Prevalence of Risk Factors for Coronary Heart Disease among Patients Presented in Cardiology Clinic at King Abdul-Aziz Hospital and Oncology Center – Jeddah

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ABSTRACT

Background: Coronary heart disease is the leading cause of death in Saudi Arabia. We designed this study with the objective to determine the prevalence of risk factors of this disease within patients diagnosed with CHD.

Aim: our aim is to observe the current prevalence of risk factors of coronary heart disease (CHD), with respect to the lifestyle. We will attempt to identify the possible causes of such habits.

Patients and Method: a cross-sectional study among 300 Saudi patients, with known coronary heart disease, was conducted with help of a questionnaire. The study was conducted at the cardiology department of King Abdul Aziz Hospital & Oncology Center in the city of Jeddah.

Results: the prevalence of CHD was higher in the male gender by a ratio of 2:1. Also, the prevalence increases with age, the highest being found in age group over 75 years old which is 8 times higher than was observed in age group 35-44 years. 72.5% females and 52.6% males of these atherosclerotic patients was either overweight or obese. The same trend is seen in negative habits of 10 years duration, such as lack of exercise as high as 75.6 % in males and 81.3% in females. Intake of fatty/fast food was found to be 64.85% in both sexes. Intake of sweet/ sugary food was also high, and unfortunately consumption of fruits and vegetables was low. The current smoking trend is 45.9% in men and 21.95% in women.

Conclusion: The risk factors assessed in the study were gender, age, obesity, smoking history, physical inactivity, and eating habits. Unfortunately, physical inactivity, bad eating habits, and smoking were found to be very common. The patients must be encouraged to practice healthy lifestyle modifications to reduce morbidity and mortality.

Keywords: coronary heart disease; Saudi Arabia; risk factor prevalence; lifestyle habits in patients with coronary heart disease.

INTRODUCTION

According to the WHO [1] data published in May 2014, mortality due to coronary heart disease (CHD) in Saudi Arabia reached 19,569 or 24.34% of total deaths, and ranks one in the leading causes of death in the Kingdom. Dyslipidemia, hypertension, diabetes, obesity, smoking, poor diet, lack of physical activity, and alcohol consumption are the most common risk factors for myocardial infarction worldwide, according to the INTERHEART and INTERSTROKE studies [2]. The national survey in Saudi Arabia reported 5.5% prevalence of CHD, which is comparatively higher than China (2%), India (3%) and Europe (5%), but lower than the United States (6.7%) and Egypt (8.3%) [3, 4, 5].

Due to rapid economic growth in Saudi Arabia with encouragement of free trade, it led to socioeconomic growth and sudden change in life style from the past three decades with increased intake of poor quality food and adoption of a very sedentary lifestyle [6]. Obesity is a major drawback in the Saudi society. The prevalence of BMI >30 among Saudi men was found to be 24.1% while among women it reaches 33.5% [7]. The overall prevalence rates of physical inactivity among Saudi children, youth and adults were roughly 60%, 70%, and 80%, respectively [8]. In a study done by Noura A. *et al.* [9] 95.4% of participants consumed restaurants' fast food and 79.1% eat fast food at least one time per week. Burgers and carbonated soft drinks were the major kinds of fast food

meals, and beverages were usually consumed by females [9]. The fast food market in Saudi Arabia reached $4.5 billion in gross sales in 2015 [10]. Apart from diet and exercise, the other risk factors for CHD are also markedly very high. Smoking, for instance, has a massive prevalence that reaches up to 52.3% among young adults, and 25% among elderly. The overall prevalence in males was found to be 38%, while 16% in females [11]. In a study done by al-Nuaim et al., in Saudi Arabia, the prevalence of hypercholesterolemia 5.2-6.2 mmol/l for subjects aged 40-59 years was 14% for males and 10% for females, whereas the prevalence of hypercholesterolemia> 6.2 mmol/l was 9% for males, and 11% for females [12]. As demonstrated in a study done by Abdulaziz et al., the prevalence of dyslipidemia among adults in the KSA ranges from 20% to 44%, out of which 51% were females, and 23% of them were less than 25 years old [13], while the prevalence of diabetes mellitus is found to be 30% at a mean age of 55 years, 34.1% in males and 27.6% in females [14].

AIM OF THE STUDY

Our aim is to observe the current prevalence of risk factors of coronary heart disease (CHD), with respect to the lifestyle. We will attempt to identify the possible causes of such habits.

PATIENTS AND METHODS

Study Setting: The study was conducted at the cardiology department of King Abdul Aziz Hospital & Oncology Center in the city of Jeddah.

Study Design: It is a cross-sectional study among 300 Saudi patients with confirmed cases of coronary heart disease. The study's purpose and method was briefly explained to all participating patients. They consented to share their history details and anthropometric measurements. The participants were requested to answer the questions in the questionnaire.

Variables: The dependent variables in this study were:
- Patients' gender (male/ female)
- Age (35-44/ 45-54/ 55-64/ 65-74/ >75)
- Weight (kg) and height (cm) to calculate the BMI and then plotted on the graph under broad groups (20-24.9/ 25-29.9/ >30)

-History of smoking (yes/ no)
- Lifestyle habits of at least 3x/week duration for 10 years (exercise 30 minutes/ intake fatty-oily food/ intake of cake-sweet-chocolate/ intake of fruits-vegetable)

Data Collection

Data collection was done from December 2015 till June 2016 from those attending the Department of Cardiology and Oncology Center. Approval for study was obtained from all participants, and they were given a brief description.

Data Analysis

Statistical analyses were performed to detect association between different independent variables using SPSS.

RESULTS

In the 300 patients who answered their questionnaires, we found the following results.

Fig (1) from our participating patients, 209 (69.9%) are males and 91 (30.3%) are females.

Fig (2) the percentage of participants into distinct age groups. Our youngest participant was 35 years old and the oldest was 84 years old. In age group 35-44, we had 14 (4.7%) patients, group 45-54 were 31 (10.3%) people, group 55-64 were 51 (17%), group 65-74 were 85 (28.3%) patients, and lastly in age group over 75 were 119 (39.7%) patients.

Weight (kg) and height (m) data was taken, and Body Mass Index (BMI) was calculated by the formula

BMI= weight (kg) / height (m) ^{2}

the result was recorded in **(table 1)** in three basic groups. 99 (47.4%) males and 25 (27.5%) females had normal (BMI= 20-24.9), 96 (45.9%) males and 52 (56%) females were overweight (BMI= 25- 29.9), and 14 (6.7%) males and 15 (16.5%) females were obese (BMI >30). **(Fig 3)** is a graphical representation of the same data. The highest percentage of both sexes falls in the overweight group.

Fig (4) demonstrates the percentage of smokers among the participants. Among the males 96 (45.9%) are current smokers, 23 (11%) were ex-smokers who quit at least 2 years ago, and 90 (43.1%) have never smoked. From among the females 20 (21.9%) are current smokers, 18 (19.7%) were ex-smokers, and 53 (58.2%) never smoked.

Table (2) shows the lifestyle habits that the patients recall about the past 10 years. When asked about mild exercise for 30 minutes at least three times a week, 52 (24.4%) males and 17 (18.7%) females answered yes. 131 (62.7%) males and 61 (67%) females admitted to having fast food at least 3 times a week. 45 (21.5%) males and 28 (30.1%) females confirmed intake of sweets 3 times a week. Lastly, 48 (22.9%) males and 20 (22%) females ate vegetable and fruits for a minimum of 3 times a week.
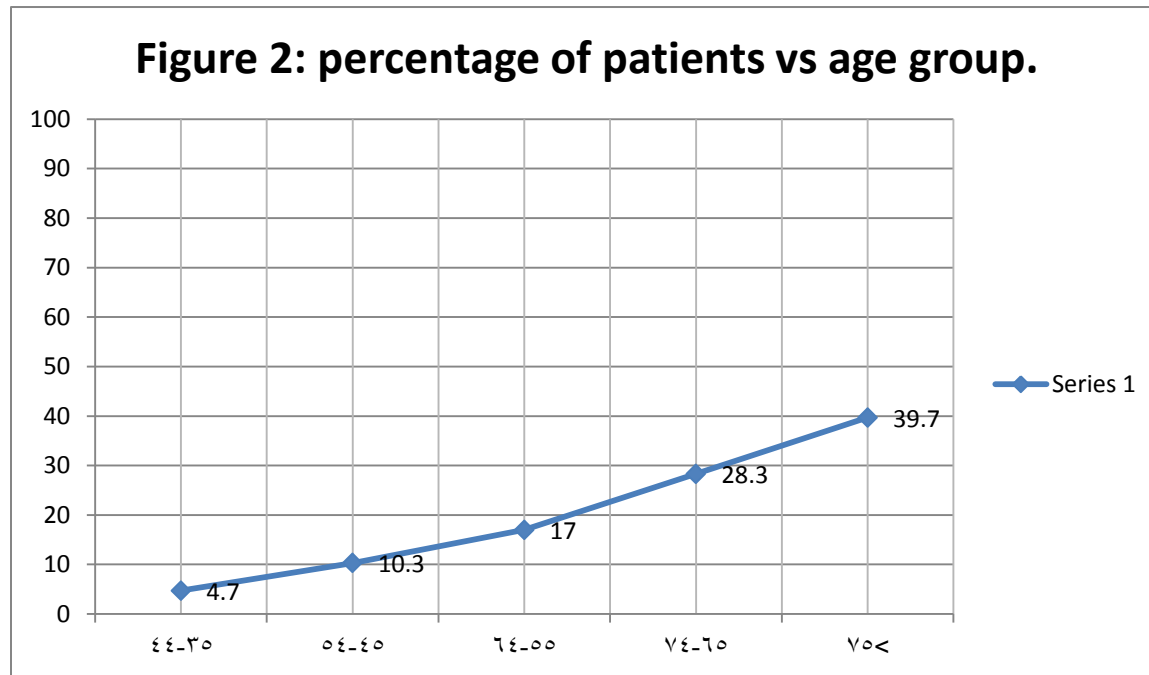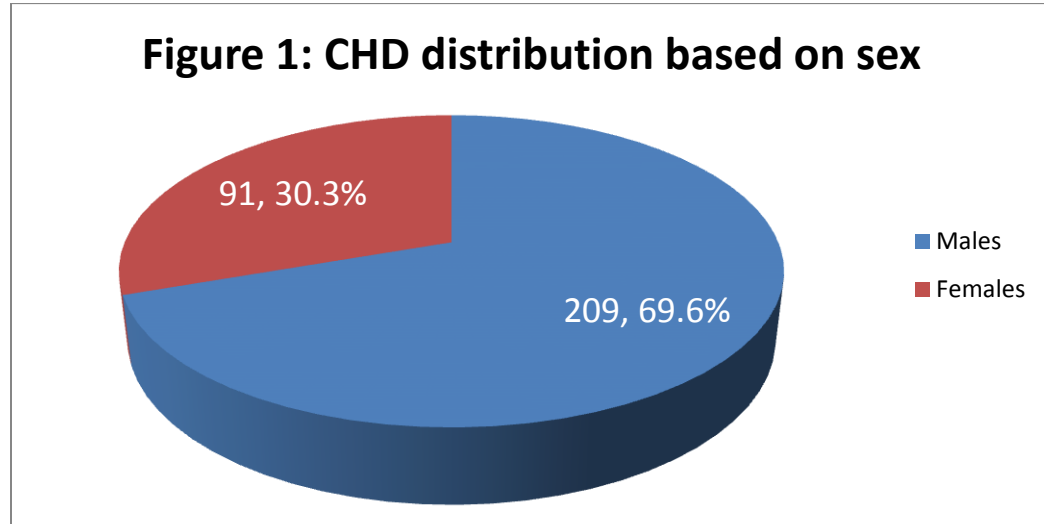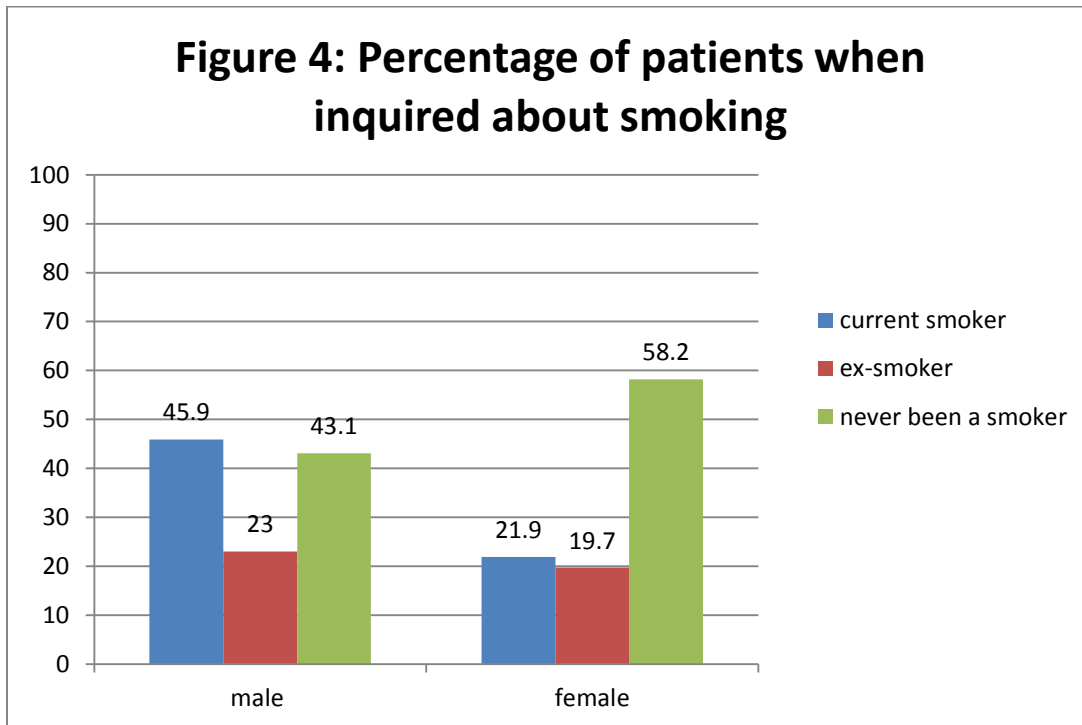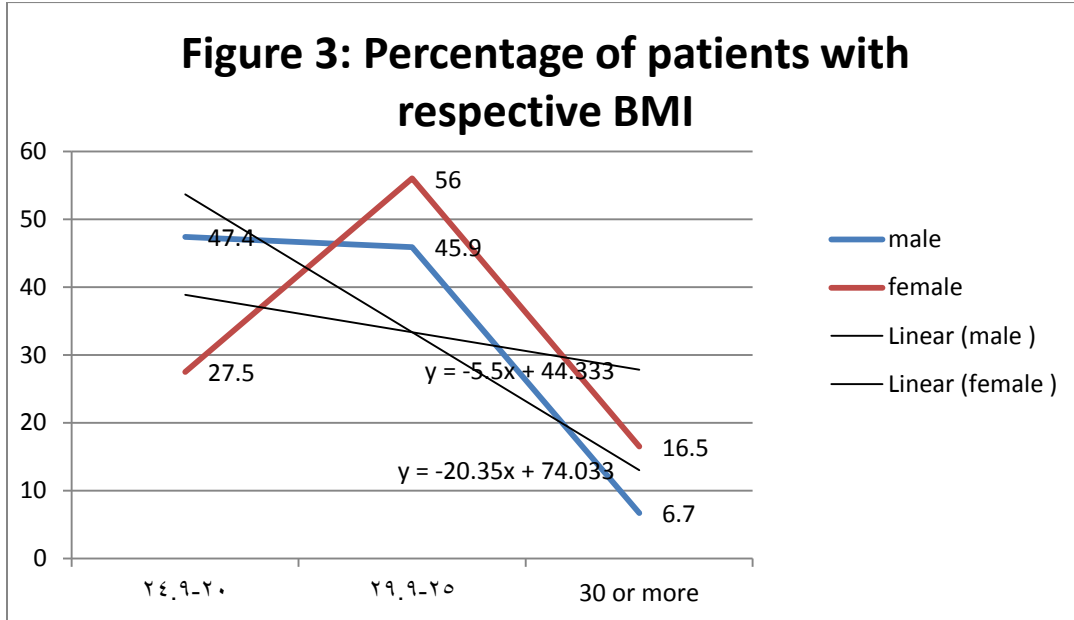
Figure 1: CHD distribution based on sex

91, 30.3%

209, 69.6%

- Males
- Females

Figure 2: percentage of patients vs age group.

4.7 — 10.3 — 17 — 28.3 — 39.7

Series 1

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Table 1: Calculated BMI

BMI	20-24.9		25-29.9		>=30	
Sex	Male	female	Male	Female	Male	Female
Number of patients	99	25	96	51	14	15
percentage	47.4%	27.5%	45.9%	56%	6.7%	16.5%

Figure 3: Percentage of patients with respective BMI

Figure 3 shows two line series (male, female) with linear trendlines. Data points: male 47.4, 45.9, 6.7; female 27.5, 56, 16.5. Trendline equations: $y = -5.5x + 44.333$ and $y = -20.35x + 74.033$. X-axis categories: ٢٤.٩-٢٠, ٢٩.٩-٢٥, 30 or more.

Figure 4: Percentage of patients when inquired about smoking

Bar chart with categories male and female. Male: current smoker 45.9, ex-smoker 23, never been a smoker 43.1. Female: current smoker 21.9, ex-smoker 19.7, never been a smoker 58.2.

Variable	Male (209)	Female (91)
Exercise >30 minutes (3 times/week)	52 (24.4%)	17(18.7%)
Intake of fast food (3 times/week)	131 (62.7%)	61 (67%)
Intake of sweets/ cake/ chocolate (3 times week)	45 (21.5%)	28 (30.1%)
Intake fruits or vegetable (3 times/week)	48 (22.9%)	20 (22%)

Table 2: Patients with the following habits from 10 years

DISCUSSION

The risk factors associated with coronary heart disease are classified as modifiable and non-modifiable. Family history, ethnicity, gender, and age are non-modifiable. Tobacco exposure, high blood pressure, high cholesterol, obesity, physical inactivity, unhealthy diet, diabetes, and excessive alcohol use are modifiable risk factors [15, 16].

In this study the risk factors we focused on were gender, age, obesity, history of smoking, physical inactivity, and eating habits. As expected from previously done studies, we found the prevalence of CHD was higher in the male gender by a ratio of 2:1. Also, the prevalence is higher with increasing age. CHD was most prevalent in patients over 75 years old, which is 8 times higher than was observed in age group 35-44 years. Furthermore, when questioned about some daily lifestyle habits in the past 10 years, 72.5% females and 52.6% males of these atherosclerotic patients are either overweight or obese. The same trend is seen in negative habits, such as lack of exercise as high as 75.6 % in males and 81.3% in females. Intake of fatty/fast food was found to be 64.85% in both sexes. Intake of sweet/sugary food was also high, and unfortunately consumption of fruits and vegetables was low. The current smoking trend is also not promising. 45.9% of men and 21.95% of women smoke despite being diagnosed with coronary heart disease. Only 23% males and 19.7% females had quit smoking.

Not many retrospective data is available to find the attributable risk of the exposure factor in Saudi Arabia. The drawback of this study is that it shows no relation of disease occurrence with trend of diabetes, hypercholesterolemia, dyslipidemia, or hypertension, all of which are modifiable risk factors.

Patients diagnosed with coronary heart disease must be educated and encouraged to implement lifestyle changes to conquer modifiable risk factors. A method of surveillance must be created for good follow up, and such data of progress must be recorded.

LIMITATIONS OF THE STUDY

This study has methodological limitations that must be kept in mind when interpreting its results. National health surveys depend commonly on data was collected through self-administered questionnaires due its lower costs. In several studies, self-reported data were compared with data from medical records, disease registries or the results of clinical and laboratory investigations. Our data has relied exclusively on data derived from a self-reported questionnaire, along with interview of patients to estimate CHD. Since this approach depends upon CHD cases being recognized, diagnosed and recorded, self-reporting information of CHD can lead to inaccurate estimates of its prevalence rates.

CONCLUSION

Risk factors assessed in the study were gender, age, obesity, history of smoking, physical inactivity, and some eating habits. All the observed factors showed a non-promising trend. The patients must be educated and encouraged to apply healthy lifestyle modifications to reduce morbidity and mortality.

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