Journal of the
Bahrain Medical Society

Alsooreti et al., J Bahrain Med Soc. 2018;30(3):25-33

ORIGINAL ARTICLE

Awareness of Heart Attack Symptoms Among Bahraini Adults Attending Primary Healthcare Centers

Shooq Alsooreti[1*], Batool Alalawi[2], Hesa Abdulkarim[1], Sara Mohamed Alsayed[1], Wafa Al Sharbati[3]

[1]Medical Doctor, MD, Primary Care Physician, Bank Bahrain and Kuwait Hid Health Centre, Kingdom of Bahrain

[2]Medical Doctor, MD, Primary Care Physician, Al Dair Health Centre

[3]Medical Consultant, Primary Care Consultant, Public health Consultant, Public Health Directorate, Ministry Of Health

***Corresponding author:**
Shooq Alsooreti, Medical Doctor, MD, Primary Care Physician, Bank Bahrain and Kuwait Hid Health Centre, Kingdom of Bahrain; Tel: (+973) 36195556, Email: Alshoooq_16@hotmail.com

Received date: August 10, 2018; **Accepted date:** December 25, 2018; **Published date:** December 31, 2018

Abstract

Background and objectives: Worldwide, mortality due to cardiovascular diseases (CVD) is a concern of great magnitude. The mortality rate in Bahrain, due to CVD, was 19.5%, 32%, and 21.5% in the years 2005, 2011, and 2013, respectively. The objective was to assess the awareness of Bahraini adults of the early warning symptoms of heart attack (HA) and the need to activate rapid emergency care by calling 999 once recognized.

Methods: An observational cross-sectional study included 400 Bahraini adult patients attending primary healthcare centers in Bahrain. Respondents were asked to identify the five warning symptoms of a HA and the first action to be performed while witnessing a HA. HA knowledge score was calculated for each respondent. The study was approved by Bahrain Public Health Research Committee.

Results: Based on the evaluation of the knowledge scores of HA symptoms, 71.9% and 28.1% of the participants scored poor and good level of knowledge. In the study, the most recognized symptom of HA was chest pain (70.9%) followed by shortness of breath (60%). In response to the first action to be performed while witnessing a HA, only 59.5% reported that they would contact the emergency services.

Conclusion: The level of public awareness about HA symptoms in Bahrain is poor. Community campaigns are required to increase public health knowledge.

Keywords: Chest pain, Heart attack, Knowledge, Public awareness, Symptom

Introduction

Cardiovascular disease (CVD) is the "group of disorders of heart and blood vessels, and includes: hypertension, coronary heart disease, cerebrovascular disease (stroke), peripheral vascular disease, heart failure, rheumatic heart disease, congenital heart disease, and cardiomyopathies".[1]

Globally, CVD related death is a concern of great magnitude. In 2012, the World Health Organization (WHO) had estimated a mortality rate of 17.5 million due to CVD, representing 31% of all global deaths.[1] Of these deaths, an estimated 7.4 million were due to coronary heart disease. The WHO estimates 23.6 million CVD deaths in 2030.[2] The

mortality rate in Bahrain, due to CVD, was 19.5%, 32%, and 21.5% in the years 2005, 2011, and 2013, respectively.[3, 4]

Symptoms of myocardial infarction (MI), commonly known as a heart attack (HA), may be immediate or may start slowly and persist for hours, days, or weeks before death occurs.[5] The longer an individual is not treated, the greater the damage. The five major warning signs and symptoms of HA are: pain or pressure in the chest; pain or discomfort in the jaw, neck, or back; lightheadedness or fainting; shortness of breath; and pain in the shoulders or arms.[6] The American Heart Association recommends calling the emergency response number as the first action to be done even if not sure of witnessing a HA.[5]

The prehospital delay occurs due to reduced knowledge of the patients that these symptoms need urgent medical care and sometimes may recognize the symptoms but do not know where to go first. The reason for this is possibly due to insufficient knowledge of the warning signs of a HA. However, increasing awareness among the population can prevent delay in treatment.[7]

In this study, we assessed the level of awareness of early warning symptoms of HA and the importance of accessing rapid emergency care among Bahraini adults attending primary healthcare centers (PHC). The current topic was selected as early treatment of acute coronary syndrome can decrease related mortality and this is the first study of this kind in Bahrain, according to our literature review.

Materials & methods

The observational cross-sectional study included Bahraini adults aged >18 years attending the PHCs during the period of the study. The study was approved, and ethical clearance was provided by the Bahrain Public Health Research Committee. Participants were enrolled in the study from 1st to 5th of May 2016. The inclusion criteria were that the patient had to be a Bahraini adult. Exclusion criteria included inability to comprehend Arabic or English, emergency patients or incoherent. Verbal consent was taken from the participants, and educational leaflets were distributed after the interview in order to correct their knowledge about the symptoms of heart attack and the first action to be performed. Confidentiality of participants was maintained.

Data collection and sample size calculation

The Kingdom of Bahrain has 28 health centers distributed into 5 health regions; in this study one health center was selected randomly from each health region.[8] Every third person entering the PHC who was fitting the inclusion criteria was invited to participate in the study. The sample population was similar to the overall Bahraini population, as our results were generalizing only to Bahrainis. A standardized interview-based questionnaire was conducted by the family physicians. A leaflet with the five HA symptoms was distributed following the questionnaire to increase awareness during the process.

An optimal sample size was calculated through a sample size table, which included population size, specific margin of error, and a desired confidence level.[9] In this study, we considered the population of Bahrain as 1.5 million; confidence level was 95% and a margin of error of 5%. Based on these parameters, the sample size of 384 was obtained, which was approximated to 400 for convenience. Sample of 80 participants were randomly selected from each PHC.[9]

Standardized questionnaire

We adapted a validated questionnaire from the Behavioral Risk Factor Surveillance System (BRFSS, 2005),[10] which was provided by the Center for Disease Control and Prevention. The questionnaire had two parts: demographic data and HA signs and symptoms.[10] The demographic data included gender, age, living status, level of education, marital status, and employment; close-ended questions were used. Respondents were asked to identify the five major warning signs and symptoms of HA, which are discomfort of the jaw, feeling weak, chest pain, shoulder pain, and shortness of breath. One question about incorrect sign (decoy question) was asked, which was about sudden trouble with seeing in one or both eyes. Response answers for all questions were "yes," "no," "don't know/not sure", and "refuse to answer''. We also assessed participants' knowledge regarding their response to a witnessed heart attack

by calling 999. The HA knowledge score was calculated; participants received 1 point for each correct answer. The HA level of knowledge score was out of 7; and the scores were categorized as poor 0–4 and good 5–7 scores points.[11]

Statistical analysis

The data were entered and analyzed using SPSS 23. The relation between level of awareness and other factors, such as demographic data, health status, and source of medical information were examined using tests of association. Frequencies and percentages were computed for demographic variables, health status variables, source of medical information, and knowledge assessment. Overall knowledge score was computed for the participants. Cross tabulations were performed between knowledge level and each of demographical data, health status data, and source of medical information data. Chi square test was used to determine association between two categorical variables. $P<0.05$ was considered statistically significant.

Results

Demographic characteristics of the participants

Of the 400 Bahraini participants, a female preponderance (59.3%) was observed. The demographic data of the study participants are described in Table 1. Among the participants, majority (61%) were secondary school graduates or below and 39% had university or above level of education. In addition, 81.7% were married, 95% were living with others, and 43.4% were employed (Table 1).

Table 1: Demographic data of study participants

Variable		N (%)
Gender	**Male**	163 (40.7)
	Female	237 (59.3)
Age (years)	**<30**	105 (29.3)
	30–44	136 (38.0)
	45–59	80 (22.3)
	≥60	37 (10.3)
Living status	**Alone**	17 (4.3)
	With others	383 (95.8)
Level of education	**Primary or below**	40 (10.0)
	Intermediate	51 (12.8)
	Secondary	153 (8.3)
	University or above	156 (39.0)
Marital status	**Married**	326 (81.7)
	Unmarried	73 (18.3)
Employment	**Employed**	173 (43.4)
	Unemployed	173 (43.4)
	Retired	53 (13.3)

Knowledge of heart attack symptoms

According to the knowledge score of participants regarding HA symptoms, 71.9% and 28.1% scored poor and good level of knowledge.

In the study, 70.9% and 60% participants recognized chest pain and shortness of breath as symptoms of HA. Almost, 50.4% respondents correctly recognized that pain in the arms and lightheadedness are symptoms of HA. However, the least identified symptom was discomfort in the jaw, neck, or back.[10] Blurred vision, as a symptom of HA, was incorrectly answered by 64.8% respondents. In response to the question about the first action to be performed, while witnessing a HA, 59.5% respondents reported that they would call emergency services (Table 2).

One percent of the participants knew the five correct symptoms of HA, and correctly recognized the decoy symptom and the need to call 999.

Factors associated with knowledge of symptoms

Females had higher knowledge scores as compared to the males (30.1% vs. 25.2%; $P=0.28$). Participants with university degree and higher level of education had the highest knowledge score as compared to those with lower level of education ($P=0.302$, Table 3).

As represented in Table 4, participants with hypertension (44% vs. 23.3%; $P=0.001$), high levels of cholesterol (35% vs. 27.6%; 0.196), and diabetes (40% vs. 25%; $P=0,024$) had better level of knowledge as compared to those without these

Table 2: Knowledge assessment of study participants regarding symptoms of heart attack

Question	Answer	N (%)
Do you think pain or discomfort in the jaw, neck, or back are symptoms of HA?	Incorrect	302 (77.0)
	Correct	90 (23.0)
Do you think feeling weak, lightheaded, or faint are symptoms of HA?	Incorrect	221 (55.9)
	Correct	174 (44.1)
Do you think chest pain/discomfort/pressure/tightness/ heaviness are symptoms of HA?	Incorrect	115 (29.1)
	Correct	280 (70.9)
Do you think sudden trouble seeing in one or both eyes is a symptom of a HA?	Incorrect	256 (64.8)
	Correct	139 (35.2)
Do you think pain or discomfort in the arms or shoulders are symptoms of HA?	Incorrect	196 (49.6)
	Correct	199 (50.4)
Do you think shortness of breath is a symptom of HA?	Incorrect	156 (39.6)
	Correct	238 (60.4)
If you thought someone was having a HA, what is the first thing you would do?	Incorrect	161 (40.5)
	Correct	237 (59.5)

comorbidities, respectively. On the other hand, participants who had the habit of smoking had worse level of knowledge when compared to their counterparts (18% vs. 31%; 0.05).

Table 3: Association between demographic data and knowledge level

Variable		Knowledge Level		*P* value
		High	Low	
		N (%)	N (%)	
Gender	**Male**	122 (74.8)	41 (25.2)	0.281
	Female	165 (69.9)	71 (30.1)	
Age (years)	**<30**	83 (79.0)	22 (21.0)	0.071
	30–44	99 (72.8)	37 (27.2)	
	45–59	50 (62.5)	30 (37.5)	
	≥60	24 (64.9)	13 (35.1)	
Living status	**Alone**	14 (82.4)	3 (17.6)	0.417
	With others	273 (71.5)	109 (28.5)	
Level of education	**Primary or below**	28 (70.0)	12 (30.0)	0.302
	Intermediate	37 (72.5)	14 (27.5)	
	Secondary	117 (77.0)	35 (23.0)	
	University or above	105 (67.3)	51 (32.7)	
Marital status	**Married**	229 (70.5)	96 (29.5)	0.191
	Unmarried	57 (78.1)	16 (21.9)	
Employment	**Employed**	125 (72.3)	48 (27.7)	0.938
	Unemployed	124 (72.1)	48 (27.9)	
	Retired	37 (69.8)	16 (30.2)	

Table 4: Association between health status and knowledge level

Variable		Knowledge level		*P* value
		Poor	Good	
		N (%)	N (%)	
History of heart attack or myocardial infarction	**Yes**	15 (62.5)	9 (37.5)	0.289
	No	259 (72.5)	98 (27.5)	
Current smoking	**Every day**	41 (82.0)	9 (18.0)	0.050
	Some days	29 (82.9)	6 (17.1)	
	Not at all	210 (68.9)	95 (31.1)	
High blood pressure	**Yes**	45 (55.6)	36 (44.4)	0.001
	Yes, only during pregnancy	4 (44.4)	5 (55.6)	
	Borderline high or pre-hypertensive	4 (66.7)	2 (33.3)	
	No	219 (76.8)	66 (23.2)	
High cholesterol	**Yes**	52 (65.0)	28 (35.0)	0.196
	No	205 (72.4)	78 (27.6)	
Diabetes	**Yes**	48 (60.0)	32 (40.0)	0.024
	Yes, only during pregnancy	13 (81.3)	3 (18.8)	
	Prediabetes or borderline diabetes	4 (50.0)	4 (50.0)	
	No	210 (75.0)	70 (25.0)	
Do you have any family member who has a heart disease?	**Yes**	73 (64.6)	40 (35.4)	0.041
	No	214 (74.8)	72 (25.2)	
Have you ever witnessed a heart attack?	**Yes**	30 (63.8)	17 (36.2)	0.188
	No	257 (73.0)	95 (27.0)	

Participants were asked to select a single answer regarding the major source of their medical information. As shown in Table 5, participants who chose doctors or nurses as their major source of medical information had higher level of knowledge compared to those who did not (34% vs. 24%; 0.033). Respondents who selected social media as their source of medical information had better knowledge score compared to participants who did not (28.4% vs. 27.94%; 0.927).

Table 5: Association between source of medical information and knowledge level

Variable		Knowledge level		*P* value
		Poor	Good	
Media (TV/Radio)	**Yes**	84 (70.0)	36 (30.0)	0.574
	No	203 (72.8)	76 (27.2)	
Print media	**Yes**	31 (60.8)	20 (39.2)	0.058
	No	256 (73.6)	92 (26.4)	
Social media	**Yes**	96 (71.6)	38 (28.4)	0.927
	No	191 (72.1)	74 (27.9)	
Relatives	**Yes**	52 (75.4)	17 (24.6)	0.485
	No	235 (71.2)	95 (28.8)	
Friends	**Yes**	38 (80.9)	9 (19.1)	0.147
	No	249 (70.7)	103 (29.3)	
Doctors/Nurses	**Yes**	105 (66.0)	54 (34.0)	0.033
	No	182 (75.8)	58 (24.2)	
Others	**Yes**	23 (67.6)	11 (32.4)	0.561
	No	264 (72.3)	101 (27.7)	

Discussion

The present study revealed alarming results regarding the current level of knowledge of symptoms of HA among Bahraini adults. Only one percent of the participants knew the five correct symptoms of HA, correctly recognized the decoy symptom, and were aware of the need to call 999. The revelation is consistent with the awareness level related to heart disease in all Emirati women in United Arab Emirates (UAE), which was low.[12] However, those levels of awareness are considered low as compared to adults in United States of America (10.7%).[7]

According to our study, females had higher knowledge scores as compared to males. These results were similar to the population of Dubai and Northern Emirates in UAE.[13] Further, it was observed that majority of our respondents recognized chest pain as a symptom of heart attack, while other symptoms were less recognized. These findings were similar to the study conducted in UAE.[13]

Two thirds of Bahraini adults had poor knowledge about HA symptoms and this contrasted with the findings of a Turkish study wherein 23% of the Turkish participants were not aware of the HA symptoms.[14]

The major sources of medical information among Bahraini adults were doctors/nurses, social media, and television. However, the major sources of medical information among Emirati women were internet (67.2%) followed by friends/relatives (49.3%) and TV (36.1%).[12]

We observed that participants with hypertension and diabetes had higher level of knowledge as compared to those who did not. We speculate that this might be correlated to the educational role provided by the noncommunicable disease (NCD) clinics in the PHCs in Bahrain.

Consistent with the findings of a German study,[15] we observed that patients with a family history of cardiovascular disease risk factors had higher awareness scores. The study suggested that, such patients may be more concerned or anxious about their health.

In our study, we discovered that 60% of the participants would call emergency number in

response to HA, in comparison to 32.8% Emirati women from Dubai and Abu Dhabi who would do the same.[12] Further, the figures obtained from Gulf Cooperation Council (GCC) were low as compared to United States of America (86%).[7] This could be due to the lack of educational campaign about the awareness of HA symptoms and the advertisements regarding such campaigns in the Kingdom of Bahrain and the GCC.

Conclusion

In conclusion, the level of public awareness about HA symptoms in Bahrain is poor. Community health education campaigns are required to increase public health education regarding HA symptoms. It is a responsibility of Public Health Department, Ministry of Health in Bahrain in collaboration with the Cardiac Centre. These campaigns may influence future management of these diseases and improve survival. To our knowledge, this is the first study to address awareness of HA symptoms in Bahrain and in the Gulf Region, offering a platform for further studies.

Conflict of interest

The authors of the study have no conflict of interest to declare.

Acknowledgement

We would like to acknowledge the much-appreciated contribution of Dr. Wafa AlSharbti and Family Physician Residency Program in the Kingdom of Bahrain. We genuinely appreciate the efforts of people who agreed to be a part in the research.

Appendix 1

Study questionnaire

This questionnaire evaluates your awareness regarding heart attack symptoms. Kindly fill the following questionnaire:

Part 1: Personal information

1. Gender:
   - ☐ Male
   - ☐ Female
2. Age:
3. Living status:
   - ☐ Alone
   - ☐ With others
4. Level of Education:
   - ☐ Can write and read only
   - ☐ Primary
   - ☐ Intermediate
   - ☐ Secondary
   - ☐ University
   - ☐ Higher studies
5. Marital status:
   - ☐ Married
   - ☐ Single
   - ☐ Widow
   - ☐ Divorced
6. Employed:
   - ☐ Yes, if yes what is the occupation…….
   - ☐ No
7. Do you have or have you ever suffered from a heart disease?
   - ☐ Yes, if yes what was the diagnosis ……..……
   - ☐ No
8. Are you a smoker?
   - ☐ Current
   - ☐ Former
   - ☐ Never
9. Do you have Hypertension (high blood pressure)?
   - ☐ Yes
   - ☐ No
10. Do you have Hyperlipidemia (high cholesterol level)?
    - ☐ Yes
    - ☐ No
11. Do you have Diabetes mellitus?
    - ☐ Yes
    - ☐ No
12. Do you have any family member who has a heart disease?
    - ☐ Yes, if yes what was the diagnosis……
      What is the relation…….....…
    - ☐ No

13. Have you ever witnessed a heart attack?
    - ☐ Yes
    - ☐ No
14. What is your Major source of medical information?
    - ☐ Television
    - ☐ Print media
    - ☐ Radio
    - ☐ Internet
    - ☐ Others ……

Part 2: The following questions assess your knowledge regarding heart attack symptoms

15. Do you think pain or discomfort in the jaw, neck, or back are symptoms of a heart attack?
    - ☐ Yes
    - ☐ No
16. Do you think feelings weak, lightheaded, or faint are symptoms of a heart attack?
    - ☐ Yes
    - ☐ No
17. Do you think chest pain or discomfort/pressure/ tightness/heaviness are symptoms for a heart attack?
    - ☐ Yes
    - ☐ No
18. Do you think sudden trouble seeing in one or both eyes is a symptom of a heart attack?
    - ☐ Yes
    - ☐ No
19. Do you think pain or discomfort in the arms or shoulders are symptoms of a heart attack?
    - ☐ Yes
    - ☐ No
20. Do you think shortness of breath is a symptom of a heart attack?
    - ☐ Yes
    - ☐ No
21. If you thought someone was having a heart attack what is the first thing you would do?
    - ☐ Call 999
    - ☐ Give aspirin
    - ☐ Lay person down on back, open collar, and elevate feet
    - ☐ Heart massage
    - ☐ Take/send nearest hospital
    - ☐ Give artificial respirations
    - ☐ Have them smell cologne, have them drink water
    - ☐ Pour cold water over their face
    - ☐ Wouldn't be able to do anything

Thank You

References

1. World Health Organization. Cardiovascular diseases (CVDs). [cited 2017 Aug 7]; Available at: http://www.who.int/mediacentre/factsheets/fs317/en/. Accessed August 7, 2017.
2. Preventing chronic diseases, a vital investment. World Health Organization Library Cataloguing-in- Publication Data. Available at: http://www.who.int/chp/chronic_disease_report/full_report.pdf. Accessed August 7, 2017.
3. Ibtihal F, Al-Sayyad AS, Jawad JS. Coronary events in Bahrain: Descriptive study. Bahrain Med Bull. 2011;33(4):185.
4. World Health Organization Library Cataloguing-in-Publication Data. 2011. Available at: http://www.who.int/about/licensing/copyright_form/en/index. Accessed August 7, 2017.
5. Disparities in adult awareness of heart attack warning signs and symptoms: 14 states, 2005. MMWR Morb Mortal Wkly Rep. 2008;57(7):175-9. Available at: https://www.cdc.gov/mmwr/preview/mmwrhtml/mm5707a3.htm. Accessed November 26, 2018.
6. Cardiac arrest vs. Heart attack. Available at: http://cpr.heart.org/AHAECC CPRAndECC/AboutCPRFirstAid/CardiacArrestvsHeartAttack/UCM_473213_Cardiac-Arrest-vs-Heart-Attack.jsp. Accessed August 14, 2017.
7. Fang† J, Gillespie C, Keenan NL, et al. Awareness of heart attack symptoms among US adults in 2007, and changes in awareness from 2001 to 2007 Jing. 2011. Future Cardiology. 2011;7(3):311-20.

8. Ministry of Health Bahrain/MOH. Available at: https://www.moh.gov.bh/HealthInstitution/HealthCenters. Accessed August 5, 2018.
9. Research-advisors.com. Sample Size Table. Available at: http://research-advisors.com/tools/SampleSize.htm. Accessed October 24, 2018.
10. US Centers for Disease Control and Prevention. Behavioral Risk Factor Surveillance System Users' Guide. Atlanta, Georgia. US Department of Health and Human Services, Centers for Disease Control and Prevention, 2005.
11. Lutfiyya MN, Bardales R, Bales R, et al. Awareness of heart attack and stroke symptoms among Hispanic male adults living in the United States. J Immigr Minor Heal. 2010;12(5):761-8.
12. Khan S. Exploratory study into awareness of heart disease and healthcare seeking behavior among Emirati women (UAE): Cross sectional descriptive study. International Journal of Growth and Development. 2017;1(1):41.
13. Khan N, Shehnaz S, Guruswami G, et al. Knowledge of warning signs, presenting symptoms, and risk factors of coronary heart disease among the population of Dubai and Northern Emirates in UAE: A cross-sectional study. Nepal Journal of Epidemiology. 2017;7(2):670.
14. Memiş S, Evci ED, Ergin F, et al. A population-based study on awareness of heart attack in Aydin city, Turkey. Anadolu Kardiyol Derg. 2009;9(4):304-10.
15. Kirchberger I, Heier M, Wende R, et al. The patient's interpretation of myocardial infarction symptoms and its role in the decision process to seek treatment: the MONICA/KORA Myocardial Infarction Registry. Clinical Research in Cardiology: Official journal of the German Cardiac Society. 2012;101(11):909-16.