

Coronary Artery Disease among Patients Younger than 35 Years of Age: In Search for Exploring the Most Common Risk Factors

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Abstract

Background: Coronary artery disease (CAD) and its major manifestation of acute myocardial infarction (MI) are considered as the most common causes of morbidity and mortality worldwide. MI in very young group of age is a significant issue to focus on, however there is a scarcity of data on premature coronary heart diseases-acute MI (AMI) in this group of age. This may underestimate the important difference that exists between young and old groups of age. **Objective:** The main aim of this study is to evaluate the most common risk factors, including hyperlipidemia, smoking, diabetes mellitus (DM), hypertension, and positive family history of AMI with their angiographic profile, among Iraqi patients of <35 years old. **Materials and Methods:** This study was enrolled in Surgical Specialty Hospital-Cardiac Center, Erbil, Iraq among 100 consecutive patients (77 males and 23 females) between November 2016 and December 2017 of those whose age was ≤35 years. **Results:** The mean age was 31.6 ± 2.91 years with an age range of 24–35 years. The incidence of AMI was significantly higher in male patients than females. The most common risk factors were hyperlipidemia (51%), smoking (49%), family history of premature CAD (44%), hypertension (25%), and DM (22%). The most common symptom and presentation of CAD was chest pain and anterior wall myocardial infarction, 67% and 64% respectively. About 56% of all the included patients who underwent Coronary Angiography, had obstructive CAD and among this group 89.2% had single vessel disease, 5.35% had three vessel disease, 3.57% had double vessel disease and 1.78% had abnormal characteristic of coronary artery (Muscle Bridge). The most common involved artery was the left anterior descending (LAD) (36%), followed by the right coronary artery (9%). Based on the electrocardiogram findings, 42% of the patients presented with ST-segment elevation myocardial infarction. **Conclusion:** CAD in patients younger than 35 years occurred more in the male gender. Hyperlipidemia was the most common risk factor among all the patients' and AWMi owing to the LAD artery was the most common presentation.

Keywords: Cardiovascular risk factors, coronary artery disease in young adult, hyperlipidemia, myocardial infarction, risk factors for coronary artery disease

INTRODUCTION

Coronary artery disease (CAD) is the leading cause of mortality worldwide, and by the following decades, will be the leading cause of disability. Current estimates from various epidemiologic studies indicate the prevalence of coronary heart disease to be progressively increasing. AMI is one of the most common manifestations of CAD. Although individuals younger than 35 years of age account for only 3% of all patients with CAD, they are not completely immune from CAD. In addition, AMI in very young patients aged ≤35 years has been poorly described but is estimated to be <2%.

Moreover, it carries significant morbidity, psychological impact, and financial burden for the patient and their family

when it occurs at a young age as the productive age group is being affected.

Hypertriglyceridemia, low levels of high-density lipoprotein cholesterol (HDL-C), metabolic syndrome, high lipoprotein-a, dietary habits, and unplanned modernization associated with sedentary but stressful lifestyle are suggested as additional risk factors for CAD.

Coronary angiography (CoA) performed in young patients with CAD has identified a relatively high incidence of

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nonobstructive stenosis or single-vessel disease. Clinical trials have demonstrated that the early detection and lowering of these risk factors by aggressive treatment reduce cardiovascular risks.

In Iraq, the epidemiological data on the incidence and prevalence of CAD as evidence of awareness are limited due to the unavailability of evidence-based national guidelines for the management of cardiovascular disease and surveillance studies as compared to other Eastern Mediterranean countries.

In a recent study in 2014, cardiovascular disease mortality was estimated to account for 33% in Iraq. There are multiple conventional cardiovascular risk factors of CAD. These include modifiable risk factors such as smoking, poor diet, hypertension, dyslipidemia, and diabetes. Moreover, nonmodifiable risk factors such as the family history, gender, and race have a major role in patients with CAD.

Dyslipidemia, including high levels of low-density lipoprotein (LDL), elevated triglyceride (TG), and low levels of HDL, is associated with an increased risk of cardiovascular events.

Smoking has been shown to accelerate atherosclerosis and precipitate CAD by multiple mechanisms. Hypertension is considered a strong risk factor of fatal CAD. Its prevalence is dramatically on the rise and its effective treatment remains challenging, highlighting the need for preventive programs.

Moreover, diabetes mellitus (DM) ranks among the major cardiovascular risk factors. Diabetic patients have 2–8 fold higher rates of CVD risks as compared to nondiabetic patients.

Very few studies have been conducted among Iraqi patients regarding the risk factors, clinical features, and coronary angiographic findings in very young adults (<30 years) who present with manifestations of CAD. Hence, this study was conducted to learn the details of patients with younger age groups.

MATERIALS AND METHODS

Study population

This study was a prospective, single-centered trial which was conducted among 100 consecutive patients with the manifestation of CAD, admitted to the Causality Department of the Surgical Specialty Hospital–Cardiac Center, Erbil, from November 2016 to December 2017.

All patients aged between 24 and 35 years were included in this study.

Patients subsequently underwent CoA and revascularization by either primary PCI or pharmaco-invasive PCI or coronary artery bypass grafting (CABG) surgery after obtaining informed consent from their family.

Laboratory analysis

The serum levels of lipid profile parameters, including total cholesterol (TC), HDL-C, LDL-C, and TG, were determined

at the admission of the patient presented with AMI. These laboratory tests were carried out using Cobas c311 chemistry analyzer (Roche Diagnostics, Basel, Switzerland) for sample analysis.

Hyperlipidemia was defined as serum cholesterol of ≥ 200 mg/dl, TG > 200 mg/dl, low-density lipoprotein > 130 mg/dl, and HDL-C < 50 mg/dl for female and < 40 mg/dl for male, for known cases of dyslipidemia and/or those on medication for dyslipidemia.

Obstructive CAD was defined as $\geq 70\%$ lesion in major arteries or $\geq 50\%$ lesion in the left main coronary artery. The intermediate disease was defined as 50% to 69% stenosis of major arteries, whereas minimal disease was defined as $\leq 50\%$ lesion, and together they were combined and classified as having nonobstructive disease.

Statistical analysis of data

Data were analyzed using the Statistical Package for the Social Sciences version 23 (SPSS, IBM, Chicago, IL, USA). Differences in variables were tested using Student's *t*-tests. $P < 0.05$ was considered statistically significant.

RESULTS

The most common risk factors in patients younger than 35 years of age were male gender, hyperlipidemia, smoking, positive family history, hypertension, and diabetics.

The most common presentation was anterior wall myocardial infarction (AWMI) owing to occlusion in Left Anterior Descending (LAD) artery.

Prevalence of myocardial infarction in relation to age and gender

In this study, 100 patients with the manifestation of CAD, of which 77% male and 23% female, were enrolled. The mean age was 31.6 ± 2.9 years, with an age range of 24–35 years. The mean $\pm$ standard deviation of the age was 31.2 ± 2.9 years in male patients and 32.9 ± 2.4 years in female patients. The prevalence of CAD and its major manifestation-AMI was higher in male patients comparing to female patients with a statistically significant difference ($P < 0.05$). This indicates that younger males experience CAD and its manifestations more than females. The data are summarized in Table 1.

The highest prevalence rate of CAD was seen in patients within the age group of 30–35 years (79%), followed by 18% in the

Table 1: The prevalence of Coronary Artery Diseases in relation to Age Groups and Gender

Age groups (Year)	Male		Female		Total	
	No.	%	No.	%	No.	%
≤ 24	3	3.9	0	0	3	3
25-29	16	20.8	2	8.7	18	18
≥ 30	58	75.3	21	91.3	79	79
Total	77	100	23	100	100	100

age group of 25–29 years then a smaller portion of 3% among those of younger than 24 years of age.

It was observed that the majority of the male patients (75.3%) with CAD belong to the age group of 30–35 years. On comparison, 91.3% of female patients belong to the age group of 30–35 years ($P = 0.2$).

Clinical risk factors

Hyperlipidemia and lipid profile

The present study showed that hyperlipidemia was the most frequently seen risk factor among all the 100 patients included with a prevalence rate of 51%.

The prevalence of hyperlipidemia in relation to gender was 57.1% in males and 30.4% in females with a statistically significant difference ($P < 0.05$).

We observed that among the hyperlipidemic patients, 80.4% of them had high levels of LDL (≥ 130 mg/dl), 45.1% had low levels of HDL (≤ 35 mg/dl), 45.1% had high levels of TG (≥ 200 mg/dl), and 51% had high levels of TC (≥ 200 mg/dl).

The mean concentration of lipid profile parameters in relation to gender in patients with CAD is described in Figure 1.

The results showed that the male patients had higher levels of LDL and Total cholesterol than female patients, along with lower levels of HDL among male patients with a statistically significant difference ($P < 0.05$). On the other hand the levels of TG was seen to be higher among female patients than males. ($P = 0.06$)

Smoking

The prevalence of smoking habit was high among patients with CAD below 35 years of age. Out of 100 patients, 49 of them were among the smoker groups.

The prevalence rate of smoking was higher in male patients (63.6%) and none of the female patients had smoking habit which also showed a statistically significant difference ($P < 0.05$).

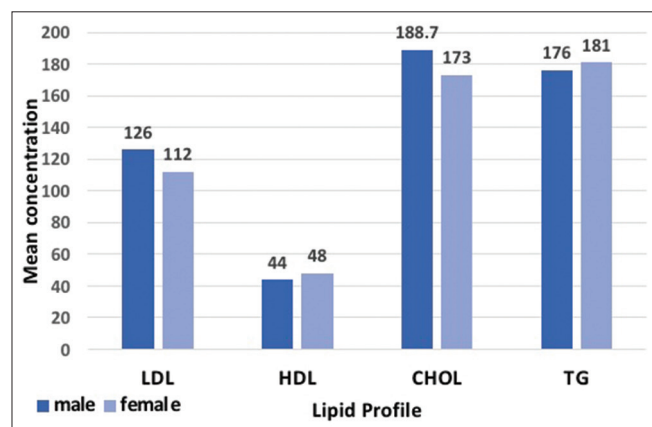


Figure 1: The mean concentration of lipid profile (high-density lipoprotein, low-density lipoprotein, triglyceride, and total cholesterol) levels in relation to gender

Furthermore, the association of smoking with conventional risk factors was determined among patients of younger than 35 years old presenting with CAD.

Up to 61.2% of smoker patients had hyperlipidemia with a statistically significant difference ($P < 0.05$), and 34.7% of smoker patients were hypertensive; this showed a statistically significant difference ($P < 0.05$).

Figure 2 shows the prevalence of smoking in relation to gender among young patients (≤ 35 years old) with CAD.

Family history

The prevalence rate of positive family history was about 44% in all the 100 patients with CAD. Furthermore, 47.7% of patients with positive family history of CAD presented with ST-segment elevation myocardial infarction (STEMI) and 22.7% presented with non-STEMI (NSTEMI).

The results showed that among patients with positive family history, as shown in Figure 3, 40.9% had high levels of LDL, 34% had low levels of HDL, 34.1% had high levels of TG, and 29.5% had high levels of TC.

Hypertension

The results showed that 25% of patients younger than 35 years of age with CAD were hypertensive.

The prevalence of hypertension in patients with CAD was higher in male patients (84%) than in female patients (16%).

Furthermore, we observed that 60% of hypertensive patients had STEMI and 20% of them had NSTEMI. This point highlights the role of hypertension as the main risk factor in patients presenting with STEMI/NSTEMI.

There was a conspicuous relation between hypertensive patients with their lipid profile. It was noted that 60% of the hypertensive patients had high levels of LDL, 44% had low HDL, 40% had high level of TG, and 28% had high levels of TC.

The most common presentation of CAD among the hypertensive group of patients was shortness of breath (76%) comparing to those who were not hypertensive (50.7%) with a statistically significant difference ($P < 0.05$).

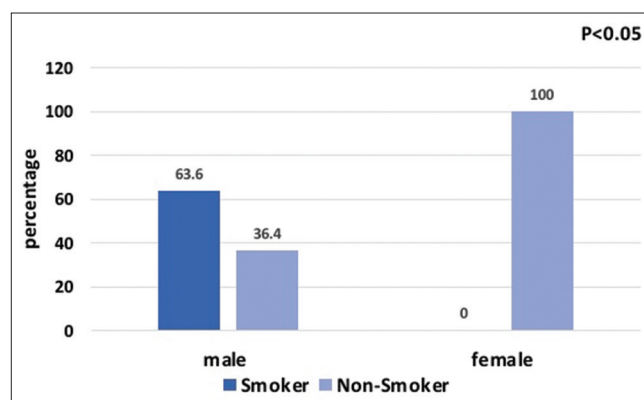


Figure 2: The prevalence of smoking in relation to gender

Diabetes mellitus

The prevalence rate of DM among Iraqi patients younger than 35 years old presented with CAD in our study was 22%. The prevalence was higher in male patients (72.7%) than in female patients (27.3%).

About 13.6% of diabetic patients presented with atypical presentation of CAD compared to nondiabetic (3.8%), but this was statistically not significant ($P = 0.1$).

The prevalence of DM was higher in patients ≥ 35 -year group of age (90.1%) and the remaining 9.1% belongs to those who lie between 25 and 29-year group of age.

Focusing on the occluded coronary artery in diabetic patients, we observed that LAD was the most commonly occluded one, with a prevalence rate of 50% among diabetic patients comparing to nondiabetic patients (32.1%). Moreover, this showed a statistically significant difference ($P < 0.05$). The notable point in diabetic patients regarding their electrocardiogram (ECG) changes, it was observed that 63.6% of them had ST-T change in anterior ECG leads.

Angiographic profile

All the patients included in our study have underwent CoA with PCI according to their condition, through either the radial or femoral route.

About 56% of all the included patients who underwent Coronary Angiography, had obstructive CAD and among this group 89.2% had single vessel disease, and PCI have been performed for them, 5.35% had three vessel disease, and was sent for Emergency CABG, 3.57% had double vessel disease, planned for Staged PCI and 1.78% had abnormal characteristic of coronary artery (Muscle Bridge) set on Optimal Medical Therapy and the remaining 44% has no critical lesion on Coronary angiography and were put on optimal medical therapy.

Table 2 summarizes the angiographic profile of patients with CAD among young group of age (≤ 35 years old).

The most common involved artery was LAD artery (36%), followed by right coronary artery (RCA) (9%), and

left circumflex artery-LCX (3%), left main stem (1%), and D1 (1%), however no obtuse marginal branch-OM was present among all the 100 Iraqi patients younger than 35 years old.

The remaining 44% (nonobstructive) who underwent CoA had no critical lesion and was served for optimal medical therapy.

Based on the ECG findings 42% presented with STEMI, and among that group, 57% of them had occlusion in LAD and 16.7% in RCA, which was statistically significant ($P < 0.05$).

Based on the ECG findings and LAD lesions, 57.1% of those with the critical lesion in LAD had STEMI, 32% of LAD had NSTEMI, and 12.1% of LAD had no significant change in ECG. Moreover, this was statistically significant ($P < 0.05$).

Notably, there was a statistically significant difference among the patients who had critical lesions in the LAD artery in relation to the presentations of CAD shown in table.

Echocardiographic findings

Echocardiography has been performed for the patients presenting with CAD, to assess the functioning of the heart.

The results showed that 52% of the patients had good ejection fraction (EF) (≥ 55), 32% of the patients have EF ranging from 45 to 54, and the remaining 16% had EF of ≤ 44 .

Among the patients whose EF ≤ 44 , 30.6% had critical lesion in LAD, 66.7% in LCX, and 11.1% in RCA. This was statistically significant and there was low role of chance ($P < 0.05$).

An obvious comparison can be noted from the EF of patients presented with STEMI and those with NSTEMI. The results showed that 87.5% of patients with STEMI had poor EF (≤ 44), 65.6% of them had fair EF (45–54), and only 13.5% of STEMI patients had good EF (≥ 55). On the other hand, 30.8% of NSTEMI patients had good EF (≥ 55), 25% had fair EF (45–54), and only 6.3% had poor EF (≤ 44). This was statistically significant ($P < 0.005$).

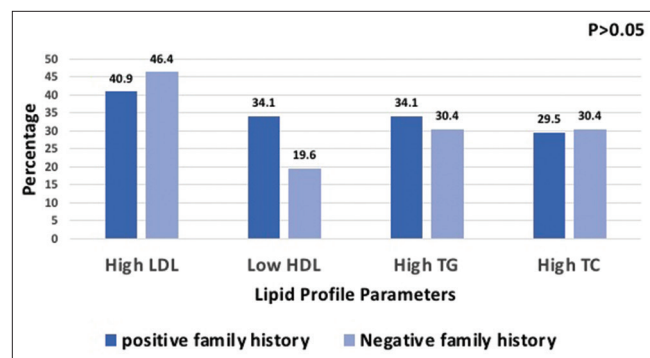


Figure 3: The prevalence of hyperlipidemia (lipid profile parameters) among patients with positive/negative family history for coronary artery diseases

Table 2: The Angiographic profile of patients with Coronary Artery Disease among patients younger than 35 years old

Angiographic Profile (Name of Occluded artery)	Gender	
	Male(%)	Female (%)
Single vessel Disease		
LAD	36.4	34.8
LCX	3.9	0
RCA	10.4	4.3
LMS	1.3	0
D1	0	4.3
Double Vessel Disease	2.6	0
Triple Vessel Disease	3.9	0
Abnormal Coronary Characteristic	1.3	0
No critical Lesion	40.3	56.5
Total	100	100

To clarify more about the relation of STEMI/NSTEMI with pumping function of the heart (EF), we observed that the mean of EF in patients with STEMI was lower ($46.5\% \pm 6.3\%$) than in NSTEMI patients ($56.5 \pm 7.2\%$). This was statistically significant with $P < 0.001$.

Electrocardiogram findings

From the ECG findings observed in all the 100 patients, the results showed that 48% of the patients had AAMI indicated by changes in the anterior leads of ECG, then followed by 22% inferior wall MI (IWMI) indicated by changes in inferior leads of ECG and 5% with changes lateral leads, presented with lateral wall MI (LWMI). Figure 4 summarizes the changes in specific ECG leads among patients presented with different forms of CAD.

Furthermore, among the patients who had changes in anterior leads of ECG, representing AAMI, 22.9% had EF of <44 , followed by 41.7% had EF between 45 and 54 and 35.4% had good EF of more than 55.

This was statistically significant ($P < 0.05$).

There was a critical relation between levels of LDL and ECG changes, which showed that 45.8% of those with anterior lead changes on ECG (AAMI), 68.2% of those with inferior lead changes (IWMI), and 60% of those with lateral lead changes (LWMI) had high levels of LDL.

This was statistically significant ($P < 0.05$).

Cardiac enzyme profile

Cardiac markers in patients younger than 35 years of age presenting with CAD showed a notable result. The prevalence of elevated troponin more than 10 folds was 79% and CK-MB was 63%.

Figure 5 summarizes the prevalence of elevated cardiac markers.

Clinical presentation and most common symptoms

The prevalence of most common symptoms on presentation of CAD in patients younger than 35 years of age was chest pain in 67% of patients (among them, only 41.7% had radiation of the pain to the back and shoulders), 57% with shortness of breath, 32% had chest pain with exertion, 28% had nausea and vomiting, and only 6% was with atypical presentations.

It was clearly noted that the prevalence of shortness of breath in hypertensive and smoker patients was 76% and 71.4%, respectively.

There was a statistically significant difference in smoker patients who presented with Shortness of Breath (SOB) (61.4%) compared to those who did not have SOB (32.6%) and $P < 0.05$ as it is shown in Figure 6.

Table 3 shows the prevalence of symptoms presented in patients with critical lesion in LAD.

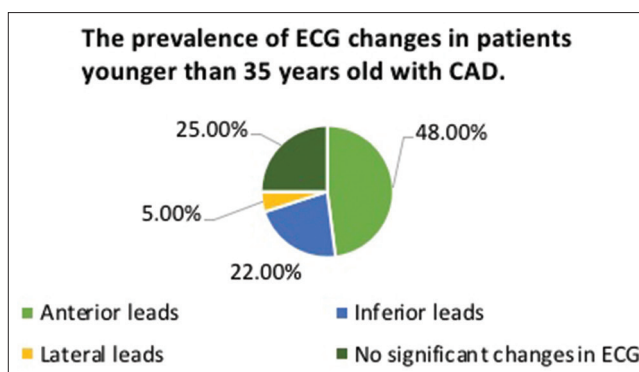


Figure 4: The prevalence of ischemic electrocardiogram changes in patients younger than 35 years of age with coronary artery diseases

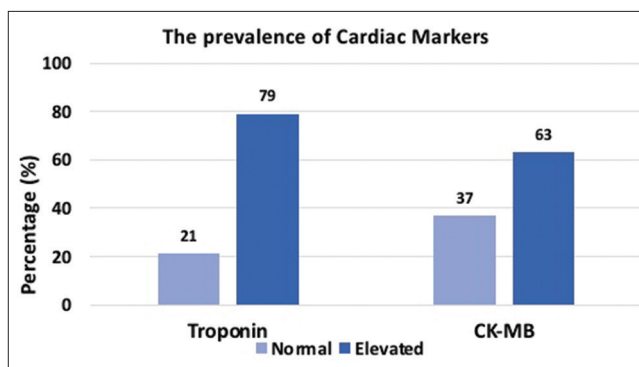


Figure 5: The prevalence of elevated cardiac markers in patients presented with coronary artery disease younger than 35 years of age

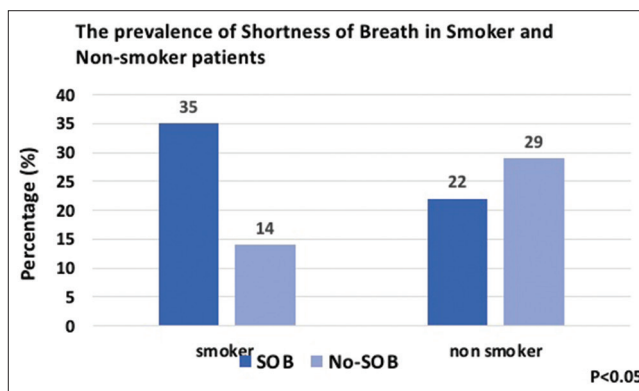


Figure 6: The prevalence of shortness of breath among smoker/nonsmoker patients with a statistically significant difference

Prevalence of most frequent risk factors

As appears in Figure 7, the findings of this study showed that the most prevalent modifiable risk factors were hyperlipidemia (51%) and their lipid profile showed 26% with low HDL, 44% with high LDL, 32% with high TG, and 30% with high TC levels. The following risk factors were smoking (49%), hypertension (25%), and DM (22%) in patients younger than 35 years old with CAD. On the other hand, the prevalence of non-modifiable risk factors among patients younger than 35 years of age, such as gender

Table 3 shows The Prevalence of symptoms of CAD in patients younger than 35 years of age, presented with critical lesion in LAD artery.

Symptoms	Yes (%)	No (%)	P value
Chest pain	49.3	9.1	$P < 0.05$
Exertional chest pain	6.3	50	$P < 0.05$
Shortness of Breath	45.6	23.3	$P < 0.05$
Palpitation	45.8	32.9	$P = 0.45$
Radiation of pain	50	30.6	$P = 0.6$
Nausea and Vomiting	60.7	26.4	$P = 0.03$
Sweating	69.2	24.3	$P < 0.01$
Atypical presentation	50	35.1	$P > 0.1$

and Family history of premature CAD was 77% and 44% respectively.

DISCUSSION

Due to the increase of incidence of CAD among younger groups of Iraqi patients, this study has been enrolled. CAD tends to be more aggressive and starts manifesting at a younger age,^[1] which was focused in our study. We determined the prevalence of most common risk factors with angiographic profile in patients younger than 35 among the Iraqi population.

Interestingly, in the previous studies that have been performed among Iraqi patients about the prevalence of CAD, it was observed that patients present with CAD and specifically AMI at a younger age. This indicates that the average age of patients hospitalized with CAD and AMI has been shifted toward younger age groups.^[2]

The mean age was 31.2 ± 2.9 in males and 32.9 ± 2.4 in females.

Comparing it to another study, that has been enrolled in India, showing that the mean age of younger patients with CAD and AMI was 26 ± 3.9 .^[3] This might be due to a greater population of the study and much younger patients were included.

According to another study that has been performed among Iraqi patients, it was found that the mean age of patients with CAD has been shifted to 10 years lower compared to that in developed countries.^[4] Higher incidences of CAD and AMI at an earlier age could be contributed to the poor management of modifiable risk factors, inappropriate primary preventive measures, and most importantly, low cardiovascular health awareness.^[2,4]

One of the most consistently demonstrated risk factors for CAD is male gender; the skewed gender distribution among males (77%) versus females (23%) of the study population is attributed to the protective effect of estrogen in preventing atherosclerosis and prevalence of smoking, which was much more common among males that has been clearly demonstrated in various epidemiological studies.^[5]

It was seen similarly in studies performed in other countries around the world; like in Iran, the incidence of male-to-female ratio was 79/29^[6] and 70/30 in Japan and Switzerland.^[7,8]

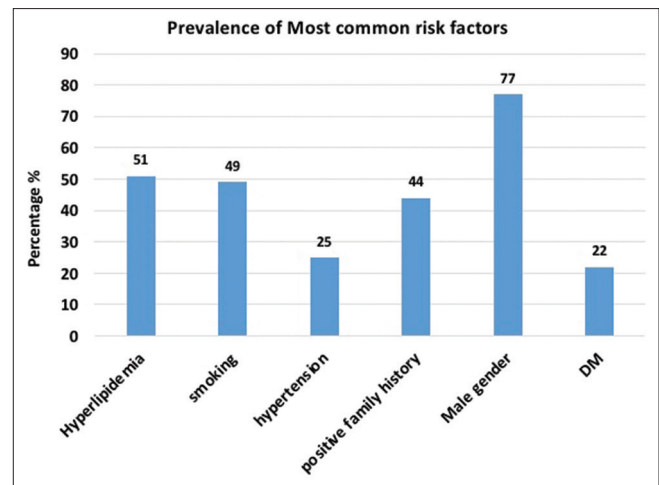


Figure 7: The prevalence of the most common risk factors of coronary artery diseases among patients younger than 35 years

In this study, we found that hyperlipidemia is a well-established predisposing risk factor for coronary atherosclerosis, and intervention of lipid profile parameters can reduce the risk of CAD. According to the present study, the prevalence of hyperlipidemia was 51% among all the patients, with a prevalence of elevated LDL (44%), elevated levels of TG (32%), and lowered levels of HDL (26%), and it was noted that the prevalence was higher in male gender than females.

However, in another study that has been performed in Iran among the same group of patients, the results showed that 50% of them had high levels of LDL, which is going in concordance to that of our results, while they have higher levels of TG (41.9%) than our study.^[9,10]

Smoking alone has a major effect and impact on health and cardiovascular diseases specifically and a leading cause of CAD.

In our study, results showed that the prevalence of smoking was about 49% and was higher among male patients than females.

The results of another study showed that the prevalence of smoking was (39.2%), which is very close to the result of the present study.^[2]

An epidemiological study has been enrolled in 2015 which resulted in higher prevalence of smoking in Eastern Mediterranean countries comparing to that of European countries.^[11]

It was noteworthy that the smoker patients had higher prevalence of hypertension, hyperlipidemia, and diabetes compared to nonsmoker patients, and this finding is consistent with previous studies among patients with CAD.^[10,12]

DM is counted as a well-recognized risk factor for CAD; it increases the risk of atherosclerotic events in coronary arteries. It has been established that CAD is more aggressive in diabetic patients than nondiabetics.^[12]

The prevalence of Iraqi patients younger than 35 years in this study was 22% and noted to be higher than another study among Middle East countries.^[13]

Recent studies had shown that DM was higher in female patients than male patients.^[14,15]

These data are similar to those found in our study, showing higher prevalence of DM among female patients with CAD among ≤ 35 years of age.

A positive family history of ischemic heart disease is a relatable risk factor in patients younger than 35 years, and it was observed that 44% of our population had positive family history and this finding reflects the association of family history with CAD, and this has been explained in light of hereditary predisposition to CAD.^[16] High blood pressure is a major health problem that is significantly associated with an increased risk of CAD.^[17] According to a study, the prevalence of hypertension is considered as the second highest risk factor in Eastern Mediterranean countries.^[18]

A study has been performed among the Lebanese population and 46.3% had hypertension.^[19]

Furthermore, a Turkish study revealed that 37.7% of the study population had hypertension.^[20] Another study which has been done in Spain showed that 46% of the study population had hypertension.^[21]

The prevalence of hypertension among the Iraqi population younger than 35 years of age with CAD was lower compared to recent studies conducted across different regions in Iraq in 2014 (54.7%)^[22] in Basrah, in 2015 46% in Duhok,^[23] and in 2018 45%–55% in Karbalah.^[24]

This difference might be due to the inclusion criteria of the study population and different center has been chosen in each study, whereas ours has been performed in only one center with a lower range of age due to the study purpose.

The results of our study declared that 25% of the study population with CAD had hypertension, which points on the importance of hypertension as a modifiable risk factor in managing CAD in younger groups of patients.

In our study, we observed that anterior wall MI-AWMI was the most common type which owes to the LAD artery.

The results go parallel to another study that has been performed in India.^[3]

Our study revealed a preponderance of single-vessel disease among both genders, whereas double-vessel disease and triple-vessel disease (TVD) only in male gender.

The incidence of angiographic normal coronary arteries in patients ≤ 35 years in various studies was 9%–17%,^[25] which appears to be lower than ours (44%); the causes could be due to coronary spasm, spontaneous recanalization, or thrombosis with reperfusion.

The prevalence of complex lesions (TVD) was about 3.9% in our study which suggests that premature CAD is associated with rapid disease progression rather than a gradually evolving process.^[26] The patients with angiographically two critical lesions were planned to have staged PCI and those with more than three lesions were planned to undergo CABG surgery.

Along with the results of this study, we reached to novel findings concerning the prevalence of most frequent risk factors of CAD in patients younger than 35 years of age and their angiographic profile. Exploration of more new risk factors in that specific age group in a larger population would further improve the understanding of key roles of conventional risk factors in the pathogenesis of CAD in younger patients with their angiographic profile.

CONCLUSION

In light of these findings, this study showed that the most common risk factor for CAD was hyperlipidemia, then followed by smoking, positive family history of CAD, hypertension, and lastly DM.

Moreover, this study highlighted that CAD has a multifactorial etiology in the Iraqi population and specifically in younger groups of age, as the prevalence of CAD is progressively increasing due to urbanization and its accompanying transition in lifestyle.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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