



Article

Level of Knowledge about Cardiovascular Disease Risk Factors among Individuals at Risk of Developing Coronary Artery Disease

Haider Jassim Hamid

1. Ph.D. in Adult Nursing, University of Baghdad, University Health Center, Baghdad Province, Iraq.

* Correspondence: haider.j@uobaghdad.edu.iq

Abstract: Cardiovascular disease risk factors are certain habits, behaviors, events, or conditions which increase a person's risk for developing cardiovascular disease, such as lack of exercise, unhealthy eating, smoking, diabetes, age, and family history. Study aims to assess level of knowledge about risk factors for cardiovascular diseases among individuals at risk of developing coronary artery disease. This descriptive study was carried out with 86 employees in the University of Baghdad those individuals at risk of developing coronary artery disease and who are referred to university health center for the purpose of seeking treatment. This study was conducted between June and September 2024. Non - probability sampling (purpose sample) used in this study. The following instruments were used to collect data: demographic, clinical characteristics and The Cardiovascular Disease Risk Factors Knowledge Level (CARRF-KL). SPSS Version 22.0 was used; descriptive statistics, independent t test and ANOVA test is used to compare the means between two related groups. that overall CARRF-KL mean total score (M=19.267) that respondents' knowledge level was moderate. And not significantly associated with sex, age, education level, medical history, family history of coronary artery disease, body mass index, smoking ($p > 0.05$). These findings indicate that, while individuals at risk of developing coronary artery disease have a moderate knowledge of the factors that contribute to cardiovascular events, there is still an obvious need for focused educational interventions to fill the identified knowledge gaps.

Citation: Level of Knowledge about Cardiovascular Disease Risk Factors among Individuals at Risk of Developing Coronary Artery Disease. Central Asian Journal of Medical and Natural Science 2024, 5(4), 1064-1070.

Received: 10th July 2024
Revised: 11th August 2024
Accepted: 24th Sept 2024
Published: 23th Oct 2024



Copyright: © 2024 by the authors. Submitted for open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Level of Knowledge, Cardiovascular Disease, University of Baghdad, Risk Factors, Coronary Artery Disease.

1. Introduction

Cardiovascular diseases (CVD), often known as heart diseases, are the most prevalent diseases that cause increased morbidity and mortality worldwide. The World Health Organisation (WHO) estimates that CVD caused 32% of global deaths, with heart attacks and stroke accounting for 85% of those deaths. ⁽¹⁾ Furthermore, most CVD-related deaths occurred in middle- and low-income nations. ⁽²⁾ According to the most recent WHO data published in 2020, coronary artery disease (CAD) deaths in Iraq were 36,594, which represent 24.98% of total deaths. Iraq ranks 23rd in the world in terms of age adjusted death rate (227.26 per 100,000 populations). ⁽³⁾ The Framingham Heart Study, the world's longest-running CVD study, created the first framework for CVD risk assessment after making many "first" CVD aetiology discoveries. By coining "risk factors" in 1961, former Framingham director Dr. William B. Kannel helped develop preventive cardiology. His essay, "Factors of Risk in the Development of Coronary Heart Disease: Six Year Follow-

up Experience: The Framingham Study," examines these factors. ⁽⁴⁾ An extensive number of modifiable risk factors contribute to the development of CVDs (5). Several modifiable incorrect habits and lifestyle or some conditions are recognized as risk factors for CVDs, such as high blood levels of low-density lipoproteins, cholesterol, and triglycerides, high fasting plasma glucose, high systolic blood pressure, impaired kidney function, high Body Mass Index, physical inactivity, poor diet, smoking, and alcohol abuse. ⁽⁶⁾ Knowledge of heart attack \ stroke warning symptoms and CVD risk factors is essential for initiating appropriate responses to acute CVD events and adopting a healthy lifestyle. ^(7, 8) Inadequate knowledge of CVD risk factors has been identified as a remarkable obstacle to the prevention and treatment process, as well as influencing people's attitudes towards these diseases. ⁽⁹⁾ However, to date, no information was found in Iraq regarding that; hence, this study was aimed to identify level of knowledge about risk factors for cardiovascular diseases among university students' and factors associated with it.

2. Materials and Methods

Study design and participants

This descriptive study has been conducted to determine assess the knowledge level about CVDs' risk factors was carried out with 86 employees in the University of Baghdad those individuals at risk of developing CAD and who are referred to university health center for the purpose of seeking treatment during between June and September 2024. Non - probability sampling (purpose sample) used in this study. The formula by Krejcie & Morgan ⁽¹⁰⁾ was used to estimate the sample size of the present study. Inclusion criteria for participation involved each participant had two or more risk factors of the following:

- 1) Women ages > 45 at elevated risk for CAD.
- 2) Men ages > 40 at elevated risk for CAD.
- 3) History of Diabetes Mellitus (DM) or being treated.
- 4) History of Hypertension or being treated.
- 5) Smoker.
- 6) Obese (body mass index > 25)

Instruments:

Two instruments are used to conduct this study; they are characteristics of participants and The Cardiovascular Disease Risk Factors Knowledge Level (CARRF-KL). ⁽¹¹⁾ Basic characteristics of participants comprised of eight items including sex, age, education level, medical history (hypertension and diabetetic), family history of CAD, body mass index, and smoking. CARRF-KL comprised 28 items. The first four items assess CVD characteristics, prevention, and age, while fifteen items (items 5, 6, 9-12, 14, 18-20, 23-25, 27, 28) assess at risk factors and nine items (items 7, 8, 13, 15, 16, 17, 21, 22, 26) assessed at the outcome of changes in risk behaviors. All of the items were displayed as complete true or false statements, and participants were asked to respond with "Yes," "No," or "Don't Know." Each right answer was assigned a score of one. Six of the statements on the scale were incorrect (1, 11, 12, 16, 24, 26), and they were encoded in reversed compared to the rest. The highest total score was set at 28. The maximum score to be obtained is 28 and higher scores indicate higher knowledge level. The CARRF-KL has been used in other studies with reliable test-retest reliability, internal consistency, and validity Cronbach's alpha coefficient of the scale was 0.76. The translation and cultural adaptation were conducted initially. The procedure adhered to rigorous standards that were approved by the author and was established upon the protocol recommended by Guillemin. ⁽¹²⁾

Ethical considerations

The University of Baghdad ethics committee approved the protocol for the study, and informed consent was obtained prior to data collection. In addition, participants were given the option to withdraw at any time.

Data Analysis:

SPSS Version 22.0 was used, and the level of significance was set at 0.05 for all tests. Descriptive statistics, independent t test and ANOVA test is used to compare the means between two related groups, and Shapiro-Wilk test of normality to assessment of the normality of data.

3. Results

Result the (table 1) shows there were, 51 (59.3%) was female, the mean age of participants in this study is (50.27). Concerning age group, the majority in forty six (53.4%) within the age group (46 - 55). The most common educational level is doctorate of 30(34.9%). most participants have hypertension that is 49 (57%). Nearly quarter of the participants had diabetes 22 (23.3%). Forty one had family history of CAD. Regarding Body Mass Index, most participants 46(53.4%) having overweight and the mean body mass index of participants in this study is (26.488). Concerning smoking; the most common are non- smoking which are 28 (32.6%).

Table (1). Demographic Characteristics and risk factors of participants (N = 86)

Variables	Groups	No	%
Sex	Male	35	40.7
	Female	51	59.3
Age Groups	≤ 45	25	29.1
	46 – 55	46	53.4
	56 – 65	15	17.5
	<i>M ± S.D.</i>	50.27 + 5.818	
Education level	Bachelors	27	31.4
	Master	29	33.7
	Doctor	30	34.9
Hypertension	Yes	49	57
	No	37	43
Diabetic	Yes	20	23.3
	No	66	76.7
family history of coronary artery disease	Yes	41	47.7
	No	45	52.3
Body Mass Index	Underweight	0	0
	Ideal Weight	23	26.7
	Overweight	46	53.4
	Obese	17	19.9
	<i>M ± S.D.</i>	26.488 + 3.699	

Smoking	Yes	28	32.6
	No	58	67.4

No=number of participants, %=Percentages, ≤ = less than or equal, M = mean, SD = standard deviation

Table 2. Indicated that overall CARRF-KL mean total score (M=19.267) the respondents' knowledge level was moderate. Regarding the CARRF-KL subscales; we observed the mean score for knowledge about characteristics of CVD, prevention, and age (mean=2.209) that knowledge level was moderate and the in the risk factors (mean=10.941) the respondents' knowledge level was more than moderate knowledge, with scores about the outcome of changes in risk behaviors (mean = 6.127) the respondents' knowledge level was more than moderate knowledge.

Table (4): The Distribution of the The Cardiovascular Disease Risk Factors Knowledge Level Scores (N= 86)

Domain	Maximum mean score	CARRF-KL scores				
		M	SD	Min	Mix	Possible range
characteristics of CVD, prevention, and age	4	2.209	0.615	1	4	0 - 4
the risk factors	15	10.941	1.490	8	14	0 - 15
the outcome of changes in risk behaviors	9	6.127	0.979	4	8	0 - 9
Overall Knowledge	28	19.267	1.978	13	24	0 - 28

M = Mean, SD = Standard Deviation, Min = minimum, Max= Maximum

Table 3 shows the CARRF-KL scale scores were not significantly associated with sex, age, education level, medical history (hypertension and diabetic), family history of coronary artery disease, body mass index, smoking ($p > 0.05$).

Table 3. Overall Mean The Cardiovascular Disease Risk Factors Knowledge Level Scores According to Characteristics of Participants

Variables	Overall CARRF-KL score (Mean ± SD)	<i>t</i>	P value
Sex			
Male	19.342 + 1.731	0.291	0.772
Female	19.215 + 2.147		
Age group			
≥ 45	19.960 + 1.719	2.228 ^a	0.114
46 – 55	19.000 + 2.097		
56 – 65	18.933 + 1.830		
Educational level			
Bachelors	19.740 + 1.534	1.633 ^a	0.201
Master	18.793 + 2.304		

Variables	Overall CARRF-KL score (Mean $\pm$ SD)	<i>t</i>	P value
Doctor	19.300 + 1.950		
Hypertension			
Yes	19.346 + 2.067	0.427	0.671
No	19.162 + 1.878		
Diabetes mellitus			
Yes	20.000 +1.555	1.919	0.058
No	19.054 + 2.048		
Family history of coronary artery disease			
Yes	19.609 + 2.072	1.544	0.126
No	18.955 + 1.858		
Body Mass Index			
Ideal Weight	18.826 + 1.800	0.921 ^a	0.402
Overweight	19.347 + 2.182		
Obese	19.647 + 1.578		
Smoking			
Yes	19.428 + 1.814	0.522	0.603
No	19.189 + 2.064		

SD: Standard deviation, ^a F value = one way ANOVA test

4. Discussion

Cardiovascular diseases constitute an important health problem not only in Iraq but around the world, which is rapidly increasing in number and causing morbidity and mortality. The first step toward heart health understands risk factors of CVD. The aim of this assesses the knowledge of cardiovascular risk factors among individuals at risk of developing coronary artery disease. The study's main finding was that, although working in the university community, the majority of participants had moderate knowledge about CVD risk factors, the mean CARRF-KL total score was 19.267 which was equivalent to 68.8% of the maximum score (maximum possible score = 28) of which 8.2% have good knowledge (score over 21) while 90.6 % have moderate knowledge (score between 14 and 21) and 1.2% have low knowledge (score less than 14), this findings are consistent with related studies in the literature these found moderate knowledge of CVD risk factors in the population and prevention interventions , but additional effort is needed to enhance continuous education in order to minimize CVD prevalence. ⁽¹³⁾⁽¹⁴⁾ Previous research from Iraq indicated average or poor knowledge of CVD risk factors among Iraqi populations. ^(15 – 17) On the contrary; other researchers have shown that majority of the participants in this study had poor knowledge of heart disease risk factors. ⁽¹⁸⁾⁽¹⁹⁾ All of the above studies assessed the knowledge of the community as a whole, but in this study the knowledge of people with risk factors for CAD was assessed. The researcher confirmed of this study when qualify for study participation, the majority of participants have inadequate knowledge of the CAD and related risk factors, primary care screening is based on that. It is likely a healthcare practitioner is not discussed the effects CAD risk factors with their. National campaigns is few, along with not present routine wellness visits to healthcare providers focus largely on the major CAD risk categories of diet, exercise, and obesity,

risk factors, psychological status. This explains why the participants in this study were inadequate knowledgeable about CAD and their risk factors.

Regarding the CARRF-KL subscales; we observed knowledge level was moderate about characteristics of CVD, prevention, and age domain and the outcome of changes in risk behaviors domain, on the contrary; the respondents' knowledge level was good knowledge in the risk factors domain. Previous research in Middle Eastern Muslim countries such as Iraq, Kuwait, and Oman have shown that participants generally possess a high level of awareness regarding these risk factors. ^(16, 20, 21) However, the study able recognized areas of insufficient level CARRF-KL subscales, including characteristics of CVD, prevention, and age and the outcome of changes in risk behaviors. With these results in together, healthcare providers can develop unique instructional program to fill knowledge gaps in areas where they scored low.

There was no relationship among age, sex or level of education with the level of knowledge of CVD risk factor, also found no significant difference between level of knowledge with medical history, family history of CAD, body mass index, and smoking. This findings are consistent with related study found no significant difference among age, sex or level of education and the level of knowledge of CVD risk factor also found no relationship between level of knowledge with total cholesterol, triglycerides, low density lipoprotein, systolic and diastolic blood pressure, and body mass index. ⁽¹⁸⁾ Other researchers have shown that age and sex were associated with level of knowledge. ⁽²²⁾ In contrast, study found that age was the only factor that indicates significant differences with the awareness of CVD risk factors. ⁽¹⁴⁾

Studies found that there was no significant relationship between educational level and knowledge level. ^{(14) (18)} In opposition, participants with a higher educational level were more likely to have a higher level of knowledge in Saudi Arabia ⁽²³⁾ and Spain. ⁽²⁴⁾ Therefore, study confirms that findings indicate that health-promotion campaigns should not consider individual differences and include distinct messages for groups of the population, regardless of age and education level.

5. Conclusion

These findings suggest that while among individuals at risk of developing CAD possess a moderate knowledge of the conditions them to CVD, There still an obvious need for focused educational programs to fill the identified knowledge gaps.

Funding

There was not funding involved in this study.

Conflicts of Interest

The authors declare no conflict of interest.

Acknowledgments

The authors wish to thank all the participants in this study.

REFERENCES

1. World Health Organization (WHO). Cardiovascular diseases (CVDs). Key facts. Available from: www.who.int. Accessed January 10, 2023.
2. Kaptoge S, Pennells L, De Bacquer D, Cooney, M. T., Kavousi, M., & Stevens, G., et al. World Health Organization cardiovascular disease risk charts: revised models to estimate risk in 21 global regions. *Lancet Glob Health*. 2019;7(10):e1332–45. doi: 10.1016/S2214-109X(19)30318-3
3. World health rankings.(2023) Iraq: coronary heart disease Retrieved from: <https://www.worldlifeexpectancy.com/iraq-coronary-heart-disease>
4. Kannel WB, Dawber TR, Kagan A, Revotskie, N., & STOKES III, J.. Factors of risk in the development of coronary heart disease—six-year follow-up experience: the Framingham Study. *Ann Intern Med*. 1961 Jul 1;55(1):33-50.

5. Flora GD, & Nayak MK. A Brief Review of Cardiovascular Diseases, Associated Risk Factors and Current Treatment Regimes. *Curr Pharm Des*.2019; 25(38):4063–4084
6. Roth GA, Mensah GA, Johnson CO., Addolorato, G., Ammirati, E., Baddour, L. M. et al. Global Burden of Cardiovascular Diseases and Risk Factors, 1990-2019: Update From the GBD 2019 Study. 2020; *J Am Coll Cardiol* 76(25):2982–3021
7. Ciccone, L. Valvassori, M. Nichelatti, A. Sgoifo, M. Ponzio, R. Sterzi, et al. Endovascular treatment for acute ischemic stroke *N Engl J Med*, 2013. 368 (10): 904-913.
8. Ibanez, S. James, S. Agewall, M.J. Antunes, C. Bucciarelli-Ducci, H. Bueno, et al. ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation: the task force for the management of acute myocardial infarction in patients presenting with ST-segment elevation of the European Society of Cardiology (ESC) *Eur Heart J*, 2018; 39 (2) : 119 177. <https://doi.org/10.1093/eurheartj/ehx393>
9. Boateng, D., Wekesah, F., Browne, J. L., Agyemang, C., Agyei-Baffour, P., Aikins, A. D., et al. Knowledge and awareness of and perception towards cardiovascular disease risk in sub-Saharan Africa: A systematic review. *PLoS ONE*. 2017;12(12), e0189264. <https://doi.org/10.1371/journal.pone.0189264>
10. Krejcie RV, & Morgan DW. Determining sample size for research activities. *Educ Psychol Meas*. 1970 Sep; 30(3):607-10. doi.org/10.1177/001316447003000308
11. Arikan, I., Metintaş, S., Kalyoncu, C., & Yildiz, Z. E. K. İ. (2009). The cardiovascular disease risk factors knowledge level (CARRF-KL) scale: a validity and reliability study. *Türk Kardiyoloji Dernegi Arsivi: Turk Kardiyoloji Derneginin Yayin Organidir*, 2009. Jan; 37(1), 35-40.
12. Guillemin F, Bombardier C, & Beaton D. Cross-cultural adaptation of health-related quality of life measures: literature review and proposed guidelines. *J Clin Epidemiol*. 1993 Dec 1; 46(12):1417-32. doi: 10.1016/0895-4356(93)90142-n.
13. Bashatah A, Syed W, Al-Rawi MBA. Knowledge of Cardiovascular Disease Risk Factors and Its Primary Prevention Practices Among the Saudi Public - A Questionnaire-Based Cross-Sectional Study. *Int J Gen Med*. 2023 Oct 20;16:4745-4756. doi: 10.2147/IJGM.S433472.
14. Taiek, N., El Fadili, N. E. H., Belkacem, A., Cheikh, A. A., Kabbadj, K., & Damoun, N. The Knowledge Assessment of Cardiovascular Disease Risk Factors: A Cross-Sectional Study. *Cureus*, 2024; 16(5), e59774. <https://doi.org/10.7759/cureus.59774>
15. Sulaiman HA, & Andsoy II. Health behaviors, knowledge, and attitudes toward cardiovascular disease risk factors in young Iraqi adults: a sample from Erbil, Iraq. *Cardiovasc Prev Pharmacother*. 2024;6(3):92-101.
16. Khalaf MA, Raaouf AA, Shuker AI. Knowledge, attitude, and practice of coronary heart disease among the population in Kirkuk city. *Med J Tikrit Univ* 2018;24:94–108.
17. Taher TM, Alfadhul SA, Shwekh AS, & Sarraj FT. Knowledge and awareness on cardiovascular diseases among the Iraqi population. *Int Res J Sci Technol Educ Manag* 2021;1:26–37.
18. Akintunde AA, Akintunde T', & Opadijo OG. Knowledge of heart disease risk factors among workers in a Nigerian University: A call for concern. *Niger Med J*. 2015 Mar-Apr;56(2):91-5. doi: 10.4103/0300-1652.150688
19. Muhihi, A.J., Anaëli, A., Mpembeni, R.N.M. Sunguya, B. F., Leyna, G., Kakoko, D., et al. Public knowledge of risk factors and warning signs for cardiovascular disease among young and middle-aged adults in rural Tanzania. *BMC Public Health* 2020 Nov 30; 20 (1):1832 <https://doi.org/10.1186/s12889-020-09956-z>
20. Awad A, & Al-Nafisi H. Public knowledge of cardiovascular disease and its risk factors in Kuwait: a cross-sectional survey. *BMC Public Health*. 2014 Nov 4;14:1131. doi: 10.1186/1471-2458-14-1131.
21. Yeluri SR, Gara HK, & Vanamali DR. Assessment of knowledge with regard to cardiovascular disease risk factors among college students using Heart Disease Fact Questionnaire. *J Evolution Med Dent Sci*. 2021;10(6):347–51.
22. Pratt CA, Ha L, Levine SR, & Pratt CB. Stroke knowledge and barriers to stroke prevention among African-Americans: Implications for health communication. *J Health Commun* 2003Aug;8(4):369–81. doi: 10.1080/108107303005725.
23. Mujammi, A. H., Alluhaymid, Y. M., Alshibani, M. G., Alotaibi, F. Y., Alzahrani, K. M., Alotaibi, A. B., et al. Awareness of cardiovascular disease associated risk factors among Saudis in Riyadh City. *J Family Med Prim Care*. 2020 Jun 30; 9(6): 3100-3105 doi: 10.4103/jfmpc.jfmpc_458_20
24. Wagner, J., Abbott, G., & Lacey, K. (2005). Knowledge of heart disease risk among spanish speakers with diabetes: the role of interpreters in the medical encounter. *Ethn Dis*, 2005; 15(4), 679–684.