

# Knowledge and attitudes towards cardiopulmonary resuscitation among university students in Riyadh, Saudi Arabia

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## ABSTRACT

**الأهداف:** لمعرفة مدى إلمام طلاب وطالبات جامعة الملك سعود بمهارات الإنعاش القلبي الرئوي (CPR).

**الطريقة:** أجريت دراسة ميدانية لطلاب جامعة الملك سعود – الرياض – المملكة العربية السعودية، خلال الفترة من 17 وحتى 20 ديسمبر 2006م، حيث تم جمع البيانات بتوزيع استبيانات باللغة العربية على عينة من الطلبة في الخمسة عشر كلية التابعة لجامعة الملك سعود.

**النتائج:** تبين أن 2250 طالباً وطالبة (31%) لم يكن لديهم أي معلومات سابقة عن الإنعاش القلبي الرئوي (CPR)، أما اللذين كان لديهم معلومات سابقة (85%) يشعرون بأن معلوماتهم غير كافية، كما أن مصادر معلوماتهم عن الإنعاش القلبي الرئوي (CPR) كانت عن طريق التلفاز والأفلام السينمائية. نسبة (12.7%) من الأشخاص واجهوا حالات تستدعي القيام بالإنعاش القلبي الرئوي (CPR) ولم ينفذوها إلا (14%) فقط. إن السبب الرئيسي لعدم إجراء الإنعاش القلبي الرئوي (CPR) هو جهل الإلمام بتلك المهارة وذلك في (48.2%) من الحالات. نسبة (88%) من الطلاب والطالبات لديهم الرغبة بتعلم الإنعاش القلبي الرئوي، و(45%) من طلاب وطالبات الجامعة يرون بأن دورة الإنعاش القلبي الرئوي (CPR) يجب أن تكون من متطلبات التخرج من الجامعة.

**خاتمة:** إن الانطباع العام لضرورة الإنعاش القلبي الرئوي (CPR) كان إيجابياً، ولكن الإلمام بالمهارة كان غير كافي، لذلك يجب التركيز أكثر على أهمية تعلم الإنعاش القلبي الرئوي عند الطلاب الجامعيين، كما يجب القيام بأبحاث إضافية للإلمام بمهارات الإنعاش القلبي الرئوي (CPR) في المجتمع ككل.

**Objective:** To assess the knowledge and attitudes towards cardiopulmonary resuscitation (CPR) among the students of King Saud University.

**Method:** This study was a cross-sectional survey among King Saud University students, Riyadh, Kingdom of Saudi Arabia, which took place on December 17-20, 2006. The data was collected via self-administered questionnaires prepared in Arabic. The questionnaires were distributed to all 15 colleges of the University.

**Results:** Out of a study sample of 2250 students, 31% did not have prior CPR information. Of those with previous knowledge, 85% feel that it is inadequate. The most common sources of information were television and movies. The 12.7% of individuals encountered a situation that required the use of CPR. However, only 14% of them performed it. This was mostly due to lack of knowledge (48.2%). Eighty eight percent of students would like to learn how to perform CPR. Out of all King Saud University students, 45% believe that CPR training should be a graduation requirement.

**Conclusion:** It was found that the overall attitude towards CPR was positive. However, the knowledge on the topic was insufficient. Thus, more focus should be placed on the improvement of CPR skills. In addition, more studies are needed to assess knowledge and attitudes towards CPR in the community.

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Cardiopulmonary resuscitation (CPR) is a lifesaving technique which is useful in many emergencies. Cardiopulmonary resuscitation is essential in cases of suffocation, near-drowning, electrocution injuries, heart attacks, or any other situation in which a person's breathing or heartbeat has stopped. This involves a combination of rescue breathing and chest compressions, which keep oxygenated blood flowing to the brain and other vital organs until more definitive medical treatment can restore a normal heart rhythm. When the heart stops, the absence of oxygenated blood can cause irreparable brain damage in only a few minutes. Death will occur within 10 minutes.<sup>1</sup> Time is critical when helping a person in cardiopulmonary arrest. The earlier CPR is performed, the greater the chance of a successful resuscitation. Cardiopulmonary resuscitation is one link in what the American Heart Association calls the "chain of survival".<sup>2</sup> The chain of survival is a series of actions that, when performed in sequence, will double a cardiac arrest victims' chance of survival.<sup>3</sup> Modern CPR was developed in the late 1950's and early 1960's. The discoverers of mouth-to-mouth ventilation were Elam and Safar.<sup>4</sup> Later, Kouwenhoven et al<sup>5</sup> discovered the benefits of chest compressions. Finally, both techniques were combined to formulate CPR similar to the way it is practiced today.

According to the World Health Organization's 2006 figures, heart disease is the number one killer in the Kingdom of Saudi Arabia. Each year, approximately 25,000 Saudis die from heart attack.<sup>6</sup> Furthermore, up to 80% of all cardiac arrests occur at home,<sup>7</sup> thus, one is likely to perform CPR on a family member. To date, the majority of studies concerning the knowledge and awareness of CPR have been carried out in the developed world. A 2004 study in New Zealand found that among 400 subjects, 74% had previously been taught CPR. Of those surveyed, 73% desired to know more about resuscitation (than they currently did). In addition, 70% thought that resuscitation should be a compulsory component of the New Zealand Driver's License tests.<sup>8</sup> Another 2006 United States study found that among 868 cardiac arrests, 54.1% of bystanders had been taught CPR at some time. In 21.2% of cases, the bystander immediately started CPR. Common reasons that the CPR-trained bystanders cited for not performing CPR were the following: 37.5% stated that they panicked, 9.1% perceived that they would not be able to do CPR correctly, and 1.1% thought that they would hurt the patient.<sup>9</sup> Up to our knowledge, the existence of these studies in the Arabian Peninsula is rare, considering the important role of the students in the well being of the

community. This study attempts to assess the knowledge and attitudes towards cardiopulmonary resuscitation among the students of King Saud University.

**Method.** The study was a cross-sectional survey among male and female King Saud University students, which took place on campus between the 17th and 20th of December, 2006. The students were selected based on the criteria including young age and likelihood to be exposed to situations where CPR is required. A pre-designed, systematic, anonymous 18-item questionnaire was prepared in Arabic (**Appendix 1**) and supported by a graphical presentation of CPR performance to collect the required data. Before filling the questionnaire, the purpose of the study was explained. Verbal consent was obtained from all students included in the study. The inclusion criteria were male and female King Saud University students enrolled in all the colleges within the university. There were no exclusion criteria. The questionnaires were distributed to the following colleges; Medicine, Dentistry, Pharmacy, Applied Medical Sciences, Nursing, Engineering, Architecture and Planning, Sciences, Computer Sciences, Administrative Sciences, Arts, Education, Languages, Food and Agriculture, and Community College. The questionnaires inquired about personal information, knowledge of CPR, sources of this knowledge, skills, interest in CPR, and reasons behind lack of it. It also included hypothetical questions and suggestions for proper means to increase community awareness of CPR. Two thousand seven hundred copies were randomly distributed among the colleges (2513) were collected giving a response rate of 93%. Due to incomplete or ambiguous answers (263) questionnaires were omitted from tabulation and analysis giving a final total of 2250 responses.

After completion of data collection, it was reviewed, organized, tabulated, and statistically analyzed using Statistical Package for Social Sciences. Chi-square *p*-value has been used when needed. *P*-value <0.05 was considered significant.

**Results.** Out of the 2250 students surveyed, 54.6% were males and 45.4% were females. The mean age was 21.3±1.9 years. Approximately all of them were Saudis (98%). Thirty-one percent of students did not have any previous information about CPR. Regarding the persons with previous knowledge, 85% of them feel that their information is not sufficient. In total, only 10% of those surveyed feel that their knowledge of CPR is adequate. The sources of their knowledge are seen in Table 1. Out

\*The full text including Appendix is available in PDF format on Saudi Medical Journal website ([www.smj.org.sa](http://www.smj.org.sa))

**Table 1 -** Sources of CPR knowledge among King Saud University students.

Source	%
Television	24
Movies	21
Books	16
University	14
School	9
Friends	7
Internet	4
Radio	1
Other	4
CPR - cardiopulmonary resuscitation	

**Table 2 -** Students' knowledge regarding the expected survival rate when CPR is performed correctly

Expected Survival Rate	Percentage
One percent chance	5
Twenty-five percent chances	15
Seventy-five percent chances	55
Ninety percent chances	25
CPR - cardiopulmonary resuscitation	

of the entire sample, 12.7% of individuals encountered a situation that required the use of CPR. However, only 14% of them actually performed it. Lack of knowledge was the most common cause for not performing CPR (48.2%). Confusion was the reason in 15.6% of cases. Surprisingly, only 4.3% of individuals were afraid of contracting a disease. Approximately 70% of King Saud University students know the emergency medical services phone number (997). In addition, only 12.1% of all students interviewed attended a CPR training program in the past. Out of these students, 75.5% of them were in health-related colleges in which CPR training is obligatory. One third of students who attended a CPR training program did not know the correct ABC sequence. Interestingly enough, around half (55%) of students who did not attend a training program knew the correct ABC sequence, indicating the important role of other sources of information. Regarding the importance of CPR, Table 2 shows people's perspectives towards the success rate of performing CPR. The correct value is 25%.<sup>10</sup> Seventy-three percent of students said they would be willing to perform CPR on a stranger. Unfortunately, almost all those who refused did so because the victim is of the opposite gender (9.6% of males, 17.3% of females). Most importantly, 88% of students would like to learn how to perform CPR.

Out of the interviewed King Saud University students, 45% believe that CPR training should be a graduation requirement. Furthermore, 19% of students feel CPR training should be mandatory for some specialties, and 35% concurred that it should be optional. Less than one percent of students believe that CPR training is not necessary. Students were asked about the most efficient methods to increase public awareness of CPR. Approximately 45% of students recommend increasing media coverage, while 33% suggest offering free training programs. Furthermore, 21% of those interviewed recommend increasing publicity on current programs, while 10% propose increasing the number of CPR training programs.

**Discussion.** Cardiopulmonary resuscitation is a crucial live-saving skill that should be taught to all members of the community. Fortunately, most of the students of King Saud University realize the importance of this skill. However, 85% still feel that their knowledge is inadequate. This is not that far from the 73% in New Zealand.<sup>8</sup> This lack of knowledge resulted in the inability to perform CPR in about half of situations when it was required. In comparison, a US study showed that 9.1% of individuals did not perform CPR as they felt they would not be able to perform it correctly.<sup>9</sup> This indicates the need to increase people's knowledge on the topic. Disturbingly, a significant percentage of individuals do not even know the number to call in case of a medical emergency. This indicates a shortcoming on the part of these individuals, or even by the responsible authorities. Twelve percent of those surveyed had previously been taught CPR, this falls short of the 74% of individuals in a New Zealand study.<sup>8</sup> Furthermore, one third of CPR trainees did not know the correct ABC sequence indicating a problem that must be further evaluated. One quarter of individuals are opposed to perform CPR on the opposite gender. Among the sources of CPR knowledge, television and movies were the most common. This is the reason behind why half of students recommend increasing media coverage to raise public awareness of CPR. Limitations of this study include the small sample size, and the fact that it was limited to one university. Larger sample sizes and inclusion of multiple universities both governmental as well as private would offer more information.

More studies are needed to evaluate CPR and first aid knowledge in the community. Further investigation is also needed to assess the strengths and weaknesses of CPR training programs, since one third of trainees did not know the sequence of ABC. By evaluating the respondent's answers, many recommendations may be put forth to improve knowledge and attitudes towards

CPR among King Saud University students. The media may play a major role in this instance. Media outlets are the best way to reach this crucial demographic and emphasize the value of CPR, training center locations, as well as the duration of training. At the same time, they must not exaggerate the success rate of CPR as it was greatly over-estimated by the respondents. In addition, institutional involvement is a crucial element. Most students support CPR training as a university prerequisite for graduation. This is similar to the situation in New Zealand where 70% support CPR training a compulsory component of the driver's license test.<sup>8</sup> Another vital initiative would be the establishment of a CPR club in King Saud University that serves both the need of the students as well as the community. We look forward that these recommendations become a reality in the near future.

In conclusion, it was found that the overall attitude towards CPR was very positive. However, the knowledge on the topic was insufficient. Thus, more focus should be placed on the improvement of CPR skills. In addition, more studies are needed to assess knowledge and attitudes towards CPR in the community.

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## Appendix I

قسم طب الأسرة والمجتمع  
البحوث الطبية ٢٠٠٤

جامعة الملك سعود  
كلية الطب و المستشفيات الجامعية

### "دراسة مدى إلمام طلاب وطالبات جامعة الملك سعود بمهارات الإنعاش القلبي الرئوي"

- العمر : .....  
- الجنس :  ذكر  أنثى  
- الكلية : .....  
- التخصص : .....  
- المستوى : .....

الإنعاش القلبي الرئوي (Cardio-Pulmonary Resuscitation) هو أحد مهارات الإسعافات الأولية والذي يسهم- بإذن الله - في إنقاذ عدد كبير من المصابين . إن إجابتك لهذه الأسئلة بحرص ومصداقية يساهم بشكل كبير في نجاح هذه الدراسة.



- ١- هل لديك أي معلومات سابقة عن الإنعاش القلبي الرئوي (CPR) ؟  نعم  لا
  - ٢- (إذا كانت الإجابة نعم) حدد مصدر معلوماتك عن الإنعاش القلبي الرئوي ؟ **"يمكن اختيار أكثر من إجابة"**
    - قراءة (منشورات ، كتب ،...الخ)  أفلام و مسلسلات
    - من خلال المدرسة  من خلال الجامعة
    - من خلال الإنترنت  من خلال التلفزيونية
    - الراديو  معارف وأصدقاء
    - أخرى؟ حدد: .....
  - ٣- هل سبق وأن واجهت موقفاً يستدعي إجراء عملية الإنعاش لشخص ما؟  نعم  لا
  - ٤- (إذا كانت الإجابة نعم) هل قمت بإنعاشه ؟  نعم  لا ، ما هو السبب؟
    - الارتباك
    - عدم معرفة القيام بالإنعاش بشكل صحيح
    - الخوف من العدوى بالأمراض عن طريق الفم
    - أخرى؟ حدد: .....
  - ٥- هل تشعر بأن معلوماتك عن الإنعاش القلبي الرئوي كافية ؟  نعم  لا
  - ٦- في حال طلب الإسعاف ، هل تعرف الرقم الذي تتصل به ؟ **"الهلال الأحمر"**  نعم، الرقم : .....  لا
  - ٧- هل التحقت بدورة تدريبية عن الإنعاش القلبي الرئوي ؟  نعم  لا
- \*\*\* **"إذا كانت الإجابة ( لا ) انتقل للسؤال رقم ( ١١ )"** \*\*\*
- ٨- ما الذي دفعك للالتحاق بالدورة ؟
    - متطلبات عمل أو تخرج ( إجباري )
    - لغرض الفائدة ( اختياري )
    - مررت بحادثة سابقة أشعرتك بأهمية عملية الإنعاش
    - أخرى ؟ حدد : .....
  - ٩- أين حصلت على هذه الدورة ؟ - المدينة: ..... - المكان: .....
  - ١٠- متى حصلت على هذه الدورة ؟  منذ أقل من سنة  منذ ١-٣ سنوات  منذ ٣ سنوات أو أكثر

**\*\* (فضلاً أقلب الصفحة) \*\***

١١- كم تتوقع مدة الدورة التدريبية لمهارات الإنعاش القلبي الرئوي ؟

- يوم  
 أسبوع  
 شهر  
 أكثر

١٢- في حال تعرض شخص لسكتة قلبية، ماذا تفعل أولاً؟ "اختر واحدة فقط"

- اتصل بالإسعاف  
 تبدأ بإنعاش المصاب  
 تقوم بنقل المصاب لأقرب مستشفى  
 لا تفعل شيئاً

١٣- قم بترقيم الخطوات التالية (من ١ إلى ٣) حسب ترتيبها الصحيح في عملية الإنعاش ؟

- \_\_\_ القيام بعملية التنفس الاصطناعي  
 \_\_\_ الحفاظ على سلامة مجرى الهواء  
 \_\_\_ إنعاش القلب والدورة الدموية

١٤- هل لديك الرغبة لتعلم مهارات الإنعاش القلبي الرئوي ؟  نعم  لا، ما سبب رفضك ؟

- ترى أنه عديم الفائدة  
 تدع ذلك للمختصين  
 عدم وجود وقت كافي  
 أخرى ؟ حدد : .....

١٥- ما هي فرصة إنقاذ مصاب في حال تم إنعاشه بشكل صحيح- بإذن الله- ؟

- ١ %  
 ٢٥ %  
 ٧٥ %  
 ٩٠ %

١٦- إذا استدعى الأمر- هل تمنع القيام بعملية الإنعاش :-

- أحد أقرانك ؟ لماذا ؟ .....
- رجل ؟ لماذا ؟ .....
- امرأة ؟ لماذا ؟ .....
- طفل ؟ لماذا ؟ .....
- أخرى ؟ حدد: ..... لماذا ؟ .....
- لا أمانع

١٧- هل تؤيد أن تكون دورات التدريب لمهارات الإنعاش :-

- إجبارية لجميع الطلاب (متطلب تخرج) ؟  
 إجبارية لبعض التخصصات ؟  
 اختيارية ؟  
 لا أؤيد وجودها

١٨- ما هي الوسيلة المثلى- برأيك- لزيادة وعي المجتمع بأهمية الإنعاش القلبي الرئوي ؟ "اختر واحدة فقط"

- إعطاء الموضوع حقه إعلامياً  
 زيادة التوعية عن الدورات الموجودة حالياً  
 وجود دورات مجانية  
 زيادة عدد الدورات  
 أخرى ؟ حدد: .....

للاستفسار: KSU\_CPR@hotmail.com

،،، شاكرين لكم تعاونكم

Knowledge and Attitudes towards Cardiopulmonary Resuscitation among the Students of King Saud University

Age: \_\_\_\_\_

College: \_\_\_\_\_

Sex: \_\_\_\_\_

Major: \_\_\_\_\_

Nationality: \_\_\_\_\_

Level: \_\_\_\_\_

1) Do you have any information about cardiopulmonary resuscitation? (Yes / No)

2) (If yes) Indicate the source of your information about CPR:

Reading (Pamphlets, Books, Etc)

Movies or TV shows

Television documentaries

School

University

Internet

Radio

Relatives or friends

Other: \_\_\_\_\_

3) Have you ever encountered a situation that required the use of CPR? (Yes / No)

4) (If yes) did you resuscitate the person? (Yes / No)

If No, why not:

Nervousness

No knowledge about CPR

Fear of infection via mouth to mouth

Other: \_\_\_\_\_

5) Do you feel that your knowledge of CPR is sufficient: (Yes / No)

6) Do you call the number in a medical emergency (Red Crescent)?  Yes, Number: \_\_\_\_\_  No

7) Have you ever taken a CPR training course? (Yes / No)

\*If the answer was no, proceed to question 11\*

8) What encouraged you to take the course?

Work or graduation requirement (Mandatory)

Personal benefit (Optional)

Previous experience proved the importance of CPR

Other: \_\_\_\_\_

9) Where did you take the course? City: \_\_\_\_\_ Location: \_\_\_\_\_

10) When did you take the course?  Less than 1 year ago  1-3 years ago  More than 3 years ago

11) How long is the duration of a CPR training course?

One day

One week

One month

More

12) What do you do FIRST when you encounter a situation that requires CPR:

- Call for an ambulance
- Begin CPR
- Take the victim to the nearest hospital
- Nothing

13) Number the following steps of CPR in the correct sequence:

- \_\_\_ Perform artificial breathing
- \_\_\_ Maintain a patent airway
- \_\_\_ Perform compressions

14) Do you want to learn CPR? (Yes / No)

If no, why not:

- You don't find it important
- Leave it to those specialized in CPR
- You don't have enough time
- Other: \_\_\_\_\_

15) What is the chance of saving a victim when CPR is performed correctly?

- 1%
- 25%
- 75%
- 90%

16) If the situation arises, would you abstain from performing CPR to:

- |   |                                     |
|---|-------------------------------------|
| <input type="checkbox"/> Relative                               | <input type="checkbox"/> Why? _____ |
| <input type="checkbox"/> Man                                    | <input type="checkbox"/> Why? _____ |
| <input type="checkbox"/> Woman                                  | <input type="checkbox"/> Why? _____ |
| <input type="checkbox"/> Child                                  | <input type="checkbox"/> Why? _____ |
| <input type="checkbox"/> Other: _____                           | <input type="checkbox"/> Why? _____ |
| <input type="checkbox"/> I don't mind performing CPR to anyone. |                                     |

17) Do you think CPR training courses should be:

- Mandatory for all students (graduation requirement)
- Mandatory for some majors
- Optional
- Don't support implementation of training courses

18) What is the BEST method-in your opinion- to increase public awareness of the importance of CPR?

- Increased publicity
- Inform people of the training courses currently available
- Free training courses
- Increase the number of courses
- Other: \_\_\_\_\_