

RESEARCH PAPER

# Knowledge and practice of adults attending primary health care centers regarding major coronary heart disease risk factors in Basrah city

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## Abstract

**Introduction:** Cardiovascular diseases (CVDs) are common in the general population, affecting the majority of adults past the age of 60 years. The prevalence of coronary heart disease (CHD) is approximately one-third to one-half that of total CVD. Knowledge of CHD risk factors has been identified as a prerequisite for changes in behavior and is often targeted by prevention programs.

**Objective:** The study aimed to study the knowledge of risk factors and the practice of CHD related behaviors among individuals  $\geq 18$  years of age attending PHC centers in Basrah city center and to find out the sociodemographic factors that affect such knowledge and practice.

**Methods:** The study involved 423 male and female aged 18 years and above, attending 6 primary health care centers in Basrah city. Data were collected through direct interview of the participants by the investigators, using a special questionnaire form prepared for the purpose of the study.

**Results:** The results of the study showed that 77.3% of the participants had good level of knowledge (know at least 7 risk factors). The most common knowledgeable risk factors by the participants were stress, smoking, fatty diet and obesity in descending order. Older age groups, high educated persons, governmental employees and participants with history of coronary heart disease related illness were more likely to have higher knowledge score. Practicing diet modification and regular exercise were prevalent in 23.5% and 12.8% of the participants respectively.

**Conclusions:** The knowledge level of risk factors for CHD in selected PHC centers in Basrah seems to be good, however, the practice of CHD preventive behaviors was quite poor, this necessitates the need for public health education programs.

**Keywords:** Knowledge, Primary health care, Coronary heart disease, Risk factors, Basrah.

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## Introduction

Cardiovascular diseases (CVDs) are common in the general population, affecting the majority of adults past the age of 60 years. The prevalence of coronary heart disease (CHD) is approximately one-third to one-half that of total CVD.<sup>1</sup> In today's world,

most deaths are attributable to non-communicable disease (32 million) and just over half of these (16.7 million) are as a result of CVD. In developed countries, heart disease and stroke are the first and second leading causes of death for adult men and women. These facts are familiar and hardly surprising, however these surprisingly in some of the developing countries, CVD have also become the first and second leading causes responsible for one-third of all deaths.<sup>2</sup> Progressive urbanization, and adoption of a "western" lifestyle contributed to the rising burden of cardiovascular disease (CVD) in the

developing world. Developing nations continue to be ill-equipped to handle this burden and this, coupled with poor literacy rates and lack of awareness of disease symptoms, result in worse disease outcomes.<sup>3</sup> In Iraq coronary heart diseases have increased remarkably over the last two decades; it was noticed clearly after 1991 war, particularly in young adults.<sup>4</sup> The etiology of CHD is multi factorial. Some of the risk factors are modifiable (cigarette smoking, high blood pressure, elevated serum cholesterol, diabetes mellitus (DM), obesity, sedentary habits, stress), others immutable (age, sex, family history, genetic factors, personality). Estimating the level of knowledge of the population can help to guide public health programs especially those programs directed towards reducing modifiable risk factors for CVD like providing risk factor screenings and connecting them with lifestyle programs and health counseling.<sup>3</sup> There are no known estimates of the level of knowledge of CHD risk factors in Basrah.

**The aims of the study were:**

- To study the knowledge of risk factors and the practice of CHD-related behaviors among individuals aged 18 years and above attending PHC centers in Basrah city centre.
- To find out the sociodemographic factors that affect such knowledge and practice.

**METHODS**

**Study design and setting:** This cross-sectional study was carried out during the period extending from the first of May 2011-to the 31<sup>st</sup> of July 2011. The study population included adults of both sexes (aged 18 years and above) attending primary health care centers during the study period.

**Ethical consideration:** agreement of the Basrah directorate of health to carry out the study on adults attending primary health care centers was obtained before starting the study.

**Sampling:** A total of 423 adults attending 6 primary health care centers in Basrah city were included in the present study. A list of the primary health care centers in Basrah city was obtained from the Department of Primary Health Care (a total of 34 primary health care centers). The health centers were arbitrarily grouped into 3 groups according to the socioeconomic level of their catchment areas: high, middle and low socio-economic level. Then 6 primary health care centers were randomly selected, two centers were chosen to represent each socio-economic level. Two from high socioeconomic areas (Al-Razzi, and Al-Buradai'a), two from middle socioeconomic areas (Al-Junaina, and Mohammed Al-Dura), and two from low socioeconomic areas (Al-Hadi, and Al-Mutaiha). The data were collected through direct interview of the study population by the investigators.

**Procedure:** A special questionnaire form was used to collect data. Components of the questionnaire were taken from published studies,<sup>3,5-7</sup> in addition to questions which were suggested by the authors. The majority of the questions were closed ended. The questionnaire included: socio-economic and health information about the participants including: age, sex, education, occupation, marital status; smoking history; medical history of CHD; and family history of CHD. The questionnaire also included questions to assess the knowledge and practice of the participants regarding CHD risk

factors. Ten risk factors were assessed: 1) smoking, 2) hypertension, 3) high blood cholesterol, 4) old age, 5) DM, 6) family history of CHD, 7) Lack of exercise, 8) obesity, 9) psychosocial factors and 10) fatty diet consumption. Subjects were asked about the association of each risk factor, as well as direction of the association, of the risk factor with CHD. For each risk factor, if the subject correctly identified the association of the risk factor with CHD she / he would get a score of one otherwise zero for that component. Subjects scoring a total of 0-3 risk factors were regarded as having a poor level of knowledge, from 4 to 6 risk factors were regarded as moderate level, scoring a total greater than or equal to 7 out of a possible 10 were regarded as having good level of knowledge. Then each of the above mentioned risk factors were analyzed separately, which enabled us to identify specific knowledge gaps in our population. The practice of the respondents related to CHD risk factors was assessed through inquiring about 8 preventive practices which included:

- The last time the participant has checked his blood pressure, his blood cholesterol, his blood sugar, his body weight, and the last time he / she tried to quit smoking.
- Starting diet modification, regular exercise starting and visiting the doctor just for checkup. Timing of each preventive practice was grouped as follows:
  - Within the past 3 months.
  - Within the past 6 months.
  - Within the past 1 year.
  - Never.

**Statistical analysis:** The data were analyzed by the statistical package for social science (SPSS) version 17. Descriptive statistics like the socio-demographic characteristics were presented as frequencies, and percentages. The relationship between two categorical variables was analyzed using Chi square and Fisher's exact test. A P-value of < 0.05 was the criterion of statistical significance.<sup>8</sup>

## RESULTS

(Table-1), shows characteristics of the study population. The study included 423 respondents; 130 (30.7%) were males and 293 (69.3%) were females. The age of the study population ranged between 18 -70 years. The majority were in the age groups 20-29 and  $\geq 40$  years, 34.3% and 31.2% respectively. About half of the respondents (45.9%) had 6 years of schooling or less, while 37.1% had between 7 and 12 years and only 17% with 13 years and above. The majority of the respondents were married (92.9%), while 7.1% were (single, widow and divorced). More than half of the respondents (57.9%) were self-employed, 23.6% were governmental employees. The majority of the study populations were non-smokers (83.2%). Overall 17.7% of the study population had history of CHD or CHD related illnesses (hypertension, diabetes mellitus, dyslipidemia), while 61% had a family history of such conditions.

**Table 1. Characteristics of the study population**

Variable	No. (%)
<b>Age (years)</b>	
< 20	27 (6.4)
20-29	145 (34.3)
30-39	119 (28.1)
≥40	132 (31.2)
<b>Sex</b>	
Male	130 (30.7)
Female	293 (69.3)
<b>Education (years)</b>	
≤ 6	194 (45.9)
7-12	157 (37.1)
≥ 13	72 (17.0)
<b>Marital status</b>	
Married	393 (92.9)
Others (single, widow, divorced)	30 (7.1)
<b>Occupation</b>	
Governmental employee	100 (23.6)
Self employed	245(57.9)
Housewife	67 (15.8)
Others	11 (2.6)
<b>Smoking history</b>	
Smoker	53 (12.5)
Nonsmoker	352 (83.2)
Ex-smoker	18 (4.3)
<b>Medical history (of CHD&amp;CHD related illness)</b>	
+ve	75 (17.7)
-ve	348 (82.3)
<b>Family history (of CHD &amp;CHD related illness)</b>	
+ve	358 (61.0)
-ve	165 (39.0)
<b>Total</b>	423 (100.0)

To assess the respondent's level of knowledge, they were asked about the association of 10 risk factors as well as direction of the association with coronary heart disease (whether the factor increases, decreases, or has no effect). About three quarters of the subjects (77.3%) showed good level of knowledge of the risk factors (know correctly the role of 7 to 10 risk factors). Another 57(13.5%) of the participants had moderate knowledge (know correctly the role of 4 to 6 risk factors), and only 39 (9.2% ) of the participants had poor knowledge about CHD risk factors (knew correctly the role of ≤ 3 risk factors, of whom 8 respondents didn't know the role of any risk factor), (Table-2).

**Table 2. Respondent's level of knowledge of CHD risk factors**

Knowledge of CHD risk factors	No. (%)
<b>Good knowledge</b>	327 (77.3)
<b>Moderate knowledge</b>	57 (13.5)
<b>Poor knowledge</b>	39 (9.2)
<b>Total</b>	423 (100.0)

Out of 423 study subjects, 390 (92.2%) had correct knowledge about the association of psychological factors with CHD, 90.8% were able to correctly identify the association of smoking with CHD, 87% were knowledgeable about the association of fatty diet consumption with CHD. The poorest knowledge was that related to the association between diabetes mellitus and CHD, (Table-3).

**Table 3. Respondent’s level of knowledge about specific CHD risk factors**

The risk factor	Respondents with correct knowledge
	No. (%)
Psychological factors	390 (92.2)
Smoking	384 (90.8)
Fatty diet	369 (87.0)
Obesity	347 (82.0)
Old age	330 (78.0)
High blood cholesterol	316 (74.7)
Hypertension	307 (72.3)
Family history	300 (70.9)
Exercise	292 (69.0)
DM	183 (43.3)

Factors affecting the level of knowledge are summarized in (Table-4). A significant association was found between the participants’ age, educational level, occupation, medical history of CHD or CHD related illness and

knowledge level ( $P < 0.05$ ). No significant association was found between the participants’ gender, marital status, family history of CHD and knowledge level ( $P > 0.05$ ).

**Table 4. Factors affecting the level of knowledge**

Variable	Knowledge level			Total
	Poor	Moderate	Good	
	No. (%)	No. (%)	No. (%)	No. (%)
<b>Sex</b>				
Male	8 (6.2)	16 (12.3)	106 (81.5)	130 (100.0)
Female	31 (10.6)	41 (14.0)	221 (75.4)	293 (100.0)
<b>Total</b>	<b>39 (9.2)</b>	<b>57 (13.5)</b>	<b>327 (77.3)</b>	<b>423 (100.0)</b>
$X^2=2.539$ $df = 2$ $P = 0.284$				
<b>Age</b>				
< 20	5 (18.5)	8 (29.6)	14 (51.9)	27 (100.0)
20 – 29	14 (9.6)	23 (15.9)	108 (74.5)	145 (100.0)
30 – 39	11 (9.2)	19 (16.0)	89 (74.8)	119 (100.0)
≥ 40	9 (6.8)	7 (5.3)	116 (87.9)	132 (100.0)
<b>Total</b>	<b>39 (9.2)</b>	<b>57 (13.5)</b>	<b>327 (77.3)</b>	<b>423 (100.0)</b>
$Fisher's\ exact = 21.459$ $P = 0.001$				
<b>Education (years)</b>				
≤ 6	35 (18.0)	43 (22.2)	116 (59.8)	194 (100.0)
7-12	4 (2.5)	12 (7.6)	141 (89.8)	157 (100.0)
≥ 13	0 (0.0)	2 (2.8)	70 (97.2)	72 (100.0)
<b>Total</b>	<b>39 (9.2)</b>	<b>57 (13.5)</b>	<b>327 (77.3)</b>	<b>423 (100.0)</b>
$Fisher's\ exact = 68.626$ $P < 0.001$				
<b>Occupation</b>				
Governmental employee	3 (3.0)	7 (7.0)	90 (90.0)	100 (100.0)
Self employed	23 (9.4)	41 (16.7)	181 (73.9)	245 (100.0)
Housewife	13 (19.4)	6 (9.0)	48 (71.6)	67 (100.0)
Others	0 (0.0)	3 (27.3)	8 (72.7)	11 (100.0)
<b>Total</b>	<b>39 (9.2)</b>	<b>57 (13.5)</b>	<b>327 (77.3)</b>	<b>423 (100.0)</b>
$X^2 = 23.131$ $df = 6$ $P = 0.001$				
<b>Marital status</b>				
Married	35 (8.9)	53 (13.5)	305 (77.6)	393 (100.0)
Others	4 (13.3)	4 (13.3)	22 (73.3)	30 (100.0)
<b>Total</b>	<b>39 (9.2)</b>	<b>57 (13.5)</b>	<b>327 (77.3)</b>	<b>423 (100.0)</b>
$Fisher's\ exact = 0.955$ $P = 0.70$				
<b>Medical history of CHD</b>				
+ve	4 (5.3)	4 (5.3)	67 (89.4)	75 (100.0)
- ve	35 (10.1)	53 (15.2)	260 (74.7)	348 (100.0)
<b>Total</b>	<b>39 (9.2)</b>	<b>57 (13.5)</b>	<b>327 (77.3)</b>	<b>423 (100.0)</b>
$Fisher's\ exact = 7.840$ $P = 0.021$				
<b>Family history of CHD</b>				
+ve	19 (7.4)	32 (12.4)	207 (80.2)	258 (100.0)
-ve	20 (12.1)	25 (15.2)	120 (72.7)	165 (100.0)
<b>Total</b>	<b>39 (9.2)</b>	<b>57 (13.5)</b>	<b>327 (77.3)</b>	<b>423 (100.0)</b>
$X^2 = 3.767$ $df = 2$ $P = 0.15$				

When the respondents were asked to name their source of information about CHD risk factors, their responses are shown in (Table-5). Relatives and friends were the main source of information for nearly one-half of respondents (52.2%), followed by television (50.6%) and radio (31.6%).

**Table 5. Source of information about CHD risk factors**

Information source	No. (%)
Relatives and friends	221 (52.2)
TV	214 (50.6)
Radio	134 (31.6)
Doctors	72 (17.0)
Newspapers	15 (3.5)
Others ( academic study, internet)	79 (18.7)

(Table-6) represents the respondent's CHD preventive practices and timing of such practices. The majority of participants (82.5%)

reported that they had their blood pressure checked. The second most commonly practiced CHD preventive measure was weight measurement (65.2%). On the other hand, only 123 (29.1%) of the study population had their blood sugar checked during the preceding year, (51.2%) of them were having history of CHD-related illness. About one quarter (25.8%) of the study population reported starting dietary modification, half of them modified their diet following doctor's advice. Overall, only 61 (14.4%) of the study population did serum cholesterol checkup, (51.2%) of them were having medical disease related to CHD. Physical inactivity was reported by the majority (87.2%) of the study population. Only 54(12.8%) reported starting regular exercise within the preceding year. Of the study subjects only 32(7.6%) reported visiting a doctor during the preceding year just for checkup, (71.9) % of them were already suffering from CHD-related conditions. Out of 53 smokers 29 (50.9%) tried to quit smoking.

**Table 6. Respondents' CHD preventive practices and timing of such practices.**

The preventive practice	Done / Timing (months)			Not done No. (%)
	3	6	12	
	No. (%)	No. (%)	No. (%)	
Blood pressure check up	251 (59.3)	47(11.1)	51(12.1)	74(17.5)
Body weight check up	193 (45.6)	41 (9.7)	42 (9.9)	147(34.8)
Blood sugar check up	86 (20.4)	14 (3.3)	23 (5.4)	300 (70.9)
Blood cholesterol check up	35 (8.3)	8 (1.9)	18 (4.2)	362 (85.6)
Tried to quit smoking	13 (24.5)	3 (5.7)	13(24.5)	24 (45.3)
Starting diet modification	34 (8.0)	10 (2.4)	65 (15.4)	314 (74.2)
Starting regular exercise	18 (4.3)	3 (0.7)	33 (7.8)	369 (87.2)
Visiting doctor for check up	29 (6.9)	3 (0.7)	0 (0.0)	391 (92.4)



## DISCUSSION

Knowledge is necessary for behavioral change; people must have the knowledge about both the risk factors and preventive behaviors.<sup>5</sup> In the present study, a good percent (77.3%) of the participants had good level of knowledge (knew at least 7 risk factors). This is much higher than that reported in a similar study done in Karachi which revealed that (41.9%) of the participants had good level of knowledge,<sup>3</sup> in Maldives (18.8%),<sup>5</sup> in India (41.4%),<sup>9</sup> and in Poland (40.7%).<sup>10</sup> The good level of knowledge in our study may reflect that the respondents in Basrah had fairly good idea about CHD risk factors. However, assessing the level of knowledge using a structured questionnaire, the respondent with no knowledge still has a 50% chance of getting a correct answer, so there may be an overestimation of the total level of knowledge of the risk factors. While this may affect the assessment of the level of knowledge, it definitely cannot account for the striking differences in knowledge between certain groups e.g., those classified by education, age, and occupation subgroups. The majority of the participants in our study identified psychological factors, smoking, fatty diet, and obesity as risk factors for CHD (92.2%, 90.8%, 87%, 82%) respectively. A good percentage of the participants identified old age, high blood cholesterol, hypertension, family history and lack of exercise as risk factors. However, a relatively low percentage (43.3%) knew that DM is a CHD risk factor. In Karachi, the most frequently known risk factors were fatty food (92.2%), smoking (82.9%), and obesity (41.9%).<sup>3</sup> In India, hypertension (73%), obesity (72%), smoking (67%), and high blood cholesterol (57%) were the most commonly known risk factors.<sup>9</sup> While in Poland, alcohol

misuse (86.2%), smoking (85.6%), obesity (79.6%), family history (75.4%), lack of physical exercise (74.3%), hypertension (73.1%), and fatty diet (72%), were all well known risk factors.<sup>10</sup> The results obtained showed that most of the respondents in the present study, identified stress as a CHD risk factor possibly because of the high prevalence of this factor in our community. If an individual believes that stress is the main cause of ill health, he or she may discount the importance of behavioral changes (e.g., diet and exercise) that may be more effective in reducing the risk of CHD.<sup>11</sup> Another noticeable aspect in the results of the present study, is that the study population were more knowledgeable about behavior related risk factors-smoking, fatty diet, and obesity- than the physiologic ones-old age, high blood cholesterol, hypertension, family history, and DM- with the exception of lack of exercise which fell near the end of the list. The reason may be that the behavioral risk factors of CHD are much simpler to disseminate through mass media than the more complex physiologic risk factors. The latter may be more effectively delivered by health care professionals in a clinical setting. The present study found that knowledge of CHD risk factors was significantly higher among older age groups. The reverse was true in Canada and Italy.<sup>6,12</sup> While, in Karachi no association was found between respondent's age and the level of knowledge.<sup>3</sup> A strong, positive and independent association between level of education and good level of knowledge of CHD risk factors, was found in the present study. This result is consistent with those reported by similar studies in Canada, India.<sup>6,9</sup> While a study in the Maldives found no association between



knowledge and educational level.<sup>5</sup> Individuals who are more educated are more able to understand health messages that are conveyed through print media and / or visual media. This finding identifies the need for targeting poorly educated individuals in Basrah with educational programs that are tailored to their level of understanding. Similarly, a significant association was found between knowledge and occupation. Respondents working in government and private sectors had higher knowledge scores compared to housewives, retired, unemployed, and students. The same results were obtained in Karachi,<sup>3</sup> the Maldives,<sup>5</sup> and Canada.<sup>6</sup> This could be partly related to the level of education, in addition to the fact that occupation provides cultural environments and access to information. A significant association was also found between positive medical history of CHD and/or CHD- related illness and knowledge level. This is consistent with the results obtained in USA,<sup>11</sup> while in Karachi and the Maldives,<sup>3,5</sup> there was no significant association between the medical condition and the level of knowledge. This could be explained by that subjects with such history might have received advice about their illness from doctors and health professionals and they might listen more eagerly to health messages from different sources. No significant association was found between sex, marital status and family history of CHD and / or CHD related illness and knowledge about CHD risk factors. From the results obtained from the study, relatives and friends, television and radio were the main sources of information for CHD risk factors. Also it was found that doctors, newspaper weren't good source of information on CHD. This is because; the mass media is playing the major role in promoting health in today's world.

Studies in the Maldives and USA also showed that TV advertisements are the most frequently mentioned source of help among recent quitters of smoking.<sup>5,11</sup> Number of studies have shown that campaigns enhance improvements in attitude toward healthy behavior, such as better diet, exercise and smoking cessation.<sup>5</sup> Despite the apparently good level of knowledge of CHD risk factors, the practice of selected preventive behaviors was insufficient. Only 25.8% of the participants have started diet modification in the preceding year, 12.8% have started regular exercise and only 7.6% of the participants were visiting doctor for check up in the same period. One reason why knowledge does not lead to behavior change is the lack of skills necessary to perform the behavior. Adoption of a new health-promoting behavior often requires complex cognitive, social, behavioral and self-regulatory skills. For example in order to exercise regularly we need motivation, the importance and benefits of exercise, and an idea of the kinds of exercises. Without the necessary skills to support a new health behavior people are unlikely to initiate and less likely to sustain behavior change efforts.<sup>5</sup> The participants in the present study, lack the necessary capabilities to practice CHD preventive behaviors, and this is similar to the Maldives and USA studies results.<sup>5,11</sup>

## **COCLUSIONS & RECOMMENDATIONS**

In summary, the knowledge level in Basrah seems to be good however, the practice of CHD preventive behaviors was quite poor, this necessitates the need for public health education programs, in addition to further epidemiological studies, especially population-based, to assess the level of knowledge and practice of CHD risk factors in Basrah.

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## معارف وممارسات البالغين المرتادين لمراكز الرعاية الصحية الأولية بالنسبة الى عوامل الخطورة

### الرئيسية لأمراض القلب التاجية في مدينة البصرة

*المقدمة:* أمراض القلب الوعائية شائعة بين عامة السكان، وتؤثر على غالبية البالغين بعد سن 60 عاما. معدل انتشار أمراض القلب التاجية هو ما يقرب من ثلث إلى نصف مجموع أمراض القلب الوعائية. وقد تم تحديد المعرفة بعوامل الخطورة لأمراض القلب التاجية كشرط مسبق للتغيرات في السلوك و التي غالباً ما تستهدفها برامج الوقاية.

*الغرض:* كان الغرض من الدراسة هو دراسة معرفة عوامل الخطورة لأمراض القلب التاجية وممارسة السلوكيات المرتبطة بها بين الأفراد الذين تزيد أعمارهم عن 18 سنة والذين يرتادون مراكز الرعاية الصحية الأولية في مركز مدينة البصرة و معرفة العوامل الاجتماعية الديمغرافية التي تؤثر على هذه المعرفة والممارسة. *المنهجية:* شملت الدراسة 423 من الذكور والإناث الذين تبلغ أعمارهم 18 سنة فما فوق، ممن يرتادون 6 مراكز للرعاية الصحية الأولية في مدينة البصرة. وقام الباحثون بجمع البيانات من خلال مقابلة مباشرة مع المشاركين، باستخدام استمارة استبيان خاصة أعدت لأغراض الدراسة.

*النتائج:* أظهرت نتائج الدراسة أن 77.3% من المشاركين لديهم مستوى جيد من المعرفة (يعرفون ما لا يقل عن 7 عوامل خطورة). وكانت عوامل الخطورة الأكثر معرفة من قبل المشاركين الشد النفسي، التدخين، الأغذية الدهنية والسمنة بترتيب تنازلي. الفئات العمرية الأكبر، ذوو التعليم العالي، موظفو الحكومة، والمشاركون الذين لديهم تاريخ مرضي بأحد الأمراض التي لها علاقة بأمراض القلب التاجية حصلوا على درجة أعلى من المعرفة. ممارسة العادات الصحية في الاكل والرياضة المنتظمة كانت مسجلة لدى 23.5% و 12.8% من المشاركين بالتتابع.

*الاستنتاجات:* يبدو أن مستوى معرفة عوامل الخطورة لأمراض القلب التاجية في المراكز الصحية التي تم دراستها في البصرة جيد ولكن ممارسة السلوكيات الوقائية لأمراض القلب التاجية كانت ضعيفة جداً، وهذا يتطلب الحاجة إلى برامج التثقيف الصحي العامة.

الكلمات المفتاحية: امراض القلب التاجية، الرعاية الصحية الاولية، المخاطر