Myung Ho Jeong, Byeong-Keuk Kim, Dong-Ho Shin, Jung-Sun Kim, Young-Guk Ko, Donghoon Choi, Myeong-Ki Hong, and Yangsoo Jang. "Two-year outcomes of statin therapy in patients with acute myocardial infarction with or without dyslipidemia after percutaneous coronary intervention in the era of new-generation drug-eluting stents within Korean population: Data from the Korea Acute Myocardial Infarction Registry." *Catheterization and Cardiovascular Interventions* 93, no. 7 (2019): 1264-1275.
14. Wang, Mo, Marjan Vaez, Thomas Ernst Dorner, Syed Rahman, Magnus Helgesson, Torbjörn Ivert, and Ellenor Mittendorfer-Rutz. "Risk factors for subsequent work disability in patients with acute myocardial

- infarction." *European Journal of Public Health* 29, no. 3 (2019): 531-540.
15. Kim, Chang-Yeon, Jang Hoon Lee, Se Yong Jang, Myung Hwan Bae, Dong Heon Yang, Hun Sik Park, Yongkeun Cho et al. "Usefulness of Calculation of Cardiovascular Risk Factors to Predict Outcomes in Patients With Acute Myocardial Infarction." *The American journal of cardiology* 124, no. 6 (2019): 857-863.