Assessment of Some Risk Factors among Patients with Coronary Heart Disease

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Abstract

Background: Coronary heart disease is the most common type of heart diseases. This condition could results from a buildup of plaque inside the arteries, which decrease blood flow to the heart and raises the risk of a heart attack. The World Health Organization estimates that coronary heart disease prominent cause of death worldwide, and a number of well-characterized factors, including advanced age, genders, hypertension, diabetes mellitus, smoking and others contribute to Coronary heart disease risk development.
Objective: To assess of some risk factors of patients with coronary heart disease.
Patients and Methods: Hospitals based case-control study was conducted at Iraqi center for heart diseases in Ghazi Al-Hariri hospital / Medical City, Ibn-AL-Bitar cardiac surgery hospital and Ibn-AL-Nafees hospital during the periods from the 1st of November 2016 to the 30th of June 2017. A convenient sample was taken from each hospital. Typical questionnaire was used to interview 300 individuals, 100 (cases) and 200 (controls). The data collection included demographic characteristics and some risk factors of coronary heart disease. The participants were diagnosed by qualified physician and confirmed by specific laboratory and clinical tests including electrocardiogram (ECG) with the healthy controls that matched the age groups and genders.
Results: This study offered that the percentage of age group is higher among (60-69) years were (12.0 %) in the cases, the number of males and females were (50, 16.7%), for each of them, according to marital status most of cases were married and educational levels the majority of cases were among institutes, colleges and above, while the occupation status were (11.3%) among house wife finally, the residence was high as (21.0%) in the urban areas, most of the risk factors were significantly associated with coronary heart diseases ($P<0.05$).
Conclusion: Our outcomes indicated there were a significant association of modifiable risk factors (smoking, family history, diabetes mellitus, hypertension, taken meals contained high quantity fat and physical activity) for heart disease among patients with coronary heart disease.

Key words: Coronary heart disease, Risk factors, Case control study.
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Introduction

Coronary heart disease (CHD) still one of the main causes of death and disability worldwide. In 2015, 16% of all deaths in both men and women were caused by CHD

[1]. CHD, also called Coronary artery disease, is a disorder in which a waxy material called plaque (plak) builds up on the internal walls of the coronary arteries. Plaque tightens the arteries and decreases blood flow to the heart muscle. Reduced blood flow can cause chest pain. Finally, an area of plaque can rupture (break open). This causes a blood clot to form on the surface of the plaque. If the clot converts to be large enough, it can block the flow of oxygen-rich blood to the portion of heart muscle fed by the artery [2]. The risk factors for CHD vary among different populations. The CHD is a raises worldwide health encumbrance. Regarding to World Health Organization, Where they was there (7.4) million deaths because ischemic heart disease in 2012, with upper middle income countries and high income countries estimating for 107 and 158 deaths per million, respectively [3]. However, the spread of CHD has settle down in developed countries, the circumstance has newly initiated to affect developing countries because height of life expectation, urbanization and lifestyle variations; some Middle Eastern countries (like, Iraq , Oman , United Arab Emirates , Kuwait , Bahrain and Qatar) are instances of zones experiencing this epidemiological conversion [4]. Adjustable risk factors for example a sedentary lifestyle , hyperlipidemia, diabetes mellitus, hypertension, smoking and obesity are considered to be the leading precursors of CHD [5]. The increasing trend of CHD and its associated danger factors has emphasized the requirement to reinforce nationwide observation schemes and labors to decrease CHD correlated morbidity and mortality. Numerous countries have applied a primary prevention method; though, a main aspect of impact the achievement of this way is the knowledge of the persons at danger concerning a particular health problem [6]. Larger information of CHD hazard factors aids persons to properly evaluate their individual risk stimulates them to raise prevention pursuing behaviors and has been related with increased act to lesser dangers [7]. Assessing of traditional CHD hazard elements between a populations consequently essential in the prevention and therapy of this state and lasts to aid as the standard for most checking programs [8]. Lifestyle variations, including an rise in the larger caloric consumption and a sedentary lifestyles, have participate to a fast increase in the incidence of CHD; current revisions in this area have concentrate on examination to the diabetes mellitus, dietary style and obesity [3].Consequently; an pressing requirement to recognize baseline risk factor ranks to the CHD between Iraqi population before planning suitable and active involvements to support awareness. The current research targeted to assess some risk factors of patients with CHD.

Patients and Methods

Subjects and Samples

Hospitals based case-control study carried out from the periods 1st of November 2016 to the 30th of June 2017, was conducted at Iraqi center for heart diseases in Ghazi Al-Hariri hospital / Medical City, Ibn-AL-Bitar

cardiac surgery hospital and Ibn-AL-Nafees hospital .A convenient sample for all hospital above was taken, and the data collected by use questionnaire including to purpose of study obtained through direct interview with 300 samples, 100 with acquired coronary heart disease (cases) and 200 without (controls). The data collection included demographic characteristics like (gender, age, marital status, education level occupation, residence), and some modifiable risk factors of coronary heart disease like: smoking intake, alcohol drinking, fatty food consumption, heart diseases history, chronic diseases and physical activity were assessed. The participants were diagnosed by qualified physician and established by certain laboratory investigations and other clinical tests such as electrocardiogram (ECG).

Statistical Analysis

Data were interpreted into codes using a especially designed coding sheet, and then transformed to computerized database and statistical analyses were complete using the Statistical Package for the Social Sciences (SPSS) Version 21 computer software. Chi-square, Odd ratio (OR) and Confidence intervals (95% CI) was used to investigate the presence or the absence of association between CHD with the studied risk factors. For all comparisons, statistical significance as any p-value ≤ 0.05.

Results

Table (1) Showed that the higher percentage of cases were in the age group (60-69) years, as 36 (12.0%) and lower percentage were in the age group (>=70) years, as 10 (3.3%) and the higher percentage of controls (24.0 %) also were in the age group (60-69) years.

The total number of cases were (100, 33.3%), the number of males and females were (50, 16.7%) each for them, while the total number of controls were (200, 66.7%), the number of males and females were (100, 33.3%) each for them. Table (2) Showed that (24.0%) of cases and (53.0%) of controls were married. The highest percentage of cases were (9.7%) in an institute, college and above, and the highest percentage of controls were also in an institute, college and above (26.3%). The higher percentage of cases (11.3%) was among house wife while in controls was among governmental employed (24.7%). The residence in the study sample were (21.0%) of cases and (50.0%) of controls were residing in an urban area.

Concerning smoking habits, Table (3) showed that the frequency of current smokers were (15.3%) in cases while in controls it were (18.3%), with highly significant association of developing CHD (OR= 3.97; 95%CI= 2.204-7.16;P-value= 0.000), the association of passive and ex-smoker are significant 95%CI of odd ratio were (OR=2.51; 95%CI= 1.002-6.31) and (OR=7.12; 95%CI= 3.17-15.16) respectively. The frequency of family history regarding to the heart diseases was (11.7%) in the cases while in the controls it was (3.3%) as shown in table (4), with is highly between family history of heart diseases and risk of CHD (P-value=0.000). The percentage of cases with diabetes mellitus

were (25.0%), while in controls were (8.7%), odd ratio (0.05) with significant association (95%CI=0.02-0.9, P-value=0.000). The percentage of cases with hypertension were (29.0%) while in controls were (23.4%), odd ratio (0.08) with significant association (95%CI=0.04-0.15, P-value=0.000), as revealed in table (4). There was highly significant relationship among taken meals contained high quantity fat and physical activity with developing of CHD, the results interpretation as shown in table (5). Figure (1) showed that the percentage of alcohol drinking persons it was (2.3%) was in the cases while (3.3%) it was in the controls, with no significant association (OR=0.69;95%CI=0.25-1.89;P value=0.48).

Table (1): Distribution of age and gender according to cases and controls.

Age and Gender	Groups				Total	
	Cases		Controls			
	No	%	No	%	No	%
Age						
< 50	27	9.0	54	18.0	81	27.0
50 – 59	27	9.0	54	18.0	81	27.0
60 – 69	36	12.0	72	24.0	108	36.0
> = 70	10	3.3	20	6.7	30	10.0
Total	100	33.3	200	66.7	300	100.0
Gender						
Male	50	16.7	100	33.3	150	50.0
Female	50	16.7	100	33.3	150	50.0
Total	100	33.3	200	66.7	300	100.0

Table (2): Distribution of cases and controls regarding to demographic characteristics.

Demographic characteristics	Cases		Controls		Total		P-value
	No	%	No	%	No	%	
Marital status							
Married	72	24.0	159	53.0	231	77.0	(0.09) Non-Significant
Unmarried	1	.3	9	3.0	10	3.3	
Separation	3	1.0	2	.7	5	1.7	
Divorced	4	1.3	3	1.0	7	2.3	
Widowed	20	6.7	27	9.0	47	15.7	
Total	100	33.3	200	66.7	300	100.0	
Education level							
Illiterate	15	5.0	18	6.0	33	11.0	0.06) Non-Significant(
Read and write	17	5.7	23	7.7	40	13.3	
Primary	17	5.7	24	8.0	41	13.7	
Intermediate	19	6.3	38	12.7	57	19.0	
Secondary	3	1.0	18	6.0	21	7.0	
Institute, College and Above	29	9.7	79	26.3	108	36.0	
Total	100	33.3	200	66.7	300	100.0	
Occupation status							
Governmental employed	29	9.7	74	24.7	103	34.3	0.51) Non-Significant(
Free works	1	0.3	4	1.3	5	1.7	
House wife	34	11.3	54	18.0	88	29.3	
Retired	18	6.0	30	10.0	48	16.0	
Unemployed	18	6.0	38	12.7	56	18.7	
Total	100	33.3	200	66.7	300	100.0	
Residence							
Urban	63	21.0	150	50.0	213	71.0	0.03) Significant(
Rural	37	12.3	50	16.7	87	29.0	
Total	100	33.3	200	66.7	200	100.0	

Table (3): Distribution of cases and controls according to smoking habits.

Smoking habits	Cases		Controls		Total		OR	95%CI	P-value
	No	%	No	%	No	%			
Current smoker	46	15.3	55	18.3	101	33.7	3.97	2.204-7.16	(0.000) Highly significant
Passive smoker	9	3.0	17	5.7	26	8.7	2.51	1.002-6.31	
Ex-smoker	21	7.0	14	4.7	35	11.7	7.12	3.17-15.96	
Not	24	8.0	114	38.0	138	46.0	-	-	
Total	100	33.3	200	66.7	300	100.0	-	-	

Table (4): Distribution of cases and controls according to family history relatively heart diseases and chronic disease.

Family history regarding to heart diseases and Chronic diseases	Cases		Controls		Total		OR	95%CI	P-value
	No	%	No	%	No	%			
Family history of heart diseases									
Yes	35	11.7	10	3.3	45	15.0	0.09	0.04-0.2	(0.000) Highly significant
No	65	21.7	190	63.3	285	85.0	-	-	
Total	100	33.3	200	66.7	300	100.0	-	-	
Diabetes mellitus									
Yes	75	25.0	26	8.7	101	33.7	0.05	0.02-0.9	(0.000) Highly significant
No	25	8.3	174	58.0	199	66.3	-	-	
Total	100	33.3	200	66.7	300	100.0	-	-	
Hypertension									
Yes	87	29.0	70	23.4	157	52.4	0.08	0.04-0.15	(0.000) Highly significant
No	13	4.3	130	43.3	143	47.6	-		
Total	100	33.3	200	66.7	300	100.0	-		

Table (5): Distribution of cases and controls regarding to physical habits.

physical habits.	Cases		Controls		Total		OR	95%C	P-value
	No	%	No	%	No	%			
Are you taken meals contained high quantity fat									
Yes	82	27.3	47	15.7	129	43.0	0.06	0.03-0	(0.000) Highly significant
No	18	6.0	153	51.0	171	57	-	-	
Total	100	33.3	200	66.7	300	100.0	-	-	
Are you physical activity									
Yes	6	2.0	34	11.3	40	13.3	3.2	1.29-7	(0.008) Highly significant
No	94	31.3	166	55.4	260	86.7	-	-	
Total	100	33.3	200	66.7	300	100.0	-	-	

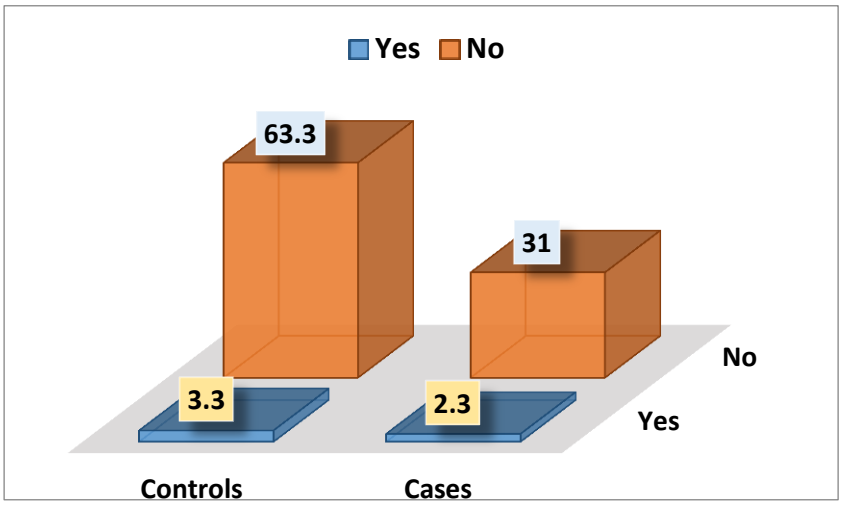

Figure (1): Distribution of cases and controls according to alcohol drinking.

Discussion

Coronary heart disease (CHD) is the best common form of heart disease and one of the most important reasons of premature death in Europe. By 2020, it is assessed that it will be the main cause of death in all areas of the world [9]. In this case-control study, cases and controls were matched for both age and gender, the study revealed that higher percentage of cases were in the age groups 60-69 years, 36 (12.0%).This result was commitment with study that done to European countries by Reimer WS *et all*

stated that percentage was comparatively great in elderly patients 53% in those more than or equal 60 years[10].

Also this study agreed with another study done by Abu-Baker NN et al showed that contributors who were among 60 and 69 years of age had the extreme proportion [11]. Results in present study presented that 24.0% of cases were married. Also Aminpour et al as shown that highest percentage of cases were 94% among married [12]. Another study done by Ganguly et al suggested that the majority of cases (73%) were married agrees with our results [13]. The current study showed that highest percentage of cases and controls were 9.7%, 26.3% respectively in an institute, college and Above. A study presented not supportive evidence to this result by Janati et al and Ganguly et al where they found the high percentage of cases in illiterate were 91%, 61% respectively [14] [13]. This is may be due to the different educational level between the countries.

Another finding of this study was that a maximum percentage of cases 11.3% were among house wife. These results were similar to those revealed by Janati *et al* as showed 34 % of cases in house wife [14]. In this study, 21.0% of the patients with CHD were residence in urban area and statistically significant (P=0.03).These findings are consistent with previous study done by Eljedi and Mushtaha who found that the differences regarding place of residency between cases and controls were statistically significant (P=0.049) [15].

Regarding the association between smoking habits and risk of CHD, the data examination shown that current smokers collected 15.3% in the cases , and were statistically significant (OR=3.97,95%CI=2.204-7.16, P=0.000).A study presented supportive evidence to this result by Abu-Baker et al showed that percentage of cases 48.3% in current smokers[11], also agree another study done by Ram and Trivedi who found statistically significant between smoking and risk of CHD (OR=2.03, 95%CI=1.19-3.47, P <0.01) [16]. Current study had identified that the significant protective role of family history of heart disease in CHD developed (OR=0.09, 95%CI=0.04-0.2, P=0.000), which is well not related with the results of Ganguly et al who found a family history of CHD was more recurrent between the cases as likened to controls with an (OR = 5.0), but this was statistically not significant (p>0.05) [13].Another study done by Eljedi and Mushtaha who found that the study sample (cases & controls) were 41.1% of cases and 27% in controls , statistically significant(OR= 2.12, 95% CI= 1.17-3.84, p<0.01) [15]. This difference due to a family history of coronary heart disease (CHD) is connected with an about 1.5- to 2.0- fold greater hazard of CHD independent of conventional danger factors, highlighting the role of hereditary factors to disease susceptibility [17].

Another finding of the study sample to Diabetes Mellitus was 25.0% in cases and 8.7 % in controls, and statistically were

significant (OR=0.05, 95%CI=0.02-0.9, P < 0.000), these result were similar to that of AL-Oqaily found percentage of cases and controls to Diabetes Mellitus 52.38% and 6.67% respectively, statistically significant (P=0.002) [18]. Also our study which is well correlated with the findings of Eljedi and Mushtaha who found frequency of cases and controls were 50.5% and 35% respectively and statistically significant(OR=2.18, 95%CI=1.23-3.85, P =0.007) [15]. In recent study significant relationship was detected among hypertension and CHD (OR=0.08, 95%CI=0.04-0.15, P =0.000),and percentage of cases and controls were 29.0% and 23.4% respectively, these results are agreed with the results of Milane et al as showed statistically significant between hypertension and CHD(OR=0.656, 95%CI=0.504-0.853, P =0.0016) [19], another study which is similar our results done by Eljedi and Mushtaha who found percentage of cases were 69.2% and controls were 51% ,statically significant(OR=2.73, 95%CI=1.51-4.95, P =0.001) [15].

Regarding to taken meals contained high quantity fat the percentage of cases and controls were 27.3% and 15.7% respectively, statistically were significant (OR=0.06, 95%CI=0.03-0.12, P <0.000), which is well correlated with the findings of Ram and Trivedi who found significantly greater statistics of the cases (23.7%) were expended oil/ghee per day than the controls (5.9%) and statistically significant (<0.05) [16]. In present study the relationship was significant detected among physical activity and risk of coronary heart disease (OR=3.2, 95%CI=1.29-7.92, P =0.008). These findings are consistent with previous study done by Eljedi and Mushtaha who found significant association between physical activity and risk of CHD(OR=3.96, 95%CI=1.61-9.74, P =0.002) [15].Also another study which agree with our results done by Ram and Trivedi as showed a statistically significant association between physical activity and risk of CHD(OR=3.57, 95%CI=1.58-8.23,P =0.001) [16]. Another finding of the current study showed not statistically significant association between alcohol drinking and danger of CHD (OR=0.69, 95%CI=0.25-1.89, P =0.48). These results were not similar to those revealed by Oommen et al as showed that the significant protective role of alcohol consumption of risk CHD (OR=0.57, 95%CI=0.43–0.76, P=0.001) [20], also another study which is well not correlated with our results done by Ram and Trivedi who found significant and association between alcohol consumption and risk of CHD (OR=2.31, 95%CI= 1.02-5.33, P<0.05) [16].This differences may due to different customs and traditions between countries.

Conclusion

In conclusion, the present study revealed the majority of cases occur in age groups 60-69 years and more cases reside in urban area, also our outcomes indicate there was a significant association of modifiable risk factors (smoking, family history, diabetes mellitus, hypertension, taken meals contained high quantity fat and physical activity) for heart disease among patients

with CHD admitted in the selective hospitals for this study.

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