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The Most Important Risk Factors Among Angina Patients in Thi-Qar Governorate in Iraq

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Abstract

Angina is a chest pressure, discomfort, or pain like a squeeze. It may occur as an angina attack that typically lasts from 1 to 15 minutes; however, angina is not only a disorder, but is also a symptom of heart disease. There are various risk factors that lead to raising an angina pectoris attack which were designated in previous studies but no one detected the most significant one in Thi- Qar governorate. Because of the specific economic, lifestyle and environment characteristics of this governorate, the present study has aimed to determine the most important risk factors that trigger angina among patients of the Nasiriya Heart Center in Nasiriya city.

A cross-sectional study has been conducted in Nasiriya Heart Center which involved 200 angina patients that attended the hospital. The patients answered questioners' form that has been designed by the researcher. The collecting data contained the demographic, lifestyle and family history information of patients.

The results showed no significant differences between male and female in angina occurrence. An age group 31- 60 year was considered the most susceptible to the incidence of angina. However, no significant impacts of the genetic, smoking, alcohol and obesity were found as risk factors. On the other hand, significant effects of diabetes, hypertension, eating habits and stress in the angina incidence were determined.

In conclusion, the specificity of the governorate has had the greatest impact on the determination of risk factors where, apart from eating habits, the stress in its various types was the most important factor; therefore, intensive studies must promote population health conditions in this governorate.

Keywords: angina; risk factor; gender; obese; eating habits; stress

1. Introduction

Angina is heart disorder that causes squeezing pain or chest pressure as a result of inadequate blood supply to the heart muscle because of obstruction or spasm of the coronary arteries. It is a sign of coronary artery disease (CAD); moreover, other causes contribute to this case, such as anaemia, heart failure, and spasm of the coronary arteries [1]. There are three types of angina, including stable, unstable and variable. The most common type is stable angina when the heart works harder than usual through some activities like walking and running. It is called effort angina also, it is a classic type of angina since pain subsides in a few minutes after vigour activities, but it returns after the activity resumes [2].

Unstable angina is worse than the first one and also called dysfunctional angina. It occurs at rest, extremely, serious and dangerously, 64% of dysfunctional angina occurs between 10 p.m. and 8 a.m. time-out for patients. The reduction of coronary artery flow due to the transition of platelet aggregation to the endothelium, coronary artery (CA) spasm, or thrombosis is unstable angina pathophysiology [3].

Nomenclature

(CA) Coronary artery	(χ2) Chi-Square
(BMI) Body mass index	LDL Low density lipoprotein
(SAS) Statistical Analysis System	(ROX) Reactive oxygen species
CVD Cardiovascular disease	

Variant angina is a syndrome typically consisting of angina (cardiac chest pain) caused by contraction of smooth muscle tissue in the vessel walls leading to narrowing of the CA [4], occurring in patients at rest or asleep compared to stable angina, which is excited by intense exercise due to the permanent occlusion of these vessels by atherosclerosis [3]. In Iraq, 2004, the Ministry of Health announced a 65% rise in hospital admissions due to coronary artery disease (CAD) [4]. CAD mortality in the Middle East countries has been expected to rise; whereas, 13.3% of all deaths in 2010 were due to CAD [5]. It has been estimated that between 1990 and 2020, CAD mortality in Middle East countries will increase by 174% for men and 146% for women [1]. Several studies support worldwide conventional CAD risk factors such as hereditary, hypertension, diabetic Mellitus, smoking, obesity, age, eating habits, and low exercise levels [6].

Thi-Qar is governorate in the Southeastern Iraq on the Euphrates River, which made it an agricultural city and some of its inhabitants live on hunting. Despite the richness of governorate with petrol and agricultural wealth, but it still suffering from poor economic and planning conditions surrounded by imbalances and deficits in some areas, which are manifestations of the political fluctuations that the country went through, which resulted in the consumption and ageing of the infrastructure with the increase in the population size [7]. It is the second governorate when ranked by unemployment numbers in Iraq. The poverty ratio is 40.9% in 2012, and the number of poverty trend changed to 8.9 between 2007 and 2012 [8].

In addition to crowded populations, the governorate community still coalesces under difficult and bad environmental conditions due to polygamy and high fertility rates [9], which focused on certain risk factors for the disease in addition to social customs that focus on genetic factors of variable trials in the governorate families. The current study is aimed to determine and detect the most significant risk factors for angina among patients in the Thi-Qar governorate because of the specifications of this governorate.

2. Patients and Methods

2.1. Study Design

A cross-sectional analysis was performed at the Nasiriyah Heart Center in Nasiriyah city. It is the capital of Thi-Qar Governorate. From 8 April 2018 to 8 October 2018, the study period was carried out for 6 months. 200 patients aged 20-90 years were included in the study sample. These patients were surveyed from the hospital's regular attendants exclusively from Thi- Qar governorate. All patients answered the questioners' form through the personal interview.

2.2. Patient Data Form

Patients were interviewed using a structured questionnaire that was prepared through available relevant literature. The researcher filled a questionnaire by using a clear Arabic language. All the information was kept confidential. Questioners divided into three parts.

The first part includes the demographic characteristics of patients regarding age, gender. The second part includes a lifestyle of patients which involve smoking history and alcohol history, types of food, exercise and obesity. The third part includes family history of angina and suffering from diabetes and hypertension.

The height and weight of patients were taken by metric tape and weight balance respectively to calculate body mass index (BMI) which calculated according to the following formula:

BMI = Weight (Kg)/ Height (m2).

The patients were classified into subgroups according to their BMI [10], as shown in Table 1:

Table 1 classified of patients according to their BMI

BMI	Categories
18.5-24.9	Normal
25-29.9	Overweight
30-34.9	Obese I
=>35	Obese II

2.3. Statistical Analysis

The Statistical Analysis System- SAS (2012) program was used to analyze the different factors in study parameters. The Chi-square test was used to study the significance of different variables in this study.

3. Results

The results of the current study are shown in the following tables:
Table 2 showed the highest percentage of the participants were in females (52.50%), while males were 47.50%. There were no significant differences between both genders.

Table 2 The percentages in females and males

Gender	No.	Percentage (%)
Male	95	47.50
Female	105	52.50
Total	200	100 %
Chi-Square (χ^2)	---	1.584 NS
Non - Significant.		

Table 3 illustrated that 51-60 and 31-40 (52.22%) were the most likely age groups in this sample, followed by 41-50, 61-70, 71-80 (50.00, 36.67, and 18.89 %) respectively. Although 81-90 was the lowest age group in this study (0.03), the age factor has a highly significant angina risk factor.

Table 3 Distribution of study sample according to the ages

Age group	No.	Percentage (%)
20-30	8	4.00
31-40	47	52.22
41-50	45	50.00
51-60	47	52.22
61-70	33	36.67
71-80	17	18.89
81-90	3	0.03
Total	200	100 %
Chi-Square (χ^2)	---	11.392 **
** (P<0.01).		

The findings of Table 4 clarified that there is no role in angina for family genetic history (90.50 %); while the remainder has this factor (9.50 %). The significant difference between these groups appears to be large.

Table 4 Distribution of study sample according to the family history

Family history	No.	Percentage (%)
History	19	9.50
No history	181	90.50
Total	200	100 %
Chi-Square (χ^2)	---	14.261 **
** (P<0.01).		

Table 5 revealed that not smoking (68.5 %) was the highest percentage, while the smoking category was 31.50. The differences between these two classes are highly important (P<0.01).

Table 5 Distribution of study sample according to the smoking

Smoking	No.	Percentage (%)
smokers	63	31.50
Non- smokers	137	68.50
Total	200	100 %
Chi-Square (χ^2)	---	10.073 **
** (P<0.01).		

Table 6 illustrated that Alcohol is not considered the risk factor of angina in Thi- Qar city, where on a high significance between these groups.

Table 6 Distribution of study sample according to the alcohol drinking

Alcohol drinking	No.	Percentage (%)
Alcoholic patients	00	00
Non- alcoholic patients	200	100.00
Total	200	100 %
Chi-Square (χ^2)	---	8.262 **
	** (P<0.01).	

Table 7 showed the highest percentage of patients are not-Obese (94.00%), whereas the obese patients were (6.00%) as significant differences between these two groups (P<0.01).

Table 7 Distribution of study sample according to the body mass index

Body mass index	No.	Percentage (%)
obese	12	6.00
Normal	188	94.00
Total	200	100 %
Chi-Square (χ^2)	---	14.721 **
	** (P<0.01).	

Highly significant differences (P<0.01) between participants according to physical activity are shown in Table 8. The highest proportions of participants (60.5 %) have physical activity, while 39.5 % do not have physical activity.

Table 8 Distribution of study sample according to the physical activity

Physical activity	No.	Percentage (%)
Patients have Physical activity	79	39.5
Patients do not have physical activity	121	60.5
Total	200	100 %
Chi-Square (χ^2)	---	9.522 **
	** (P<0.01).	

The highest numbers of participants were patients with diabetes (56.50 %) in Table 9, while 43.50 % of participants did not. Between these two classes, there is an important difference (P<0.05).

Table 9 Distribution of study sample according to the diabetes

Diabetes	No.	Percentage (%)
Diabetic patients	113	56.50
Non diabetic patients	87	43.50
Total	200	100 %
Chi-Square (χ^2)	---	5.361 *
	* (P<0.05).	

Table 10 shows high significant differences between hyper tensioned patients (P<0.01). and have not. Whereas 59.50% of participants were hyper tensioned patients, while 40.50% were not.

Table 10 Distribution of study sample according to hypertension

Hypertension	No.	Percentage (%)
Hyper tensioned patients	119	59.50
Non hyper tensioned patients	81	40.50
Total	200	100 %
Chi-Square (χ^2)	---	8.269 **
	** (P<0.01).	

Table 11 shows a highly significant effect (P<0.01) of fast food eating as a risk factor of the angina. 75% of patients eating fast food and 25% did not. A high significant effect of this factor on angina (P<0.01).

Table 11 Distribution of study sample according to eating fast food

Junk food	No.	Percentage (%)
Get junk food patients	151	75%
Lay off junk food patients	49	25%
Total	200	100 %
Chi-Square (χ^2)	---	6.811 **
	** (P<0.01).	

Table 12 shows the high significant effect (P<0.01) of stress on angina (99.50%).

Table 12 Distribution of study sample according to Stress

Stress	No.	Percentage (%)
Stressful patients	199	99.50
Not stressed patients	1	0.50
Total	200	100 %
Chi-Square (χ^2)	---	15.00 **
	** (P<0.01).	

4. Discussion

There is no doubt that hormonal changes exist in both sexes as a factor related to the incidence of angina, like the adverse impact of a pregnancy in females [11], an obesity in earlier pregnancy increased the risk of hypertension and gestational diabetes [12], as well as the decrease in androgynous estrogen contributes to a rise in the amount of LDL, which is present in both sexes but it is worse in menopausal females [12,13]. The evidence for this argument tends to hinder the development of atherosclerosis via a protective effect of estrogen in premenopausal women where it appears in an elevation of the HDL level that induces vasodilatation. This result agreed with Jeanine E et al, 2002, R. V. Ram Atul V.Trivedi ,2012& M. Duran1 et al, 2019 [14, 15, 16] and disagreed with H. Hemingway et al,2008 & F. Imamura, 2015 [17, 18].

The critical factor in the incidence of angina is the hereditary factor [19] which it is not presented in the current study as well as the impact of smoking as well. Perhaps, because of the majority of participants in the study were women. The traditions of Iraqi society blame the smoker women for this habit, or because of the medical guidelines. This result contradicts with AW. Schoenenberger et al, 2011& H. Alkhawam et al, 2015 [20, 21]. Similarly, Thi-Qar community is known for its religiosity and forbids alcohol therefore it has ignored significant influence of alcohol as risk factor of CAD

Obesity induces a deficiency in the proper vascular endothelial across many steps. Elevation of triglycerides and LDL has been correlated with A Lerman, AM. Zeiher, 2005& CE. Lewis et al, 2009 [22, 23]. Obesity, however, was not a risk factor for CAD in this study, which agrees with M. Duran1 et al, 2019 (16) and disagreed with Lakka HM et al,2002 [24] may be high following medical recommendations or the lifestyle of farmers in the governorate. Physical activity-related work, transport, and housework that have a positive impact on CA will increase blood circulation, blood pressure, lipid profile, enhance the degree of endogenous regeneration, and other mechanisms and pathways influence the heart's blood supply and cause atherosclerosis to decrease [15].

Diabetic patients are closely associated with death due to CVD s [25, 20]. There are sequences of steps for the formation of diabetic coronary plaques, some of which are associated with protein glycosylation in the arterial wall, in addition to increased reactive oxygen species (ROX) [26] that prevents the production of nitric oxide by endothelial atherosclerosis, are expected to be involved in diabetic atherosclerosis.

This result agreed with T.A. Elhadd et al, 2007 $ M.M. Al-Nozha et al, 2004 [27, 28], but it did not have a risk factor for CAD among young people [29], because the sample population has severe diabetics that increase many metabolic risk factors, such as hypertension, which increased significantly in the study. Previous research indicates that in diabetic patients have lipid-rich atherosclerotic plaques that are delicate, precarious, prone to rupture [30]. Hypertension is a typical risk factor for CAD, which has been shown in previous studies of SS. Gidding et al 2016& Y. Hirota et al, 2018 [31, 32] and the current study, but is not in accordance with S. Arnold et al, 2009 [22] among young people.

Although Thi-Qar is considered agricultural governorate, but it has merged with world food habits focused on value-free fast food. The result showed that 151% of patients depended on junk food. Besides, this governorate's modest income was the explanation for consuming poor-quality diets and relaying to fast foods high in sugars, unhealthy salts, low whole grain, processed meat, hydrogenated fat, refined oil in addition to food additives that raise population levels of cholesterol and diabetic Mellitus. Various studies confirm the association between eating fast food and heart disease and hypertension due to economic reasons because over 80% of CVD mortality, while vegetarians in Mediterranean countries have decreased CAD [33].

Stress creates an imbalance in the homeostasis of the individual. To discover the mechanism and relation between disease and stress, numerous studies have been performed that separating stress into several types: biological, behavioral, and emotional stress that contributes to cause cardiovascular events as family and job stress-related chronic stress. According to epidemiological studies the emotional stress type associated the cardiopathy events. In this study appears high significant effect of stress as a risk factor of angina which matched with H. biglari1 et al, 2016 [34] findings.

It may well be concluded that governorate customs and traditions play a basic role in determining the chance figure of angina, at the side socio-economic and environmental circumstance identify that stress in both genders advance angina rate through rising diabetes and hypertension,, As well Dietary activities are commonly believed to present a real risk of angina. Nonetheless, it is important to suggest that the economic and environmental situation be improved. In addition to, increasing interest in the nutritional value of individual meals and exercise**.**

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