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Risk Factors for Chronic Coronary Syndrome and Acute Coronary Syndrome among Patients Attending Karbala Cardiac Center

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Abstract

Background Ischemic heart disease is a common cardiovascular disease that occurs when blood flow to the heart is reduced or blocked, leading to a lack of oxygen and nutrients to the heart muscle. It can lead to chest pain, shortness of breath, and potentially life-threatening conditions such as heart attack and heart failure. The two main types are chronic coronary syndrome (CCS) and acute coronary syndrome (ACS).

Objective To evaluate the patients having CCS and ACS regard the prevalence of risk factors, symptoms, co-morbidities and other factors that may contribute to these differences between the patients.

Methods A descriptive cross-sectional study was conducted at the Karbala Cardiac Center in Iraq. Participants were 160 patients diagnosed with ischemic heart disease (60 cases of CCS, 100 cases of ACS) between January and June 2023.

Results ACS was twice as common as CCS (62.5% vs 37.5%). There was no significant age difference between groups. More males (67%) than women (23%) were suffered from CCS. ACS patients showed significant dyslipidemia (P = 0.002) with increased low density lipoprotein cholesterol levels and more frequent medical treatment. Social factors such as retirement and low physical activity were more prevalent among ACS patients. CCS was associated with the emergence of chest pain, while shortness of breath was predominant in ACS.

Conclusion The levels of dyslipidemia, social factors, and symptom presentation varied significantly among the community groups. This result shows the need for individualized management strategies for such conditions.

Keywords Ischemic heart disease, chronic coronary syndrome, acute coronary syndrome

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List of abbreviations: ACS = Acute coronary syndrome, BMI = Body mass index, CABG = Coronary artery bypass graft, CAD = Coronary artery disease, CAG = Coronary angiography, CCS = Chronic coronary syndrome, CHD = Coronary heart disease, CVD = Cardiovascular disease, DM = Diabetes mellitus, ECG = Electrocardiogram, HDL-C = High density lipoprotein cholesterol, HTN = Hypertension, IHD = Ischemic heart disease, LDL-C = Low density lipoprotein cholesterol, NSTEMI = Non-ST elevation myocardial infarction, SOB = Shortness of breath, STEMI = ST elevation myocardial infarction, TC = Total cholesterol, TG = Triglyceride, WHO = World Health Organization

Introduction

Ischemic heart disease (IHD) is still the most common death and disability factor for both men and women and takes away millions of lives around the globe [(1)].

The ever-changing process of obstruction of a coronary artery or changes in the coronary

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circulation, commonly known as IHD, can be altered through medication, revascularization, or lifestyle changes. It is possible that the disease would be arrested or even reversed by this type of treatment. Due to the emergence of a new language, IHD clinical manifestations are now referred to as either acute coronary syndrome (ACS) or chronic coronary syndrome (CCS) [2].

Cardiovascular diseases (CVDs) are the leading cause of global morbidity and mortality. In 2019, CVDs accounted for an estimated 17.9 million mortalities worldwide, representing 32% of global deaths [3].

People living in low- and middle-income countries are more exposed to pre-mature deaths of CVD origin. Among CVDs, IHD is the most prevalent [4]. IHD is a pathological process that is characterized by an imbalance between the demand and supply of myocardial oxygen as a consequence of the reduced cardiac blood flow.

Atherosclerotic blockage, microvascular dysfunction, coronary artery vasospasm, and congenital abnormalities are a few possible reasons. Since they are commonly used collectively, coronary artery disease (CAD) and IHD [5].

Therefore, it is believed that IHD or CAD is a multifactorial phenomenon that is influenced by both modifiable and non-modifiable risk factors, such as lipid profile, obesity, smoking, alcohol, low fruit and vegetable intake, physical inactivity, and other psychological aspects. Non-modifiable risk factors include genetics, sex, age, and family history [6].

The goal of current therapies is to lower the modifiable risk factors, particularly the advancement of atherosclerotic disease, either by employing traditional therapies or by providing patients with food and lifestyle advice [7].

Pathophysiology

The first phase in atherosclerosis histologically occurs as focal thickening of the intima with accumulation of lipid-laden macrophages (foam cells) and extracellular matrix [8]. Epicardial arteries, pre-arterioles, and arterioles make up the coronary vasculature, with the last two forming the coronary microvasculature [9]. The endothelial-dependent vasodilator process is used as a regulating mechanism in the proximal and bigger arterioles [10].

The clinical features

Chest pain, shortness of breath (SOB), nausea, weakness, weariness, and jaw discomfort are all common symptoms of IHD in both men and women [11]. Class of presentation can be CCS and ACS.

Risk factors of IHD

Diabetes mellitus (DM) increases independent risk of IHD approximately 1.5 and 1.7-fold among males and females, respectively [12].

Hypertension (HTN) is one of the main risk factors for IHD, and controlling blood pressure appropriately is essential to preventing both primary and secondary ischemic heart disease. Sustaining a blood pressure of 140/90 mmHg is recommended for primary prevention, whereas a blood pressure of 130/85 mmHg was previously advised for secondary prevention [13].

Obesity: Numerous risk factors and comorbidities, including metabolic syndrome, type 2 DM, HTN, and CVDs, are linked to obesity [14]. Obesity in adults is becoming increasingly common worldwide, but it's much more worrying among adolescents.

Dyslipidemia refers to abnormal blood levels of lipoproteins and lipids. Triglycerides (TG), low-density lipoprotein cholesterol (LDL-C), total cholesterol (TC), and lowered high-density lipoprotein cholesterol (HDL-C) are the symptoms. It has been demonstrated to be an independent predictor of several cardiovascular and cerebrovascular events on an international basis [15].

The World Health Organization (WHO) estimates that tobacco use results in the deaths of about eight million people annually

[16]. Most of smoker's preventable deaths are attributable to cigarette smoking, with atherosclerotic cardiovascular illnesses including heart attacks and stroke accounting for half of these deaths [17].

Elderly patients have four times higher rates of hospitalization for IHD than patients 45-54 years old. With 85% of heart failure patients being older than 65, congestive heart failure is notably more common among the elderly [18].

Individuals with a positive family history of CHD had a significantly higher risk of developing CHD themselves, even after adjusting for other risk factors such as age, smoking, and HTN [19].

Treatment

The studies outline the recommended line of treatment for IHD, including the use of reperfusion therapy (such as primary percutaneous coronary intervention or thrombolysis), antiplatelet therapy, anticoagulant therapy, and secondary prevention strategies [20]. Various lines of treatment, including lifestyle modifications (such as diet and exercise), management of cardiovascular risk factors (such as HTN and dyslipidemia), and the use of pharmacological interventions when necessary [21].

The present study aimed assess the prevalence of risk factors between patients with CCS and ACS, also, to study the difference in risk factors, clinical presentation and comorbidity between patients with CCS and ACS.

Methods

Study design

This study is a descriptive cross-sectional study conducted in Karbala Cardiac Center, Karbala Iraq to compare between patients with CCS and ACS.

Study population

A random sample of 160 patients (100 ACS and 60 CCS) accounted from January to June in 2023 in Karbala Cardiac Center.

Inclusion criteria

Patients diagnosed with IHD (ACS, CCS).

Exclusion criteria

- Patients who were hemodynamically unstable, whose data cannot be collected.
- Uncooperative patients.
- Patients with incomplete data.

Data collection tools

A special questionnaire form was used for purpose of study, that was filled by the researcher selected after explaining the purpose of study.

Ethical considerations

After discussing the study's aims and defining the sort of information requested of the interview, all patients involved in the study gave verbal informed permission. Throughout the data gathering, organization, analysis, and presentation process, all collected information was kept private. To safeguard the patients' privacy, their names were substituted with identifying numbers (file serial number).

An ethical approval was obtained from Research Ethics Committee at College of Medicine, University of Karbala. Further, a verbal consent was taken from patients in Karbala Cardiac Center with assuring anonymity and confidentiality of answers.

Statistical analysis

The data of the current study were entered and analyzed using the statistical package for the social sciences (SPSS 23.0 for Windows). The descriptive statistics were used in term of frequency and percentage and mean ± standard deviation (SD) in appropriate tables and graphs. Possible association between two groups was made through the Chi-square test or independent-Samples t-test. Significance level was considered when $P < 0.05$.

Results

The study included 60 patients (37.5% of total) with CCS and 100 patients (62.5% of total) with all types ACS. The distribution of ACS types was

as follows: ST-Elevation Myocardial Infarction (STEMI) was observed in 13 patients (8.1%). non-ST-elevation myocardial infarction (NSTEMI) was observed in 47 patients (29.4%) and 40 patients were classified with unstable angina (UA) (25%). The mean age ±SD of the patients in CCS group (59.06±12.43 yr) and ACS group (56.68±13.41 yr). The results showed that there was no significant difference (0.061) in mean age of the patients of the two groups of the study. Male sex was significantly higher in CCS (67.7%) than those of ACS (52%). The proportion of patients with family history of premature death and family history of premature IHD were significantly higher in CCS (65% and 70%) than that of ACS (47 and 48% respectively). Whereas, the proportion of patients with family history of prediabetes was significantly higher in patients with ACS (37%) than that of CCS (21.7%) as shown in table (1).

Table 1. Non modifiable risk factors among patients of the chronic coronary syndrome and acute coronary disease

Characteristics		Total	Chronic coronary syndrome mean±SD	Acute coronary syndrome mean±SD	P value
Age (yr)		59.06±12.43	56.68±13.41	60.49±11.65	0.061*
		N (%)	N (%)	N (%)	
Age groups (yr)	Below 40	10 (6.3)	7 (11.7)	3 (3.0)	0.077**
	40-49	30 (18.8)	14 (23.3)	16 (16.0)	
	50-59	43 (26.9)	14 (23.3)	29 (29.0)	
	60-69	45 (28)	12 (20.0)	33 (33.0)	
	≥70	32 (20)	13 (40.6)	19 (19.0)	
Sex	Male	98 (61.2)	46 (67.7)	52 (52.0)	0.002**
	Female	62 (38.8)	14 (23.3)	48 (48.0)	
Family history of premature death	No	74 (46.3)	21 (35)	53 (53.0)	0.027**
	Yes	86 (53.7)	39 (65)	47 (47.0)	
Family history of premature IHD	No	70 (43.8)	18 (30)	52 (52.0)	0.007**
	Yes	90 (56.2)	42 (70)	48 (48.0)	
Family history of premature HTN	No	86 (53.7)	32 (53.3)	54 (54.0)	0.935**
	Yes	74 (46.3)	28 (46.7)	46 (46.0)	
Family history of prediabetes	No	110 (68.7)	47 (78.3)	63 (63.0)	0.043**
	Yes	50 (31.3)	13 (21.7)	37 (37.0)	

*Chi-square test, ** Unpaired ttest, IHD: Ischemic heart disease

The analysis of modifiable risk factors of the two groups of the study patients showed that there were no significant differences among patients of the two groups in relation to weight status according to body mass index (BMI), smokers and non-smokers. Whereas there was significant difference between Former smoker and Current smoker (P = 0.031).

Table 2. Some modifiable risk factors among patients of the chronic coronary syndrome and acute coronary disease

Characteristics		Total	Chronic coronary syndrome mean±SD	Acute coronary syndrome mean±SD	P value
Duration of smoking (yr)		29.6±11.8	29.8±12.5	29.5±11.4	0.911*
BMI (kg/m^2)		27.74±4.32	27.08±3.48	28.14±4.73	0.135*
		N (%)	N (%)	N (%)	
Weight status	Normal weight	38 (23.8)	14 (23.3)	24 (24.0)	0.255**
	Overweight	79 (49.3)	34 (56.7)	45 (45.0)	
	Obese	43 (26.9)	12 (20.0)	31 (31.0)	
Central obesity	No	99 (61.9)	40 (66.7)	59 (59.0)	0.334**
	Yes	61 (38.1)	20 (33.3)	41 (41.0)	
Smoking	No	69 (43.1)	20 (33.3)	49 (49.0)	0.053**
	Yes	91 (56.9)	40 (66.7)	51 (51.0)	
Type of smoking state	Former smoker	34 (37.4)	10 (25.0)	24 (47.1)	0.031**
	Current smoker	57 (62.6)	30 (75.0)	27 (52.9)	

*Chi-square test, ** Unpaired ttest, BMI: Body mass index

The analysis of the data revealed that there were no significant differences (P value 0.146 and 0.576) respectively among patients of the two groups in relation to history of HTN.

Regarding the assessment of dyslipidemia among the two groups of the study patients, ACS group reported significantly higher proportion of patients on medical treatment of dyslipidemia than those of CCD (P = 0.004) as shown in table (2). The results concluded that history of IHD medication was significantly higher in patients with ACS than those with CCS (P = 0.019) as shown in figure (1).

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Table 3. Some modifiable risk factors among patients of the chronic coronary syndrome and acute coronary disease

Characteristics		Total	Chronic coronary syndrome N (%)	Acute coronary syndrome N (%)	P value*
High LDL-C	No	119 (74.4)	53 (88.3)	66 (66.0)	0.002
	Yes	41 (25.6)	7 (11.7)	34 (34.0)	
Low HDL-C	No	153 (95.6)	56 (30.8)	97 (97.0)	0.588
	Yes	7 (4.4)	4 (6.7)	3 (3.0)	
High TG	No	149 (93.1)	55 (91.7)	94 (94.0)	0.748
	Yes	11 (6.9)	5 (8.3)	6 (6.0)	
Follow up of dyslipidemia	No history	101 (63.1)	47 (78.3)	54 (54.0)	0.29
	Neglected	27 (16.9)	8 (13.3)	19 (19.0)	
	Controlled	19 (11.9)	4 (6.7)	15 (15.0)	
	Uncontrolled	13 (8.1)	1 (1.7)	12 (12.0)	
On medical treatment of dyslipidemia	No	112 (70.0)	50 (83.3)	62 (62.0)	0.004*
	Yes	48 (30.0)	10 (16.7)	38 (38.0)	

*Chi-square test, LDL-C: Low density lipoprotein cholesterol, HDL-C: High density lipoprotein cholesterol, TG: Triglyceride

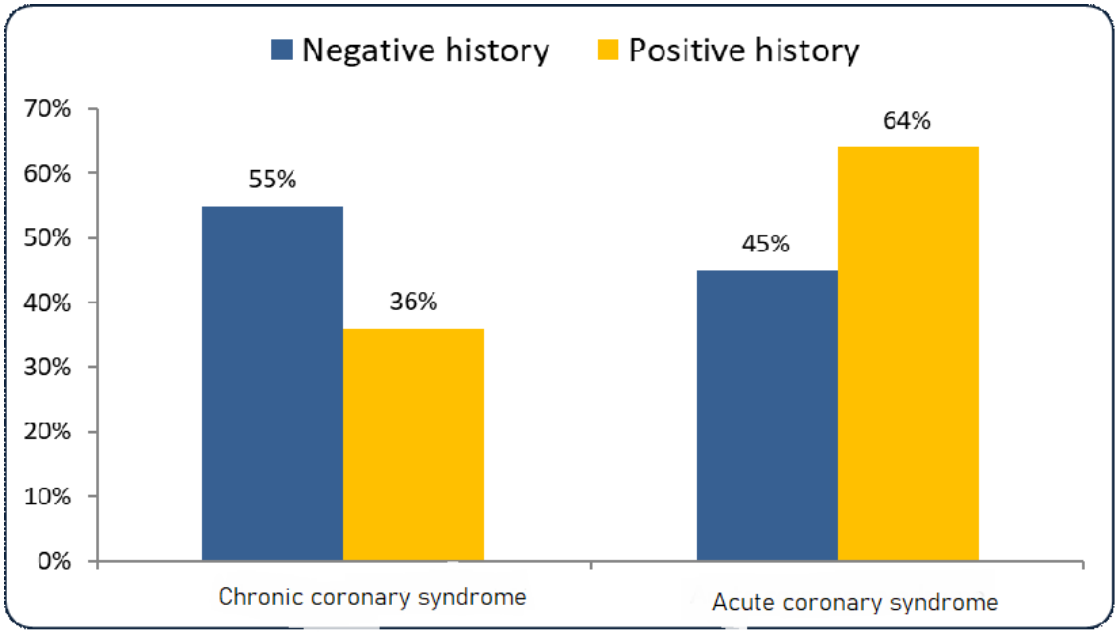

Figure 1. Comparison of history of ischemic heart disease medication among patients of the chronic coronary syndrome and acute coronary disease

Regarding the social factors of the study patients, the results showed that patients of ACS group had significantly higher proportion of patients were retired and not working than that of CCS group (P = 0.021). Also, significant difference among the patients of the two groups in term of job stress degree in proportion of patients was concluded i.e. simple freelance in ACS group had significantly higher proportion than those of CCS (P = 0.044). Low physical activity level significantly differed between the two groups of the study i.e. 79% of patients with acute coronary syndrome compared to 56.7% of patients with CCS as illustrated in table (4).

In term of cardiovascular factors, the study revealed no significant difference between two groups in view of coronary angiography (CAG) history. Regarding symptoms of CVDs, chest pain reported by 46.7% of patients with CCS compared to one quarter of patients with ACS. Whereas SOB reported by only 6.7% of patients with CCS compared to 21% of patients with ACS as shown in table (5).

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Table 4. Social factors among patients of the chronic coronary syndrome and acute coronary disease

Characteristics		Total	Chronic coronary syndrome N (%)	Acute coronary syndrome N (%)	P value*
Residence	Urban	112 (70.0)	45 (75.0)	67 (67.0)	0.285
	Rural	48 (30.0)	15 (25.0)	33 (33.0)	
Marital status	Single	8 (5.0)	2 (3.3)	6 (6.0)	0.072
	Married	102 (63.7)	45 (75)	57 (57.0)	
	Divorced/ widow	50 (31.3)	13 (21.7)	37 (37.0)	
Number of siblings	1-4	47 (29.4)	22 (36.7)	25 (25.0)	0.292
	>4	95 (59.3)	32 (53.3)	63 (63.0)	
	Infertility/ unmarried	18 (11.3)	6 (10.0)	12 (12.0)	
History of infertility	No	150 (93.7)	56 (93.3)	94 (94.0)	0.866
	Yes	10 (6.3)	4 (6.7)	6 (6.0)	
Occupation	Employee	39 (24.4)	16 (26.7)	23 (23.0)	0.021
	Free work	31 (19.4)	17 (28.3)	14 (14.0)	
	Retired	27 (16.9)	12 (20.0)	15 (15.0)	
	Not working	63 (39.3)	15 (25.0)	48 (48.0)	
Academic qualification	Neither	22 (13.8)	6 (10.0)	16 (16.0)	0.198
	Primary school	51 (13.9)	15 (25.0)	36 (36.0)	
	Secondary school	51 (13.9)	24 (40.0)	27 (27.0)	
	University	36 (22.4)	15 (25.0)	21 (21.0)	
Job stress degree	Simple freelance	143 (89.4)	50 (83.3)	93 (93.0)	0.044
	Hard freelance	13 (8.1)	9 (15.0)	4 (4.0)	
	Mental stress	4 (2.5)	1 (1.7)	3 (3.0)	
Physical activity	Low	113 (70.6)	34 (56.7)	79 (79.0)	0.011
	Moderate	41 (25.6)	23 (38.3)	18 (18.0)	
	High	6 (3.8)	3 (5.0)	3 (3.0)	
On 3 regular meals	No	67 (41.9)	25 (41.7)	42 (42.0)	0.967
	Yes	93 (58.1)	35 (58.3)	58 (58.0)	
Heavy fatty meals in a day	None	11 (6.9)	6 (10.0)	5 (5.0)	0.255
	Once	98 (61.2)	31 (51.7)	67 (67.0)	
	Twice	42 (26.3)	19 (31.7)	23 (23.0)	
	More than twice	9 (5.6)	4 (6.7)	5 (5.0)	
Type of oil used in cooking	Saturated oil	14 (8.8)	6 (10.0)	8 (8.0)	0.665
	Unsaturated oil	146 (91.2)	54 (90.0)	92 (92.0)	
Sweets	None	27 (16.9)	8 (13.3)	19 (19.0)	0.089
	Rarely	31 (19.4)	10 (16.7)	21 (21.0)	
	Sometimes	81 (50.6)	29 (48.3)	52 (52.0)	
	Always	21 (13.1)	13 (21.7)	8 (8.0)	
Soft drinks	None	65 (40.6)	18 (30)	47 (47.0)	0.161
	Rarely	23 (14.4)	11 (18.3)	12 (12.0)	
	Sometimes	54 (33.8)	22 (36.7)	32 (32.0)	
	Always	18 (11.3)	9 (15.0)	9 (9.0)	

*Chi-square test

Table 5. Cardiovascular factors among patients of the chronic coronary syndrome and acute coronary disease

Characteristics		Total	Chronic coronary syndrome N (%)	Acute coronary syndrome N (%)	P value*
Previous CAG	No	79 (49.4)	32 (53.3)	47 (47.0)	0.438
	Yes	81 (50.6)	28 (46.7)	53 (53.0)	
Previous CABG	No	155 (96.9)	59 (98.3)	96 (96.0)	0.651
	Yes	5 (3.1)	1 (1.7)	4 (4.0)	
Symptoms	Chest pain	53 (33.1)	28 (46.7)	25 (25.0)	0.006
	Palpitation	8 (5)	1 (1.7)	7 (7.0)	
	Short notes of breath	25 (15.6)	4 (6.7)	21 (21.0)	
	More than one symptom	74 (46.3)	27 (45.0)	47 (47.0)	

*Chi-square test, CABG = Coronary artery bypass graft, CAG = Coronary angiography

Discussion

The study consisted of two groups: 60 patients (37.5% of the total) with CCS and 100 patients (62.5% of the total) with ACS. This distribution highlights the higher prevalence of ACS compared to CCS in the study population and this might be due to the major of data was collected in a place specialized in acute settings of the patients.

The mean age ±SD of the patients in CCS and ACS groups did not show a significant difference (0.061). This suggests that age might not be a differentiating factor between CCS and ACS in terms of the patients' baseline characteristics. However, the age has trend to be high in ACS patients.

However, when examining the distribution of sex, the results revealed a significant difference (0.002). The proportion of male patients was higher in CCS group. This finding suggests a potential sex-based difference in the manifestation or risk factors between the two conditions. This has agreement “in view of percentage” with Kern et al. [22]. This may be due to of atypical chest pain reported more in females as previous study approved. However, this has contradicted with Sanchis-Gomar et al. [23], may be due to focusing of that study on ACS patients.

Furthermore, the study investigated the presence of family history as a potential risk factor. It was observed that the proportion of patients with a family history of premature death and family history of IHD was significantly higher in the CCS group compared to the ACS group. This implies that a positive family history of premature death or IHD may be more strongly associated with CCS. Actually, this interested finding contradicts many studies published, particularly Salari et al. [24]; however, up to our best explanation is those studies did not focus on this finding in comparison manner. The authors tried their best to avoid bias in collection of data. These differences may provide insights into the etiology, risk factors, or pathophysiological mechanisms underlying these two manifestations of ischemic heart disease.

The present study also analyzed modifiable risk factors among the two groups of patients; the results revealed some interesting findings. when examining weight status, the mean of BMI; (27.74), which revealed trend of overweight in overall patients. However, the study found no significant differences between the two groups. This suggests that weight status may not be a differentiating factor between CCS and ACS in this particular population.

Despite the smoking status in overall patients was high (56.9%), there were no significant differences between the two groups in terms of the proportion of smokers and non-smokers. This finding implies that smoking status alone may not be a distinguishing factor between CCS and ACS in these patients.

However, an important finding emerged when comparing former and current smokers. The analysis showed a significant difference between these two subgroups (P = 0.031). This indicates that current smoker more prevalent in angina than in ACS, which has consisted with Buchanan et al. [25]. In other hand, former smoker has higher prevalence in ACS patients than in CCS groups, which has agreement with Song et al. [26].

The results showed that there wasn't any statistical difference between the two groups concerning the history of HTN and DM. Consequently, the incidence of patients with CCS and those with ACS did not vary from one another greatly. This happens as a result of both conditions contribute to both types of IHD in same degree.

The results showed that the patients with ACS had a much larger percentage of high LDL-C compared to CCS group (P = 0.002). This finding, which has agreement with Abera et al. [27] and Muneeb et al. [28], suggesting that dyslipidemia, particularly elevated LDL-C, may be more prevalent in patients with ACS.

The study also discovered that the ACS group had significantly more patients on medical therapy for dyslipidemia than the CCS group (P = 0.004). This is because ACS is associated with a significantly higher risk of recurrent cardiovascular events, such as myocardial infarction or unstable angina as emergency situation; hence the acute nature of ACS prompts immediate lifestyle and medication changes, including the initiation of statin therapy. Furthermore, patients diagnosed with ACS tend to have a heightened awareness of their condition, which fosters greater acceptance of prescribed medications. Finally, post-ACS care typically involves more frequent follow-ups, contributing to higher rates of medication adherence and prescription. Together, these factors result in a markedly higher prevalence of statin use among ACS patients compared to those with CCS.

Regarding occupation, the ACS group had a significantly higher proportion of patients who were retired or not working compared to the CCS group (P = 0.021), while proportion of patients with a low physical activity level was significantly different between the two groups. The ACS group had a higher percentage (79%) of patients with low physical activity compared to the CCS group (56.7%) This suggests that patients with ACS were more likely to be in a non-working or retired status, potentially may be due to higher percentage of elderly in ACS patients and frailty is one of most common risk factors for ACS as Alonso Salinas et al. [29] stated.

Additionally, CCS group has trend to be employee or still working this has consisted with Estrella et al. [30]. This may be due to high levels of stress in the workplace can contribute to the development of angina, unhealthy eating habits and busy work schedules and limited access to healthy food options can lead to poor dietary choices, such as consuming high-fat, high-sodium, and processed foods, many jobs require long hours of sitting or minimal physical activity, which can contribute to a sedentary lifestyle. Lack of regular exercise and physical activity is a risk factor for angina and other CVDs and finally shift work and jobs that involve rotating or night shifts can disrupt the body's natural sleep-wake cycle and lead to irregular sleep patterns. This disruption in circadian rhythm can increase the risk of CVDs, including angina [31].

Regarding SOB, only 6.7% of patients with CCS reported SOB, whereas 21% of patients with ACS reported this symptom. This suggests that SOB was more frequently reported by patients with ACS, possibly indicating a higher degree of cardiac compromise or greater disease severity. Furthermore, palpitations were more in ACS group, which has agreement with DeVon et al. [32]. It's important to note that symptoms can vary based on the location and severity of the blockage, as well as individual factors like age, sex, and medical conditions.

There are limitations to be considered in this study; the sample size and specific

characteristics of the study population might limit the generalizability of the findings. Additionally, the study's cross-sectional design may restrict our ability to establish causality or provide a comprehensive understanding of the relationship between modifiable risk factors and the development of ischemic heart disease. This provides new insight into the characteristic clinical features that may help differentiate these two presentations of CAD. Therefore, future studies with larger and more diverse populations are needed to confirm and extend these findings

In conclusion the presence of dyslipidemia, particularly elevated LDL-C levels, was significantly associated with ACS patients. CCS patients have a significantly higher rate of premature death and premature IHD compared to ACS patients. Proportion of patients with a family history of premature death and premature IHD is significantly higher in the CCS group. Additionally, social factors such as retirement and low physical activity were more commonly observed in ACS patients, suggesting that lifestyle modifications may be critical in managing and preventing ACS. Overall, these results underscore the need for targeted interventions addressing both medical and social determinants to improve outcomes for patients with ACS

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Author contribution

The authors contributed directly to the creation of this paper and approved the final version that was submitted. Dr. Al Ftailah: had a major role in statistics and discussion section. Final manuscript has been read and approved by all authors.

Conflict of interest

The authors declare no conflict of interest.

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References

1. Benjamin EJ, Blaha MJ, Chiuve SE, et al. Heart disease and stroke statistics-2017 update: A report from the American heart association. Circulation. 2017; 135(10): e146-e603. doi: 10.1161/CIR.0000000000000485.
2. Jensen RV, Hjortbak MV, Bøtker HE. Ischemic heart disease: An update. Semin Nucl Med. 2020; 50(3): 195-207. doi: 10.1053/j.semnuclmed.2020.02.007.
3. Hussain MM, Rafi U, Imran A, et al. Risk factors associated with cardiovascular disorders. Pakistan BioMed J. 2024; 7(2): 3-10. doi: 10.54393/pbmj.v7i02.1034.
4. Khan MA, Hashim MJ, Mustafa H, et al. Global epidemiology of ischemic heart disease: Results from the global burden of disease study. Cureus. 2020; 12(7): e9349. doi: 10.7759/cureus.9349.
5. Dababneh E, Goldstein S. Chronic ischemic heart disease selection of treatment modality. 2023 Jul 24. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan–.
6. Kasprzyk M, Wudarczyk B, Czyz R, et al. Ischemic heart disease - definition, epidemiology, pathogenesis, risk factors and treatment. Post N Med. 2018; XXXI(6): 358-60. doi: 10.25121/PNM.2018.31.6.358.
7. Chedea VS, Tomoiagă LL, Macovei ŞO, et al. Antioxidant/pro-oxidant actions of polyphenols from grapevine and wine by-products-base for complementary therapy in ischemic heart diseases. Front Cardiovasc Med. 2021; 8: 750508. doi: 10.3389/fcvm.2021.750508.
8. Boland JE, Muller DWM. Interventional cardiology and cardiac catheterisation: The essential guide. 2nd ed. CRC Press. Doi: https://doi.org/10.1201/9781351060356.
9. Camici PG, Crea F. Coronary microvascular dysfunction. N Engl J Med. 2007; 356(8): 830-40. doi: 10.1056/NEJMra061889.
10. Sabe SA, Feng J, Sellke FW, et al. Mechanisms and clinical implications of endothelium-dependent vasomotor dysfunction in coronary microvasculature. Am J Physiol Heart Circ Physiol. 2022; 322(5): 819-41. doi: 10.1152/ajpheart.00603.2021.
11. Tullmann DF, Dracup K. Knowledge of heart attack symptoms in older men and women at risk for acute myocardial infarction. J Cardiopulm Rehabil. 2005; 25(1): 33-9. doi: 10.1097/00008483-200501000-00008.
12. Sakboonyarat B, Rangsin R. Prevalence and associated factors of ischemic heart disease (IHD) among patients with diabetes mellitus: A nation-

wide, cross-sectional survey. BMC Cardiovasc Disord. 2018; 18(1): 151. doi: 10.1186/s12872-018-0887-0.
13. Špinar J. [Hypertension and ischemic heart disease]. Cor Vasa. 2012; 54(11-12): e433-8. doi: 10.1016/j.crvasa.2012.11.002.
14. Barrios V, Escobar C, Murga N, et al. Clinical profile and management of patients with chronic ischemic heart disease according to age in the population daily attended by cardiologists in Spain The ELDERCIC study. Eur J Intern Med. 2010; 21(3): 180-4. doi: 10.1016/j.ejim.2010.01.003.
15. Kim MK, Han K, Kim HS, et al. Cholesterol variability and the risk of mortality, myocardial infarction, and stroke: a nationwide population-based study. Eur Heart J. 2017; 38(48): 3560-6. doi: 10.1093/eurheartj/ehx585.
16. Holt E, Skaarup KG, Lassen MCH, et al. The effects of smoking on cardiac structure and function in a general population. Eur Heart J. 2022; 43(2): ehac544.121. doi: https://doi.org/10.1093/eurheartj/ehac544.121.
17. Prasad DS, Kabir Z, Dash AK, et al. Smoking and cardiovascular health: a review of the epidemiology, pathogenesis, prevention and control of tobacco. Indian J Med Sci. 2009; 63(11): 520-33.
18. Gottdiener JS, Arnold AM, Aurigemma GP, et al. Predictors of congestive heart failure in the elderly: the Cardiovascular Health Study. J Am Coll Cardiol. 2000; 35(6): 1628-37. doi: 10.1016/s0735-1097(00)00582-9.
19. Si JH, Meng RR, Yu CQ, et al. [Family history and risk of coronary heart disease]. Zhonghua Liu Xing Bing Xue Za Zhi. 2018; 39(2): 173-8. Chinese. doi: 10.3760/cma.j.issn.0254-6450.2018.02.007.
20. Ibanez B, James S, Agewall S, et al. 2017 ESC guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation: The Task Force for the management of acute myocardial infarction in patients presenting with ST-segment elevation of the European Society of Cardiology (ESC). Eur Heart J. 2018; 39(2): 119-77. doi: 10.1093/eurheartj/ehx393.
21. Arnett DK, Blumenthal RS, Albert MA, et al. 2019 ACC/AHA guideline on the primary prevention of cardiovascular disease: executive summary: a report of the American college of cardiology/American heart association task force on clinical practice guidelines. J Am Coll Cardiol. 2019; 74(10): 1376-414. doi: 10.1016/j.jacc.2019.03.009.
22. Kern A, Stompór T, Bojko K, et al. Comparative ten-year outcomes in chronic and acute coronary syndrome patients undergoing invasive diagnostics-insights from the koronef registry. Biomedicines. 2024; 12(12): 2672. doi: 10.3390/biomedicines12122672.
23. Sanchis-Gomar F, Perez-Quilis C, Leischik R, et al. Epidemiology of coronary heart disease and acute coronary syndrome. Ann Transl Med. 2016; 4(13): 256. doi: 10.21037/atm.2016.06.33.
24. Salari N, Morddarvanjoghi F, Abdolmaleki A, et al. The global prevalence of myocardial infarction: a systematic review and meta-analysis. BMC Cardiovasc Disord. 2023; 23(1): 206. doi: 10.1186/s12872-023-03231-w.
25. Buchanan DM, Arnold SV, Gosch KL, et al. Association of smoking status with angina and health-related quality of life after acute myocardial infarction. Circ Cardiovasc Qual Outcomes. 2015; 8(5): 493-500. doi: 10.1161/CIRCOUTCOMES.114.001545.
26. Song C, Fu R, Dou K, et al. Association between smoking and in-hospital mortality in patients with acute myocardial infarction: results from a prospective, multicentre, observational study in China. BMJ Open. 2019; 9(8): e030252. doi: 10.1136/bmjopen-2019-030252.
27. Abera A, Worede A, Hirigo AT, et al. Dyslipidemia and associated factors among adult cardiac patients: a hospital-based comparative cross-sectional study. Eur J Med Res. 2024; 29(1): 237. doi: 10.1186/s40001-024-01802-x.
28. Muneeb M, Khan AH, Khan Niazi A, et al. Patterns of dyslipidemia among acute coronary syndrome (ACS) patients at a tertiary care hospital in Lahore, Pakistan. Cureus. 2022; 14(12): e32378. doi: 10.7759/cureus.32378.
29. Alonso Salinas GL, Sanmartín Fernández M, Pascual Izco M, et al. Frailty is a short-term prognostic marker in acute coronary syndrome of elderly patients. Eur Heart J Acute Cardiovasc Care. 2016; 5(5): 434-40. doi: 10.1177/2048872616644909.
30. Estrella ML, Rosenberg NI, Durazo-Arvizu RA, et al. The association of employment status with ideal cardiovascular health factors and behaviors among Hispanic/Latino adults: Findings from the Hispanic Community Health Study/Study of Latinos (HCHS/SOL). PLoS One. 2018; 13(11): e0207652. doi: 10.1371/journal.pone.0207652.
31. Thosar SS, Butler MP, Shea SA. Role of the circadian system in cardiovascular disease. J Clin Invest. 2018; 128(6): 2157-67. doi: 10.1172/JCI80590.
32. DeVon HA, Ryan CJ, Ochs AL, et al. Symptoms across the continuum of acute coronary syndromes: differences between women and men. Am J Crit Care. 2008; 17(1): 14-24; quiz 25.

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