ORIGINAL ARTICLE

Knowledge and attitude of Albaha University's students to perform Cardiopulmonary Resuscitation, Saudi Arabia

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Abstract

Background/Objective: In 2015, the Saudi Heart Association suggested that one in four adults isat risk for cardiac arrest within the next 10 years. Cardiopulmonary resuscitation isconsidered one of the important determinants for out-hospital cardiac arrest survival. The aim of this study was to assesslevel of cardiopulmonary resuscitationknowledge and attitude among students ofAlbaha University.

Methods: Following a cross-sectional study, questionnaires were distributed to500 studentsrecruited via stratified random sampling technique.Only 341 (68.2%) completed the study.

Results: A total of 341 students were completed the questionnaire; 49% of students had aprevious knowledge of cardiopulmonary resuscitation. Most of students (90%) were notconfident on having sufficient CPR knowledge, 69.5% of them knew emergencyphone number in Saudi Arabia, and 8.8% of the students had personally witnessed acardiac arrest victim, of those witnessed cardiac arrest no one did full cardiopulmonaryresuscitation. Although 62% of students reported willing to

الملخص

الخلفية/ الهدف: أعلنت جمعية القلب السعودية في فبراير ٢٠١٥ أن مواطن سعودي بين كل أربعه مواطنين في المملكة العربية السعودية سيكونوا معرضين للسكتة القلبية المفاجئة خلال العشرة أعوام القادمة.الإنعاش القلبي الرئوي يعتبر واحد من أهم العوامل التي تحدد معدل النجاة من السكتات القلبية خارج المستشفى. هدفت الدراسة الى قياس سلوكيات ومستوى معرفة الطلبة بمهارات انعاش القلب والرئة الاساسية في جامعة الباحة.

هذه دراسة وصفية مستعرض تهتم اجراءها على الطلاب (ذكور واناث) بجامعة الباحة. تم توزيع عدد ٥٠٠ استبانة على الطلاب / الطالبات باستخدام العينة العشوائية الطبقية. كانت الاستجابة فقط من ٣٤١ (٦٨,٢٪) طالب/ طالبة الذين أكملوا الدراسة.

النتائج: تم توزيع الإستبانه على عدد ٣٤١ طالب وطالبة. حيث تبين ان ٤٩٪ من الطلاب لديهم معلومات مسبقة عن مهارة انعاش القلب والرئة. أغلب الطلاب (٩٠٪) غيرواثقين بما لديهم من معلومات، ٦٩,٥٪ من الطلاب لديهم المعرفة برقم الاسعاف . ٨,٨٪ من الطلاب قد تعرض والموقف يستوجب قيام هم بعملية انعاش القلب والرئة، الا انه لم يقم أي احد منهم

perform cardiopulmonaryresuscitation, when students confronted with 6 hypothetical cardiac arrest scenarios,the option of providing full cardiopulmonary resuscitation are less frequently chosen.Fear of doing mistakes when performing cardiopulmonary resuscitation due to lack ofcompetence were reported in (42.5%)of students as a reason for being reluctant toperform rescue breathing.

Conclusion: The study found that overall attitude toward CPR are positive.However, the proper knowledge of CPR was not sufficient. Thus, the incorporation ofcardiopulmonary resuscitation learning approaches within university curricula willprovide the opportunity to develop knowledge and skills required to save people lives.

Keywords: Cardiopulmonary Resuscitation, Knowledge, Attitude, Students

بتنفيذعملية انعاش القلب والرئة الصحيحة. وبالرغم من ان ٦٢٪ من الطلاب قد ابدوا استعداد هم للقيام بعملية انعاش القلب والرئة الا انه عند مواجهتهم بعدد ستة من السيناريو هاتل مصابين بالسكته القلبية،كان إختيارعمل جميع الخطوات لعملية انعاش القلب والرئة من أقل الإختيارات . ٤٠,٨. الخوف من الخطاء لوحظ عند ٤٢,٥٪ من الطلاب كمبرر لعدم عمل التنفس الصناعي.

الخلاصة: أوضحت الدراسة أن المستوى العام لسلوكيات الطلبة تجاه الانعاش القلبي الرئوي كانت إيجابية، على الرغم من صحة المعرفة كانت غير كافية. لذلك فإن دمج الإنعاش القلبي الرئوي ضمن مناهج الجامعة سيوفر فرصة لتطوير المعرفة والمهارات المطلوبة للحفاظ على حياة الناس.

1. Introduction:

Survival from out hospital cardiac arrest (OHCA) depends on a sequence of time sensitive and interconnected links termed " the chain of survival "(1).Two of these links, early bystander cardiopulmonary resuscitation (CPR) and early defibrillation, have been prioritized as the two most important links in the chain of survival(2). Delivery of early bystander CPR can increase the chance of survival two to three folds(3). However,early bystander CPR rate stilllow, the rate of cardiac arrest is high. In Saudi Arabia, Bystander CPR rate varies between 15.4% and 20.8% in OHCA (4, 5).Knowledge of CPR,performing of simple task and attitude to performing CPR are important keys to increase bystander contribution to the survival of OHCA (6, 7).

Many studies investigated knowledge of CPR among health care professional and school students in Saudi Arabia(6, 8-10).

However,the limitation of previous studies in Saudi Arabia was they were conducted among medical, dentist or nursing students who may have a CPR knowledge gained through study courses. Furthermore, it was reported in the literature that both CPR training and attitude to performing CPR were varies between different age groups and between countries (7). Thus, the aim of this study was to assess the level of CPR knowledge and attitude among students in Albaha University, Saudi Arabia.

2. Materials andMethods:

A cross sectional design was used to assess CPR knowledge and attitude towards CPR among students in Albaha University. The study was conducted in Albaha university campus between 15 January 2016 and15 February 2016.Albaha University suited at South-Western area of Saudi Arabia. It is the only governmental university located in this area established in 2006. It consistsof faculties and school offering several degrees ranging from diploma to master degree on several fields of art, science and medical studies.

The study population consisted of 23,863 students, and the target population for this study included all students (males and females)registered for the second semester of the academic year 2016/2017. Students were categorized based on their field of study into 3 main sectors; health sector(consisted of students enrolled in faculty of applied medical sciences, faculty of medicine and faculty of clinical pharmacy),scientific sector(consisted of students enrolled in Faculty of Engineering,Faculty Of Sciences, and Faculty Of Computer Sciences) and literature sector(consisted of students enrolled in Faculty Of Art And Humanities, Faculty Of Art And Scientific And Faculty Of Administrative And Financial Studies). A stratified random sampling was used to select a proportionate sample size.The targeted sample size was500 students, and only 341 (68.2%) completed the study. The sample size was calculated using the following measures: , where, = factorial sample size, p=estimated proportion (0.1), q=(0.9), z =(1.96), and d=standard error. Then n; sample size was calculated by .

The questionnaire was developed and adopted from the orginal questionnaire used by Kanstad et al (2011) (7). The orginal questionnaire

was consisted of 28 questions and used to assess students' knowledge and attitude to performing bystander CPR in Norway.In the current study the questionnaire was modified by researcher to include 33 questions distributed into fivemajor sections. Section1consisted of questions regarding age, gender and field of the study.Section2 assessed the studentsprevious knowledge and training on CPR and automated external defibrillator (AED). Section 3 assessed the practical experience and attitude toward CPR and AEDand section 4 assessed the theoretical knowledge of CPR and in Section 5, students were asked to respond to realistic cardiac arrest scenarios.After that the questionnaire was validated and pre-tested on 30 students as a pilot study.

The data was collected using the adopted questionnaire and then the data was checked and cleaned before analysis to enhance accuracy and reliability data. Data analysis was undertaken using the Statistical Package for the Social Sciences (SPSS) version 20. Descriptive statistics was used to describe demographic data. Chi-square test was used and fisher exact test were used for E values less than or equal to 5. Statistical significance was reported at the conventional p-value equal and less than 0.05 and/or 0.001 levels (as significant and highly significant respectively).

Ethical approval was obtained from the deanship of sceientfic research on January 2016. Target participants, who were willing to participate, received a cover letter explaining the purpose and outcome of the study and assuring them that that their participation is voluntary with the right to withdraw at any time without any penalty. Furthermore, participants were assured that all information will be kept confidential by which the researcher only have the right to review and only the overall knowledge and attitude on CPR will be announced and published.

3.Results:

3.1. Tables

Table 1: Distribution of students according to the college enrolled in.

Demographic characters		Male	Female
School	Scientific sector	(41.8%)77	(45.2%)71
	literaturesector	(35.3%)56	(29.3%)46
	Health sector	(22.8%)42	(25.5%)40
Total		(54%)184	(46%)157

Table 2: Previous CPR and AED knowledge and attitude toward CPR among student at Albaha University.

Respondent response	All N=341	Male n=184	Female n=157	P value
(Do you have a previous knowledge about CPR? (yes	(49.3%)168	(40.8%)75	(59.2%)93	*0.000
(Have you had a CPR training course? (Yes	(10.6%)36	(10.3%)19	(10.8%)17	0.509
Do you feel that you have a sufficient CPR knowledge in situa-(tion with cardiac arrest?(Yes	(9.7%)33	(11.4%)21	(7.6%)12	0.161
Have you heard about Automated external defibrillator ((AED)? (Yes	(67.7%)231	(66.3%)122	(69.4%)109	0.309
?How do you evaluate your ability to use the AED				
Excellent-	(9.7%)33	(12%)22	(7%)11	
Good-	(20.2%)69	(20.7%)38	(19.7%)31	
I don't know how to use the AED device-	(70.1%)239	(67.4%)124	(73.2%)115	0.273
?If you have had no CPR course, what is the reason				
.Little interest -	(22.4%)66	(20.6%)33	(24.4%)33	
little time -	(24%)71	(23.1%)37	(25.2%)34	
Not sure where to attend course -	(48.1%)142	(47.5%)76	(48.9%)66	0.051
Costs -	(5.4%)16	(8.8%)14	(1.5%)2	
(Do you think that you need more CPR training?(Yes	(90.6%)309	(86.4%)159	(95.5%)	*0.003
If you think that you need more CPR training,what is the :reason				
Heart disease within family-	(12.3%)42	(15.8%)29	(8.3%)13	
Avoid unnecessary death -	(69.2%)236	(62.5%)115	(77.1%)121	*0.013
Other reason or no answer -	(18.5%)63	(21.7%)40	(14.6%)23	

:CPR course should be				
Mandatory for all students -	(40.8%)139	(73%)68	(45.2%)71	
Mandatory for health related students -	(15%)51	(15.8%)29	(14%)22	
optional -	(41.9%)143	(42.9%)79	(40.8%)64	*0.036
Don't support implementation of training course -	(2.3%)8	(4.3%)8	(0%)0	
If the AED device presents in Public area are you will-(ing to use this device in case of cardiac arrest? (Yes	(43.1%)147	(42.9%)79	(43.3%)68	0.516
If you have never received AED training would you (like to learn how to use AED? (Yes	(74.8%)255	(69%)127	(81.5%)128	*0.023

Statistical significant different using Chi square test and p value less than 0.05

Table 3: Theoretical Knowledge of CPR

Respondent response	All N=341	Male n=184	Female n=157	P value
The Emergency telephone number in Saudi Arabia "red ?"crescent	**(69.5%)237**	**(72.3%)133**	**(66.2%)104**	**0.138**
(Correct Answer (997-	**(28.7%)98**	**(24.5%)45**	**(33.8%)53**	
Not correct -				
What is the survival rate in out-of-hospital cardiac arrest if ?CPR is performed correctly	**(37%)126**	**(34.8)64**	**(65.2%)62**	**0.216**
(correct answer(10%-	**(63%)215**	**(39.5%)120**	**(60.5%)95**	
Not correct-				
What is the increment in chance of survival in out-of-hospital cardiac arrest, if the patient receives sufficient CPR before ?arrival of emergency personnel	**(41.3%)141**	**(41.8%)77**	**(40.8%)64**	**0.463**
(correct answer (it increases two fold-	**(58.7%)200**	**(58.2%)107**	**(59.2%)93**	
Not correct-				
You are alone and come across an apparently lifeless adult ?person. What do you do	**(28.2%)96**	**(23.9%)44**	**(76.1%)140**	***0.039**
correct answer (check for consciousness,secure airways and-(check if the patient breathing	**(71.8%)245**	**(33.1%)52**	**(66.9%)105**	
Not correct-				
It turns out the patient is breathing but shows no response to verbal stimuli. What do you do? -correct answer (put (the patient in recovery position and call for ambulance	**(64.5%)220**	**(63.6%)117**	**(65.6%)103**	**0.392**
Not correct-	**(35.5%)121**	**(36.4%)67**	**(34.4%)54**	

You decide to perform CPR. Which of the following combinations of chest compressions and mouth ventilation would ?you choose correct answer (First 30 chest compression, then 2 mouth (ventilation, in repeating rounds Not correct-	(42.2%)144 (57.8)197	(37.5%)69 (62.5%)115	(47.8%)75 (52.5%)82	*0.036

Statistical significant different using Chi square test and p value less than 0.05

Table 4: Personnel experience and attitude toward CPR :

Respondent response	All N=341	Male	Female	P value
Have you ever personally witnessed an assumed cardiac arrest (and experienced that someone needed CPR? (yes	(8.8%)30	(11.4%)21	(5.7%)9	*0.048
If you answered yes in question 8, did you intervene in any of ?the following ways No CPR at all- Full CPR- Called Only- Did chest compression Only-	(0%)0 (0%)0 (86.7%)26 (13.3%)4	(0%)0 (0%)0 (90%)18 (20.2%)2	(0%)0 (0%)0 (80.2%)8 (20%)2	0.407
Are you willing to perform CPR if you personally witness a (cardiac arrest? (yes	(62.2%)212	(60.3%)111	(64.3%)101	0.259
?If you answered no in question 1, what it the reason I have to little knowledge in CPR - Fearing of harming the victim - Fearing of disease transmission - others or no answer-	(26.4%)90 (17.6%)60 (1.1%)2 (55.4%)189	(27.7%)51 (19.6%)36 (1.1%) 2 (51.6%)95	(24.8%)39 (15.3%)24 (0%)0 (59.9%)94	0.273
Q31:reason for reluctant to perform rescue breathing for :scenarios from 1-6 Fear of disease transmission- feel of repulsive to perform- Fear of performing it wrong because lack of competence- other reason or no answer-	(30.5%)104 (21.1%)72 (42.5%)145 (5.9%)20	(38.6%)71 (17.9%)33 (37%)68 (6.5%)12	(21%)33 (24.8%)39 (49%)77 (“5.1%)8	*0.003
Q32” if the rescue breathing is removed fromCPR Guideline, would it be easier for you to initiate CPR? yes	(44.3%)151	(46.2%)85	(42%)66	0.254

Statistical significant different using Chi square test and p value less than 0.05

Table 5 : Gender differences according to response to six cardiac arrest scenarios.

Respondent response	All N=341	Male	Female	P value
Scenario 1 :arrested Member of your family				
Call ambulance only -	(52.2%)178	(48.9%)90	(56.1%)88	
Chest compression only-	(16.1%)55	(19%)35	(12.7%)20	
Incomplete CPR-	(24.9%)85	(22.3%)41	(28%)44	*0.023
Full CPR-	(6.7%)23	(9.8%)18	(3.2%) 5	
Scenario 2 :arrested intravenous drug user				
Call ambulance only -	(81.5%)278	(75.5%)139	(88.5%)139	
Chest compression only-	(11.4%)39	(16.3%)30	(5.7%)9	
Incomplete CPR-	(6.5%)22	(7.1%)13	(5.7%)9	*0.007
Full CPR-	(0.6%)2	(1.1%)2	(0%)0	
Scenario 3 :Arrested child				
Call ambulance only -	(50.7%)173	(50%)92	(51.6%)81	
Chest compression only-	(20.8%)71	(20.7%)38	(21%)33	
Incomplete CPR-	(23.2%)79	(22.8%)42	23.6%)37	0.744
Full CPR-	(5.3%)18	(6.5%)12	(3.8%)6	
Scenario 4 :arrested elderly lady with vomitus on her mouth				
Call ambulance only -	(69.2%)236	(66.8%)123	(72%)113	
Chest compression only-	(14.7%)50	(12%)22	(17.8%)28	
Incomplete CPR-	(14.7%)50	(18.5%)34	(10.2%)16	0.014
Full CPR-	(1.5%)5	(2.7%)5	(0%)0	
Scenario 5 :arrested adolescent with blood on his face				
Call ambulance only -	(74.2%)253	(69.6%)128	(79.6%)125	
Chest compression only-	(10%)34	(11.4%)21	(8.3%)13	
Incomplete CPR-	(12.9%)44	(16.3%)30	(8.9%)14	0.131
Full CPR-	(2.9%)10	(2.7%)5	(3.2%)5	
Scenario 6 :arrested stranger collapsed during exercise				
Call ambulance only -	(60.4%)206	(59.8%)110	(61.1%)96	
Chest compression only-	(17.3%)59	(15.2%)28	(19.7%)31	
Incomplete CPR-	(17%)58	(20.1%)37	(13.4%)21	334.
Full CPR-	(5.3%)18	(4.9%)9	(5.7%)9	

Statistical significant different using Chi square test and p value less than 0.05

3.2 The participants

The mean age for participants was 21.5 years (SD=2.6), and the sex of participants were male 184 (54%),and female 157(46%).Of the 341students who completed the questionnaire, 148(43%) were enrolled in a scientific sector, 111(33%) in literaturesector and 82(24%) in health sector(Table 1).

3.3Previous knowledge and attitude toward CPR and AED:

Forty–nine precents of participants have knowledge about CPR, and female (59.2%) were significantly more knowledgeable than male on CPR (p=0.00). The majority of students 308 (90%) were not confident on having sufficient CPR knowledge.

Only 10.6% of the students have attended a CPR training and most of them,309 (90.6%), said they would like to receive more CPR training. The reason behind requesting more CPR training was to avoid unnecessary death (69.2%) and again the female students reported a significantly higher score (p=0.013). of the participated students, 40.8% of the students supported the mandatory CPR training in university with andmale students, 68(73%) showed significantly higher commitment than female students, (p=0.036).

However, majority of the students (67.7%) have heard about the Automated External Defibrillator (AED), only 9.7% of them were competent in using the AED and majority (70%) was not able to use the AED device. The majority of female students 128(81.5%) would like to learn how to use the AED machine, they reported a significant higher commitment than male students (p=0.023). Table 2 shows the previous CPR and AED knowledge and attitude toward CPR among students at Albaha University.

3.4Theoretical knowledge of CPR:

The majority of students (69.5%) knew the emergency phone number in Saudi Arabia (997), the male students werenot more knowledgeable than female (p=0.138).About one third(39.6%) of students believed that CPR has a little influence on survival if emergency personnel arrive early (39.6%). The answers indicate lack of knowledge on the exact survival rate and the increment in chance of survival rate in out of hospital cardiac arrest (OHCA). Only 37% of students knew the correct answer for survival rate in OHCA and 41.3% believed that the increment in chance

of survival, if the patient received sufficient CPR in out of hospital settings, would be increased by twofold. In contrast to male, 76.1% of female respondents demonstrated significantly basic knowledge in handling an apparently lifeless adult person (p=0.039). The correct number for chest compressions and ventilation was known by 42.2% of the students, with a female students scored significantly higher than male students (p=0.036). Table 3 demonstrates the difference between male and female in theatrical knowledge of CPR.

3.5Personal experience and attitude toward CPR:

Despite the young age of the students, 30 (8.8%) had personally witnessed an assumed victim of cardiac arrest, with a significantly more personnel experience among male students (11.4% vs. 5.7, p=0.048). Of those who had personally witnessed cardiac arrest, No one did a full CPR, 86.7% called the emergency number only and 13.3% only did chest compression. When asking about student's wiling's to perform CPR, 47.8 % answered that they would not perform CPR due to lack of knowledge (26.4%), fear of harming other (17.6%) and fear of disease transmission (1.1) and (5.9%) had either no answer or other not specified reason. There was no statistical significantdifference between male and female regarding this point (p=0.273). However, when exposing students to cardiac arrest scenarios (Table 4), both afraiddisease transmission (30.5%) and lack of competence (42.5%) became more prevalent answer. In addition, 44.3% of respondents would initiate CPR if the rescue breathing is removed from CPR guideline.

3.6Response to cardiac arrest scenarios

The relationship between the bystander performing CPR and the victim may influence the CPR performance.In order to see if the students wiling to perform CPR would be changed when more specific details and the identity of victim was given, we provided students with six cardiac arrest scenarios. All of these scenarios proposed to be happened in out of hospital settings and the relationship between victim and bystander varies. Student's response are categorized into the following categories: Full CPR (call ambulance, chest compression and rescue breathing), incomplete CPR(any combination of 2 choices e.g. call ambulance and rescue breathing),

chest compression only or rescue breathing only.

Studentsweremore willing to perform full CPR on family members (6.7%) and not willing if the victim was suspected to be drug abuser (0.6%)(p=0.000).There was a significant gender differencein scenario 1, 2 and 4. Male students (9.8%) reported a significantly higher commitment than female student (3.2%) in providing full CPR to arrested member of their family(p=0.023).It was further reported that when the students confronted with a scenario of arrested child, (81.5%) would call ambulance only and only 0.6% would perform full CPR (p=0.007). The majority of participant (69.2%) would call ambulance only in case of arrested elderly lady and only (1.5%) would perform CPR (p=0.014). Table 5 shows the gender difference according to response to providedcardiac arrest scenarios.

4. Discussion:

The current study sought to examine the level of cardiopulmonary resuscitation knowledge and attitude among students in Albaha University, Saudi Arabia.In this study, more than half (51%) of the students did not have previous information about CPR due to lack of CPR information among students. The resultsare higher and contradicts the previous studies results. For example, in Saudi Arabian study only 31% of students at King Saud University did not have a previous knowledge about CPR(10), and in another study the lack of information about CPR was less than 50% of students (11).

Most of the students reported willing to receive more CPR training.However they reported the similar barriers to taking CPR courses described in other studies such as lack of interest and time(7, 12).Cost is not considered a barrier by students, but about 40% don't know where to find a CPR course.

The finding of poor CPR knowledge in this study is similar to previous studies finding, a study conducted among school students in Saudi Arabia revealed a poor CPR information when compared to previous CPR awareness studies, researcher explained this results by the academic background of the previously surveyed students(for example, medical and health professional students)(8). Similar

finding was found in another study conducted in China, of the surveyed respondents, only 0.4% answered all questions related to CPR knowledge(13). Our findings supported the evidence suggested that public knowledge of CPR, the use of AED and survival rate after cardiac arrest is poor(14). This underlines the need for CPR courses in the university and general public places, 40.8% supported the mandatory CPR courses in university and would even like more CPR training, this reflect their awareness of the important role of CPR training in saving victim life.

Despite the young age of participants, we explored that 8.8% of students had personally witnessed an assumed cardiac arrest and experienced that someone needs basic life support. This result is similar to the finding of a study conducted in Norway, in which 8% of secondary school students experienced a cardiac arrest scenario(7). In another study conducted in Saudi Arabia a higher rate (12.7%) of the students experienced a situation required CPR and 14% are actually performed CPR(10). The rate is higher also in another country (2).This finding supported the notion that students is a cost effective target to CPR training course. Training courses should be implemented to all students starting from school age with a refresher course in frequent interval to help retain knowledge.

Willing to perform CPR seems to be influenced by victims to bystander relationship. Our finding was consistent with the finding of other studies regarding the self-reported willing to perform CPR(10, 15). However, students willing to perform CPR were changed when more specific details and victim identity were provided. Students expressed more willing to perform full CPR when confronted of scenario of family member and arrested child, however it is still low when compared to other studies(7, 8, 12). The possible explanation for the low percentage of students willing to perform CPR, when confronted to cardiac arrest scenario, could be related to insufficient CPR knowledge and skills, and It could be also influenced by the setting in which the scenarios were presented.

The results of this study revealed that 30.5% of participant is reluctant to perform mouth to

mouth breathing due to fear of disease transmission. The finding was higher than reported in Japan (16)and Australia(17). This finding underlines the importance of the fact that the chance of getting a communicable disease from doing mouth to mouth breathing is very low(18).

The strengths of this study include the assessment of knowledge and attitude of university's students using astratified random sampling technique.The sample of the study was extrapolated from medical and non medical fields of study. The study limitations were stemmed from the fact that it was conducted in only one university; such studies will yield more useful results if conducted on more sample size with complete randomization all over the Saudi Arabia.

5. Conclusion:

In conclusion, the results of this study presented that overall students' attitude toward CPR is positive.However, the proper knowledge of CPR was not sufficient especially when confronting students with hypothetical cardiac arrest scenarios. These results confirm that students at this age group are important target for future CPR courses aimed at increasing the contribution of bystander to the survival of out of hospital cardiac arrest. Courses, refresher courses and strategies should be implemented by university to increase survival of out of hospital cardiac arrest.

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