BENHA MEDICAL JOURNAL bmj

Print ISSN 1110-208X

Online ISSN 2357-0016

Original article

Demographic, Clinical and Angiographic Profile of Patients Scheduled for Coronary Intervention in Kalyoboia Governorate

Hany H. Ebaid [a], Osama S. Arafa [a], Mohamed S. Hamouda [a], Wael A. Elsayed, Safaa S. Imam [a]

[a] Department of cardiovascular medicine, Benha faculty of medicine, Benha University, Egypt.

[b] Department of cardiovascular medicine, Benha Teaching Hospital,, Egypt.

Correspondence to: Mohamed S. Hamouda, Department of cardiovascular medicine, Benha faculty of medicine, Benha University, Egypt.

Email:

ms3694293@gmail.com

Received:

Accepted:

Abstract

Background: In Egypt, the National Hypertension Project (NHP) found that an adjusted overall prevalence of CAD is 8.3%. **This study aimed to** determine demographic, clinical, and angiographic profile among patients scheduled for coronary intervention in Benha Insurance Hospital, Benha Teaching Hospital & Benha University Hospital. **Methods:** This observational cross-sectional study included 500 patients who were subjected to coronary angiography. All studied cases were subjected to clinical examination, routine laboratory investigations [CBC, Renal function tests, International normalized ratio (INR), Total cholesterol, LDL-C, HDL-C, Triglycerides, Thyroid-stimulating hormone (TSH), FT3 and FT4.], radiological investigations (ECG and Echocardiography) & coronary angiography. **Results**: The EF demonstrated a slightly lower mean value in males compared to females (P = 0.021), while substantial differences were observed in the prevalence of segmental wall motion abnormalities (SWMA). Notably, a significantly higher proportion of males exhibited SWMA than females (P<0.001). Mitral Valve affection (MR) significantly increased with age, with the highest prevalence observed in individuals over 60 years compared to younger age groups**. Conclusion:** Key findings include a significant prevalence of risk factors such as diabetes, hypertension, and dyslipidemia, with notable gender-based differences indicating higher BMI, diabetes, and hypertension rates in females, and higher smoking rates in males. Clinically, typical chest pain was predominant, with males exhibiting more severe CAD and SWMA. Age-related disparities were evident, with older patients displaying higher chronic coronary syndrome prevalence, lower heart rates, increased diastolic dysfunction and higher number of lesions and diseased vessels.

Keywords: Angiographic Profile; Coronary Intervention; CAD; SWMA.

Introduction

Cardiovascular Disease (CVD) has become the largest single cause of death worldwide. It is responsible for an estimated 17 million deaths and led to 151 million disability-adjusted life years (DALYs) lost (~30.0% of all deaths and 14.0% of all DALYs lost). Also, 12.2% of global deaths (7.2 million) are caused by CAD, so it is a leading cause of morbidity, disability, and mortality worldwide. Further, by 2020, 32.0% of the world population deaths will be caused by CVD and by 2030; it will be responsible for 33.0% of all deaths (24.2 million). At this time, 14.9% and 13.1% of deaths in men and women respectively will be caused by CAD (1).

In Egypt, the National Hypertension Project (NHP) found an adjusted overall prevalence of CAD is 8.3% (2). Different reasons are postulated to this; increasing prevalence in developing countries, high expenses of surgical and other treatment modalities, side effects, and the resultant inability make CAD one of the most important medical and health issues (1).

In Egypt, WHOR showed in 2014 that CAD deaths reached 107,232 (23.14%) of all deaths. Age adjusted death rate is 186.36/100,000 population: this ranks Egypt #23 in the world. CAD deaths were 78,897 (21.73%) of all deaths, which make CAD the first killer in Egypt in 2013 (3). cardiovascular disease (CVD) has been the leading cause of premature death since the 1990s. In 2017, CVD accounted for 46.2% of the overall mortality in Egypt (4).

Data indicates that the elderly population has higher prevalence of CAD risk factors. CAD risk factors are classified into unmodified (e.g., age and genetic factors) and modified (e.g., smoking, obesity, psychosocial, etc). Only half of the variances of CAD are explained by unmodified risk factors (5). Most of the CAD studies focused on the biological risk factors and lifestyle, but evidence shows psychological/psychosocial factors have important role in etiology, development, continuity and the consequence of this illness. Psychological factors are considered as independent risk factors in CAD (6).

Atherosclerosis is a major risk factors for CAD, the main risk factors for atherosclerosis is gender, age, heredity, smoking, Diabetes Mellitus (DM), high BP, High Triglyceride (TG) levels, Low Density Lipoprotein (LDL) levels, chronic kidney disease (CKD), alcohol abuse, overweight, insufficient exercise, excessive stress, etc (7). Also, studies have cleared up psychosocial and psychiatric factors have a great role in the etiology, development, duration, and outcome of CAD. The most important factors are depression, anxiety, and stress (6).

The purpose of this study was to determine demographic, clinical, and angiographic profile among patients

scheduled for coronary intervention in Benha Insurance Hospital, Benha Teaching Hospital & Benha University Hospital.

Patients and methods

This observational cross-sectional study included 500 patients who were subjected to coronary angiography with or without coronary intervention. The study carried out at Cardiology Department, Cardiology Care Unit, and Catheter Lab in Benha Insurance Hospital, Benha Teaching Hospital, and Benha University Hospital from March 2023 to March 2024.

Approval of the study protocol by an ethical scientific committee of Benha University was obtained. Informed verbal and written consent were obtained from the patients before enrollment in the study (**MS 49-5-2023)**.

Inclusion criteria were Egyptian patients, Age was more than 18 years, and patients scheduled for diagnostic coronary angiography +/- therapeutic interventions.

Exclusion criteria were non-Egyptian patients, age was less than 18 years, Patient with congenital and valvular heart disease, primary PCI and patient's refusal.

All studied cases were subjected to the following: History taking, including [Age, gender, smoking history, and history of recent surgery or malignancy, the history of hypertension, dyslipidemia, obesity or diabetes mellitus]. **Clinical examination including [**heart rate, systolic blood pressure, diastolic blood pressure, respiratory rate, weight, height and BMI]. **Routine laboratory investigations [**CBC, Renal function tests, International normalized ratio (INR), Total cholesterol, LDL-C, HDL-C, Triglycerides, Thyroid-stimulating hormone (TSH), FT3 and FT4.]. Radiological investigations (ECG and Echocardiography). **Coronary angiography.**

Echocardiography: Comprehensive transthoracic echocardiographic examinations were performed using Echo cardiogram machine, with the 5.5 X transducer S5-1 probe with simultaneous ECG signal. Patients were examined in the left lateral decubitus position. All echocardiographic examinations were obtained and recorded including:

Ejection fraction: using the Modified Simpson's method, also known as the biplane method of disks, involves obtaining apical two- and four-chamber views during echocardiography to trace the endocardial borders at end-diastole and end-systole. The left ventricle was then divided into a series of disks, and the volume of each disk is calculated and summed to determine the total end-diastolic volume (EDV) and end-systolic volume (ESV). The EF was subsequently calculated using the formula: EF = [(EDV - ESV) / EDV] × 100, providing a precise and reliable

measure of left ventricular systolic function (8).

Diastolic dysfunction: Diastolic dysfunction was diagnosed according to the echocardiographic examination results and categorized into 3 grades based on 2009 version of recommendations, grade 1 (mild diastolic dysfunction or impaired relaxation phase: E/A <0.8, DT >200 milliseconds, E/e′ ≤8), grade 2 (moderate diastolic dysfunction or pseudonormal phase: E/A 0.8–1.5, DT 160–200 milliseconds, E/e′ 9–12), and grade 3 (severe diastolic dysfunction or restrictive filling phase: E/A ≥2, DT <160 milliseconds, E/e′ ≥13) (9).

Wall motion and thickening: Segmental Wall Motion Abnormalities (SWMA) was defined by the presence of akinesia or moderate to severe hypokinesia in at least two adjacent segments.

Coronary angiography:

Coronary angiography was performed for assessment of parameters including Vessel lesions or total occlusion. Number of vessels affected (single, double or multiple vessels affection) or Left main affection. Ectasia or Slow flow. Myocardial bridge. Simple lesion or Bifurcation lesion.

Statistical analysis

Statistical analysis were done using SPSS version 28 (IBM, Armonk, New York, United States). Quantitative data were summarized as means and standard deviations, while categorical data were summarized as numbers and percentages. Quantitative data were compared according to gender using the independent t-test and according to age groups using the one-way ANOVA test. Post-hoc analysis was done in case of significant overall effect, and all post-hoc analyses were Bonferroni adjusted. Categorical data were compared using the Chi-square or Fisher's exact test. All statistical tests were two-sided. P values less than 0.05 were considered significant.

Results

Table 1 shows demographics, risk factors, Clinical findings, Echo and stress test (if done) findings of the studied patients. Of the studied patients, only 22 patients had CTCA and 22 patients underwent myocardial perfusion imaging.

Females exhibited significantly higher mean BMI; the prevalence of diabetes, hypertension, and Dyslipidemia compared to males (p-value <0.001). Smoking was a significantly higher prevalence among males (48.2%) compared to females (0.7%), with a p-value <0.001. Conversely, no significant differences were observed regarding all other variables. Females reported a significantly lower prevalence of typical chest pain than males (P = 0.011). Conversely, shortness of breath was more prevalent among females than males (P < 0.001). Hemoglobin levels were significantly lower in females than

males (P < 0.001). Furthermore, females exhibited lower mean platelet counts compared to males (P = 0.021). Creatinine levels showed a trend towards significance, with females demonstrating slightly lower levels compared to males (P = 0.063). However, other parameters, including urea, INR, total cholesterol, LDL-C, HDL-C, triglycerides, thyroid-stimulating hormone (TSH), free triiodothyronine (FT3), and free thyroxine (FT4) exhibited no significant gender differences (P > 0.05 for all). **Table 2**

The EF demonstrated a slightly lower mean value in males compared to females (P = 0.021), while substantial differences were observed in the prevalence of segmental wall motion abnormalities (SWMA). Notably, a significantly higher proportion of males exhibited SWMA than females (P<0.001). Diastolic dysfunction revealed a significantly higher prevalence of Grade I dysfunction (GI) in males compared to females (P=0.034). However, no significant differences were observed regarding other parameters. The distribution of lesion types between males and females was statistically significant, with a p-value of <0.001. Number of vessels affected differed significantly according to gender (P < 0.001), with single vessel disease (6.4% vs. 15.6%) being higher in females compared to males. Conversely, double vessel disease (17% vs. 8.5%), and multiple vessel disease (60.4% vs. 33.3%) were higher in males compared to females. **Table 3**

Significant differences in segmental wall motion abnormalities (SWMA) were evident, with a higher prevalence in individuals over 60 years compared to younger age groups (66% vs. 60.7% and 33.3%, respectively; P = 0.05). Mitral Valve affection (MR) significantly increased with age, with the highest prevalence observed in individuals over 60 years compared to younger age groups (P = 0.038). In the ≤ 40 age group (n = 12), 6 participants (50.0%) had no lesions, 2 (16.7%) had non-significant lesions, and 4 (33.3%) had significant lesions. Among those aged 41 – 60 years (n = 244), 64 participants (26.2%) had no lesions, 30 (12.3%) had non-significant lesions, and 150 (61.5%) had significant lesions. In the > 60 age group (n = 244), 48 participants (19.7%) had no lesions, 48 (19.7%) had non-significant lesions, and 148 (60.7%) had significant lesions. The difference was statistically significant (P = 0.021). Other parameters did not exhibit statistically significant differences among the age groups (P > 0.05). **Table 4**

Table 1: Demographic, risk factors, Clinical findings, Echo and stress test findings (if done) of the studied patients

Demographic &Risk factors (n = 500)			
Age (years)		Mean ±SD	60 ±9
Gender	Males	n (%)	359 (71.8)
	Females	n (%)	141 (28.2)
BMI (kg/m^2)		Mean ±SD	28.21 ±2.41
FH-IHD		n (%)	80 (16)
Diabetes		n (%)	203 (40.6)
Hypertension		n (%)	300 (60)
Obesity		n (%)	115 (23)
Dyslipidemia		n (%)	301 (60.2)
CVS		n (%)	4 (0.8)
Smoking		n (%)	174 (34.8)
Clinical findings			
Heart rate (beat/min)		Mean ±SD	74 ±7
Systolic blood pressure (mmHg)		Mean ±SD	127 ±11
Diastolic blood pressure (mmHg)		Mean ±SD	78 ±10
Typical chest pain		n (%)	474 (94.8)
Shortness of breath		n (%)	89 (17.8)
Echo findings			
Ejection fraction (%)		Mean ±SD	58 ±8
SWMA		n (%)	313 (62.6)
Mitral valve affection (MR)		n (%)	49 (9.8)
Diastolic dysfunction	GI	n (%)	224 (44.8)
	GII	n (%)	34 (6.8)
No DD		n (%)	242 (48.4)
Laboratory results			
Hemoglobin (g/dL)		Mean ±SD	12.92 ±1.4
TLC (*10^9/L)		Mean ±SD	6.7 ±1.6
Platelets (*10^9/L)		Mean ±SD	284 ±62
Creatinine (mg/dL)		Mean ±SD	0.87 ±0.43
Urea (mg/dL)		Mean ±SD	25 ±10
INR		Mean ±SD	1 ±0.1
Total cholesterol (mg/dL)		Mean ±SD	190 ±26
LDL-C (mg/dL)		Mean ±SD	145 ±36
HDL-C (mg/dL)		Mean ±SD	40 ±7
Triglycerides (mg/dL)		Mean ±SD	164 ±38
TSH (mIU/L)		Mean ±SD	2.15 ±0.79
FT3 (pmol/L)		Mean ±SD	2.7 ±0.4
FT4 (ng/dL)		Mean ±SD	1.21 ±0.23

SWMA: Segmental Wall Motion Abnormalities; GI: Grade I; GII: Grade II; DD: Diastolic Dysfunction; CTCA: Computed Tomography Coronary Angiography; *Only 22 patients underwent this procedure; TLC: Total leukocyte count; INR: International Normalized Ratio; LDL-C: Low-density lipoprotein; cholesterol; HDL-C: High-density lipoprotein cholesterol; TSH: Thyroid-stimulating hormone; FT3: Free triiodothyronine; FT4: Free thyroxine; BMI: Body Mass Index; FH-IHD: Family History of Ischemic Heart Disease; CVS: Cerebrovascular stroke; PVD: Peripheral Vascular Disease.

Table 2: Demographic, risk factors, Clinical characteristics according to gender

	Males (n = 359)	Females (n = 141)	P-value
Age (years)	59 ±9	61 ±8	0.1
BMI (kg/m^2)	27.39 ±1.81	30.29 ±2.48	<0.001*
FH-IHD	61 (17)	19 (13.5)	0.334
Diabetes	129 (35.9)	74 (52.5)	<0.001*
Hypertension	199 (55.4)	101 (71.6)	<0.001*
Obesity	35 (9.7)	80 (56.7)	<0.001*
Dyslipidemia	204 (56.8)	97 (68.8)	0.014*
CVS	3 (0.8)	1 (0.7)	1.0
Smoking	173 (48.2)	1 (0.7)	<0.001*
Clinical characteristics			
Heart rate (beat/min)	74 ±7	74 ±8	0.607
Systolic blood pressure (mmHg)	127 ±11	128 ±13	0.284
Diastolic blood pressure (mmHg)	78 ±9	79 ±13	0.231
Typical chest pain	346 (96.4)	128 (90.8)	0.011*
Shortness of breath	48 (13.4)	41 (29.1)	<0.001*
Laboratory results			
Hemoglobin (g/dL)	13.31 ±1.33	11.92 ±1.05	<0.001*
TLC (*10^9/L)	6.9 ±1.6	6.5 ±1.5	0.016
Platelets (*10^9/L)	288 ±63	273 ±60	0.021*
Creatinine (mg/dL)	0.9 ±0.49	0.82 ±0.19	0.063
Urea (mg/dL)	26 ±10	25 ±8	0.721
INR	1 ±0.1	1 ±0.1	0.825
Total cholesterol (mg/dL)	190 ±26	191 ±27	0.795
LDL-C (mg/dL)	145 ±36	146 ±35	0.754
HDL-C (mg/dL)	40 ±7	40 ±7	0.953
Triglycerides (mg/dL)	163 ±39	168 ±35	0.134
TSH (mIU/L)	2.14 ±0.69	2.19 ±1.01	0.610
FT3 (pmol/L)	2.7 ±0.4	2.7 ±0.4	0.411
FT4 (ng/dL)	1.21 ±0.22	1.21 ±0.24	0.939

*Significant P-value; TLC: Total Leukocyte Count; INR: International Normalized Ratio; LDL-C: Low-density Lipoprotein Cholesterol; HDL-C: High-density Lipoprotein Cholesterol; TSH: Thyroid-stimulating Hormone; FT3: Free Triiodothyronine; FT4: Free Thyroxine; BMI: Body Mass Index; FH-IHD: Family History of Ischemic Heart Disease; CVS: Cerebrovascular stroke.

Table 3: Echocardiography, stress test (if done) and Coronary angiography findings according to gender

	Males (n = 359)	Females (n = 141)	P-value
EF (%)	58 ±8	60 ±8	**0.021***
SWMA	250 (69.6)	63 (44.7)	**<0.001***
Mitral valve affection	31 (8.6)	18 (12.8)	0.162
Diastolic dysfunction			
GI	148 (41.2)	76 (53.9)	**0.034***
GII	25 (7)	9 (6.4)	
No DD	186 (51.8)	56 (39.7)	
Coronary angiography findings			
Type of lesion			
No lesion	58 (16.2)	60 (42.6)	<0.001
Non-significant lesion	51 (14.2)	29 (20.6)	
Significant lesion	250 (69.6)	52 (36.9)	
Number of vessels affected			
No affection	58 (16.2)	60 (42.6)	<0.001*
Single vessel disease	23 (6.4)	22 (15.6)	
Double vessel disease	61 (17)	12 (8.5)	
Multiple vessel disease	217 (60.4)	47 (33.3)	
Left main affection	46 (12.8)	4 (2.8)	<0.001*
Slow flow	6 (1.7)	2 (1.4)	0.839
Ectasia	86 (24)	15 (10.6)	<0.001*
Myocardial bridge	3 (0.8)	0 (0)	0.562
Simple lesion	226 (63)	50 (35.5)	<0.001*
Bifurcation lesion	47 (13.1)	2 (1.4)	<0.001*

*Significant P-value; EF: Ejection Fraction; SWMA: Segmental Wall Motion Abnormalities; GI: Grade I; GII: Grade II; DD: Diastolic Dysfunction;

Table 4: Echocardiography, stress test (if done) and Coronary angiography findings according to age groups

	Age groups			
	≤ 40 (n = 12)	**41 – 60 (n = 244)**	**> 60 (n = 244)**	**P-value**
EF (%)	60 ±4	58 ±9	59 ±8	0.604
SWMA	4 (33.3)	148 (60.7)	161 (66)	0.05*
Mitral valve affection	0 (0)	17 (7)	32 (13.1)	0.038*
Diastolic dysfunction				
GI	2 (16.7)	97 (39.8)	125 (51.2)	0.007*
GII	2 (16.7)	14 (5.7)	18 (7.4)	
No DD	8 (66.7)	133 (54.5)	101 (41.4)	
Coronary angiography findings				
Type of lesion				
No lesion	6 (50.0)	64 (26.2)	48 (19.7)	0.021*
Non-significant lesion	2 (16.7)	30 (12.3)	48 (19.7)	
Significant lesion	4 (33.3)	150 (61.5)	148 (60.7)	
Number of affected vessels				
No affection	6 (50)	64 (26.2)	48 (19.7)	0.183
Single vessel disease	0 (0)	22 (9)	23 (9.4)	
Double vessel disease	2 (16.7)	32 (13.1)	39 (16)	
Multiple vessel disease	4 (33.3)	126 (51.6)	134 (54.9)	
Left main affection	1 (8.3)	23 (9.4)	26 (10.7)	0.886
Slow flow	1 (8.3)	3 (1.2)	4 (1.6)	0.234
Ectasia	3 (25)	45 (18.4)	53 (21.7)	0.61
Myocardial bridge	0 (0)	3 (1.2)	0 (0)	0.301
Simple lesion	4 (33.3)	137 (56.1)	135 (55.3)	0.3
Bifurcation lesion	1 (8.3)	24 (9.8)	24 (9.8)	0.985

EF: Ejection Fraction; SD: Standard Deviation; SWMA: Segmental Wall Motion Abnormalities; GI: Grade I; GII: Grade II; DD: Diastolic Dysfunction;.

Discussion

The study's demographics and risk factors reveal a patient cohort of 500 individuals with a mean age of 60 years, predominantly male (71.8%). The mean weight was 82 kg, height 170 cm, and BMI 28.21 kg/m². Significant comorbidities were observed: 16% had a family history of IHD, 40.6% had diabetes, 60% had hypertension, 23% were obese, and 60.2% had dyslipidemia. Additionally, 34.8% of patients were smokers suggesting a high prevalence of cardiovascular risk factors within the study population.

Various studies have investigated sex differences in patients undergoing evaluation for CAD, with most being several decades old and primarily conducted in academic centers (10 and 11). Hence, analyzing the differences between men and women in this large, contemporary population assessed at community centers is crucial for informing current clinical practice.

The findings indicate significant gender-based disparities in demographic and risk factors among patients scheduled for

coronary intervention. Females exhibit higher mean BMI values and a greater prevalence of diabetes mellitus, hypertension, and dyslipidemia compared to males, suggesting a higher burden of these conditions among women. In contrast, smoking is significantly more prevalent among males, highlighting a major risk factor more common in men. Additionally, females are generally shorter in height compared to males.

Consistently, Hemal et al. conducted a study to assess sex differences in demographics, risk factors, presentation, and noninvasive testing in stable outpatients with suspected coronary artery disease. Characteristics of 10,003 men and women in the Prospective Multicenter Imaging Study for Evaluation of Chest Pain (PROMISE) trial were compared. They reported that the female cohort had a higher mean age and exhibited a greater prevalence of hypertension (66.6% versus 63.2%), dyslipidemia (68.9% versus 66.3%), and a familial predisposition to premature CAD (34.6% versus 29.3%) (all p-values < 0.005). Additionally, Women were less likely to smoke (45.6% vs. 57.0%; p<0.001). They concluded that patient sex influences the entire diagnostic pathway for possible CAD, from baseline risk factors and presentation to noninvasive test outcomes (12).

However, they reported having higher BMI was more common in men compared to women and similar prevalence of DM was observed between both groups (12).

Furthermore, various studies agreed on those reported gender-based differences regarding demographics and risk factors. **Ferrari et al.** conducted their study for assessment of gender- and age-related differences in clinical presentation and management of outpatients with stable coronary artery disease and reported similar findings (13). Similar risk factors were reported (14 and 15) with agreement on the aforementioned gender-based differences (14-16).

Regarding gender-based clinical characteristics, females reported significantly less typical chest pain, but more shortness of breath compared to males, suggesting potential differences in symptom presentation. Additionally, females had lower hemoglobin levels and mean platelet counts, indicating potential variations in hematologic profile which could be attributed to physiological differences, such as menstrual blood loss and higher prevalence of anemia. Although creatinine levels were slightly lower in females, this difference was less pronounced but can be, physiologically, due to lower muscle mass.

Similarly, Hemal et al. reported higher prevalence of typical chest pain, at which they named it typical angina, in males compared to females (12.2% Vs. 11.2%) (12).

Significant gender differences in echocardiography and stress test results among patients were found. Males had a slightly lower mean EF compared to females, suggesting reduced LV function. Substantial differences were seen in the prevalence of SWMA, with males exhibiting a significantly higher proportion of SWMA than females, indicating more localized cardiac dysfunction which may be linked to more extensive ischemic heart disease. Additionally, males had a higher prevalence of Grade I diastolic dysfunction indicating a greater degree of early diastolic impairment, potentially due to increased stiffness and reduced compliance of the left ventricle.

Consistently, Khesroh et al. reported that EF by echo revealed similarly lower value in males when compared to females (47.69 vs 49.60) (17).

Regarding gender differences in coronary angiography results, males had a higher prevalence of significant lesions and more total occlusions compared to females. Females had a higher proportion of cases with no lesions. Additionally, males exhibited a higher prevalence of double and multiple vessel disease, while single vessel disease was more common in females. More males also had left main affection, ectasia, simple lesions, bifurcation lesions, and previous CABG. These differences suggest that males tend to have more extensive and severe CAD than females. Likewise, Hemal et al. found that women exhibited a lower risk of events and pretest likelihood for coronary disease across all five global risk scores: Framingham (2008), ASCVD (2013), Diamond and Forrester (1979), modified Diamond and Forrester (2011), and the combined Diamond-Forrester and CASS (2012). A greater proportion of women were assessed by their providers as having a low pre-test probability (<30%) for obstructive coronary artery disease, whereas a higher proportion of men were deemed to have a high pre-test probability (>70%) (12).

A similar coronary angiographic profile of males and female patients was observed in the study by Bajaj et al. at which single vessel disease was the most common lesion found (58% in males vs. 56% in females), while multiple vessel disease was found in 40% males as compared to 30% females. Normal coronaries/insignificant CAD were found in 14% females as compared to 2% males (18). Additionally, another study by Sayed reported that the number of vessels affected was significantly lower in females than in males when assessing coronary angiographic findings (19).

The findings indicate that echocardiography and stress test abnormalities increase with age. SWMA and valve affection are significantly more prevalent in individuals over 60 compared to younger age groups. Diastolic dysfunction, particularly Grade I, also increases notably with age, with the highest prevalence in those over 60 suggesting that cardiac structural and

functional impairments become more common with aging likely due to age-related changes in myocardial tissue, increased prevalence of comorbid conditions, and cumulative cardiovascular risk factors which aligns with existing literature, which shows that aging is associated with increased cardiac stiffness, reduced compliance, and higher incidences of valvular diseases (20).

The findings indicated that individuals aged ≤ 40 years are significantly more likely to have no coronary lesions compared to those aged 41-60 and over 60. This suggests a lower prevalence of CAD in the younger age group.

Consistently, Mohammad et al. when assessing demographic, clinical and angiographic profile of coronary artery disease in kurdistan region of Iraq, they enrolled a total of 300 adult patients with coronary artery disease (145 men and 155 women) who had undergone coronary angiography. Through coronary angiography, they found that in the age group over 65 years, there were higher rates of triple vessel disease (TVD), double vessel disease (DVD), and left main stem (LMS) involvement compared to the younger age group. Statistical analysis revealed highly significant differences between these age groups (21).

Conclusion

Key findings include a significant prevalence of risk factors such as diabetes, hypertension, and dyslipidemia, with notable gender-based differences indicating higher BMI, diabetes, and hypertension rates in females, and higher smoking rates in males. Clinically, typical chest pain was predominant, with males exhibiting more severe CAD and SWMA. Age-related disparities were evident, with older patients displaying higher chronic coronary syndrome prevalence, lower heart rates, increased diastolic dysfunction and higher number of lesions and diseased vessels.

References

1. El-Moselhy E, Mohammed A, Abd El-Aziz A, Sadek I, Hagrass S, Farag G. Coronary artery disease among elderly Egyptian patients: I. socio-demographic, lifestyle, psychosocial, medical, and biochemical risk factors. Am J Gerentol Geriatr. 2018;1:1006.
2. Almahmeed W, Arnaout MS, Chettaoui R, Ibrahim M, Kurdi MI, Taher MA, et al. Coronary artery disease in Africa and the Middle East. Ther Clin Risk Manag. 2012;8:65-72.
3. Karawan Sayed Sallam G, Fouad Abdalla K, Fathi Mahmoud S. Relation between compliance of patients post coronary artery bypass surgery towards symptoms management strategies and experienced discomforts. Egyptian Journal of Health Care. 2022;13:887-901.
4. Hassanin A, Hassanein M, Bendary A, Maksoud MA. Demographics, clinical characteristics, and outcomes among hospitalized heart failure patients across different regions of Egypt. Egypt Heart J. 2020;72:49.
5. Brown JC, Gerhardt TE, Kwon E. Risk Factors for Coronary Artery Disease. StatPearls. Treasure Island (FL) ineligible companies. Disclosure: Thomas Gerhardt declares no relevant financial relationships with ineligible companies. Disclosure: Edward Kwon declares no relevant financial relationships with ineligible companies.:

StatPearls Publishing Copyright © 2024, StatPearls Publishing LLC.; 2024.

6. Khayyam-Nekouei Z, Neshatdoost H, Yousefy A, Sadeghi M, Manshaee G. Psychological factors and coronary heart disease. ARYA Atheroscler. 2013;9:102-11.
7. Yuan J, Zou XR, Han SP, Cheng H, Wang L, Wang JW, et al. Prevalence and risk factors for cardiovascular disease among chronic kidney disease patients: results from the Chinese cohort study of chronic kidney disease (C-STRIDE). BMC Nephrol. 2017;18:23.
8. Batool S, Taj IA, Ghafoor M. Ejection Fraction Estimation from Echocardiograms Using Optimal Left Ventricle Feature Extraction Based on Clinical Methods. Diagnostics (Basel). 2023;13.
9. Zhou Y, Liu L, Cheng T, Wang DX, Yang HY, Zhang BW, et al. Grade 3 Echocardiographic Diastolic Dysfunction Is Associated With Increased Risk of Major Adverse Cardiovascular Events After Surgery: A Retrospective Cohort Study. Anesth Analg. 2019;129:651-8.
10. Shaw LJ, Miller DD, Romeis JC, Kargl D, Younis LT, Chaitman BR. Gender differences in the noninvasive evaluation and management of patients with suspected coronary artery disease. Ann Intern Med. 1994;120:559-66.
11. Miller TD, Roger VL, Hodge DO, Hopfenspirger MR, Bailey KR, Gibbons RJ. Gender differences and temporal trends in clinical characteristics, stress test results and use of invasive procedures in patients undergoing evaluation for coronary artery disease. J Am Coll Cardiol. 2001;38:690-7.
12. Hemal K, Pagidipati NJ, Coles A, Dolor RJ, Mark DB, Pellikka PA, et al. Sex Differences in Demographics, Risk Factors, Presentation, and Noninvasive Testing in Stable Outpatients With Suspected Coronary Artery Disease: Insights From the PROMISE Trial. JACC Cardiovasc Imaging. 2016;9:337-46.
13. Ferrari R, Abergel H, Ford I, Fox KM, Greenlaw N, Steg PG, et al. Gender- and age-related differences in clinical presentation and management of outpatients with stable coronary artery disease. Int J Cardiol. 2013;167:2938-43.
14. Otaki Y, Gransar H, Cheng VY, Dey D, Labounty T, Lin FY, et al. Gender differences in the prevalence, severity, and composition of coronary artery disease in the young: a study of 1635 individuals undergoing coronary CT angiography from the prospective, multinational confirm registry. Eur Heart J Cardiovasc Imaging. 2015;16:490-9.
15. Pagidipati NJ, Coles A, Hemal K, Lee KL, Dolor RJ, Pellikka PA, et al. Sex differences in management and outcomes of patients with stable symptoms suggestive of coronary artery disease: Insights from the PROMISE trial. Am Heart J. 2019;208:28-36.
16. Sarma AA, Braunwald E, Cannon CP, Guo J, Im K, Antman EM, et al. Outcomes of Women Compared With Men After Non-ST-Segment Elevation Acute Coronary Syndromes. J Am Coll Cardiol. 2019;74:3013-22.
17. Khesroh AA, Al-Roumi F, Al-Zakwani I, Attur S, Rashed W, Zubaid M. Gender Differences among Patients with Acute Coronary Syndrome in the Middle East. Heart Views. 2017;18:77-82.
18. Bajaj S, Mahajan V, Grover S, Mahajan A, Mahajan N. Gender Based Differences in Risk Factor Profile and Coronary Angiography of Patients Presenting with Acute Myocardial Infarction in North Indian Population. J Clin Diagn Res. 2016;10:Oc05-7.
19. Sayed AI. Gender Differences in Coronary Artery Disease, Clinical Characteristics, and Angiographic Features in the Jazan Region, Saudi Arabia. Cureus. 2022;14:e30239.
20. Kohn JC, Lampi MC, Reinhart-King CA. Age-related vascular stiffening: causes and consequences. Front Genet. 2015;6:112.
21. Mohammad AM, Rashad HH, Habeeb QS, Rashad BH, Saeed SY. Demographic, clinical and angiographic profile of coronary artery disease in kurdistan region of Iraq. Am J Cardiovasc Dis. 2021;11:39-45.

To cite this article: Hany H. Ebaid, Osama S. Arafa, Mohamed S. Hamouda, Wael A. Elsayed, Safaa S. Imam. Demographic, Clinical and Angiographic Profile of Patients Scheduled for Coronary Intervention in Kalyoboia Governorate. BMFJ XXX, DOI: 10.21608/bmfj.2024.311852.2166