ORIGINAL RESEARCH

Basic life support awareness among non-medical students at King Faisal University, Al Ahsa, Saudi Arabia

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ABSTRACT

Background: The knowledge and skills about basic life support (BLS) and advanced life support are the most important determining factors of the cardiopulmonary resuscitation (CPR) success rates. Practicing simple CPR techniques as well as knowing BLS improves the chances of survival of the patient until experienced medical help can arrive. In most cases, it is sufficient for survival in itself. The study aimed to determine non-medical undergraduate students' knowledge of BLS and related skills at King Faisal University.

Methods: A descriptive cross-sectional study was conducted across King Faisal University, Al Ahsa, Saudi Arabia between October 10 and December 30, 2021. A total of 406 students from nonmedical colleges participated in the study. A validated Arabic-language questionnaire was subsequently administered, which included 10 items assessing knowledge about BLS.

Results: A total of 406 participants completed the questionnaire. The majority of participants (82.5%) had poor knowledge of the BLS. A quarter of students (25.1%) indicated that they had previously taken BLS training. Approximately (16%) of students acquired their knowledge about BLS from the internet, 7.6% from watching movies and TV shows, 16% from school subjects, 2.2% from college subjects, and 26.4% from reading.

Conclusions: BLS knowledge was very limited among non-medical colleges students. It is evident from the study that nonmedical students need better BLS training in order to respond appropriately to cardiac arrest and other emergency situations.

Key Words: Awareness, Basic life support, CPR, Non-medical students

1. INTRODUCTION

Basic life support (BLS) is a compilation of emergency techniques applied to a victim, it comprises several techniques.[1–3] Practicing simple cardiopulmonary resuscitation (CPR) techniques as well as knowing BLS improves the chances of survival of the patient until experienced medical help can arrive. In most cases, it is sufficient for survival in itself.[4,5] The majority of victims who experience an out-of-hospital cardiac arrest do not receive adequate resuscitation by health care professionals within the critical time, 3-5 min after onset, thus reducing the chance of survival.[6] It's also clear that cardiac arrests outside of hospitals lead to a high mortality rate.[7,8]

As part of BLS, airway and circulation are promptly rec-

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ognized and supported in cases of respiratory or cardiac arrest.[9, 10] This skill combines ventilation assistance with chest compression to support normal blood flow to vital organs. In most cases, simple CPR practices can keep a victim alive until the arrival of experienced medical help, and they are sufficient in themselves for keeping patients alive until they receive medical attention.[4]

CPR success is determined mainly by the proficiency level of the individual in basic and advanced life support.[11]

An individual will be able to effectively resuscitate a victim if they have sufficient knowledge and appropriate awareness of procedures and practices. The BLS concept should be known and practiced by everyone. The awareness and knowledge of BLS among the Saudi population are of major value and have been assessed earlier in a variety of sub-populations in Saudi Arabia.[12, 13]

Poor CPR knowledge and applications extend to university students; it was found that 87.9% of health students had very poor knowledge scores in BLS.[14, 15] More information is needed regarding the awareness and knowledge of BLS. Our study aimed to determine non-medical undergraduate students' knowledge of BLS and related skills at King Faisal University.

2. Materials and Methods

2.1 Study design

A descriptive cross-sectional study was conducted across King Faisal University, Al Ahsa, Saudi Arabia.

2.2 Study area/setting

The study was conducted between October 10 and December 30, 2021, with King Faisal University Students, Non-Medical colleges.

2.3 Study subjects

The minimum sample size for this investigation was 400 when the proportion of awareness was taken to be 50% and the relative precision was 5%. The minimum sample size increased to 440 by adding 10% non-respondents. All levels of each college in the randomly selected class groups were included in the selection of subjects from all colleges.

2.4 Ethical considerations

The Institutional Review Board (IRB) of King Faisal University "Number: KFU-REC-2021-OCT-EA00042" approved this study on October 5, 2021. A letter of informed participation, summarizing the aims and objectives of the project, was given as well as the administered questionnaire. Participants were given the option to participate or not in this study. confidentiality agreement and an anonymity policy ensured that participants' privacy and confidentiality were protected.

2.5 Data collection methods, instruments used, measurements

In order to evaluate levels of awareness, practical knowledge, and attitudes about BLS, a structured questionnaire was used. A review and analysis of previous surveys and studies of basic life support helped build the item pool of the questionnaire. Aside from the previous BLS experience and training, the skills and attitude toward BLS were also evaluated. Respondents completed a structured and pretested questionnaire administered by an interviewer. Prior to answering the questionnaire, all participants agreed to participate. A total of 40 students pretested the questionnaires. Two experts also reviewed the questionnaire to ensure its reliability. A validated Arabic-language questionnaire was subsequently administered, which included 10 items assessing knowledge and attitudes about BLS. The questionnaire contains two parts. The first part is about demographic data including age, college level, gender, and nationality. The second part contains questions aimed to assess knowledge and practices related to BLS with total items of 10 questions.

2.6 Data management and analysis

SPSS version 22 was used to analyze the results. Analysis of variance was used to examine the associations between these variables and awareness of BLS between participants. Results are shown in tables. A p-value less than .05 is considered significant.

3. Results

Table 1 shows the demographics of the participants. A total of 406 participants ended the questionnaire, of them 177 (43.6%) were males and 229 (56.4%) were females. Nearly half of the participants 214 (52.7%) were 20 or less years of age. There were 117 (28.8%) and 96 (23.6%) participants in their first and third year of college, respectively.

Table 2 shows participants' knowledge of BLS. Nearly one-third 110 (27.1%) of the participants knew nothing about BLS. Approximately 102 (25.1%) students indicated that they had previously received BLS training.

Approximately 65 (16%) students acquired their knowledge about BLS from the internet, 31 (7.6%) from watching movies and TV series, 65 (16%) from school subjects, 9 (2.2%) from college subjects, and 107 (26.4%) from reading. Additionally, about 135 students (33.3%) recognize correctly the first action when they see someone faint.

Table 1. Demographic characters of participants

Item	Frequency	Percent (%)
Gender		
Male	177	43.6
Female	229	56.4
Age		
20 or less	214	52.7
21 and more	192	47.3
College/Study Level		
First Year	117	28.8
Second-year	73	18.0
Third-year	96	23.6
Fourth year	65	16.0
Fifth-year	55	13.5
College		
Business Administration	79	19.5
Applied College	1	.2
Computing and Information	63	15.5
Agricultural Sciences	51	12.6
Arts	48	11.8
Preparatory year	20	4.9
Education	6	1.5
Law	4	1.0
Sciences	87	21.4
Engineering	47	11.6
Nationality		
Saudi	396	97.5
Nonsaudi	10	2.5

Near to two-thirds 280 (69%) of the students knew the first step of performing CPR correctly as opening the airway (head tilt chin lift). On the other hand, 80 (19.7%) students will begin with chest compression, while 35 (8.6%) of the participants do not know what to do. The correct place for compression is known by 87 (21.4) of the students. The correct ratio of chest compressions to oral breath in adult CPR was known by 52 (12.8%) respondents only. There were 196 (32.6%) respondents who knew that two hands should be used when compressing an adult chest. A total of 244 (40.5%) of the respondents knew that when compressing an infant's chest, two fingers should be used. There were only 87 (21.4%) respondents who correctly identified the correct location for chest compressions.

Table 3 shows the level of participants' knowledge about BLS. According to the results, only two students answered all questions correctly, while 57 (14%) had no correct answers.

Table 4 shows participants' overall knowledge level of the BLS. The mean value of the corrected answers was 2.22 ± 1.404. Three hundred and thirty-five (82.5%) of the participants had poor knowledge about BLS.

Table 2. Study participnts' knowledge of BLS

Item	Frequency	Percent
Do you have any prior knowledge of Basic Life Support?		
Yes	296	72.9
No	110	27.1
Source of your information		
The previous answer is no	110	27.1
Movies and series, Internet	14	3.4
Movies and series only	31	7.6
Internet	65	16
Reading	107	26.4
College subject	9	2.2
School subject or school activity	65	16
From friends	5	1.2
Have you taken a BLS course?		
Yes	102	25.1
No	304	74.9
When did you get this course?		
The previous answer is no	304	74.9
Since a year	26	6.4
less than 2 years ago	23	5.7
More than two years ago	53	13
If someone has a fainting attack, what do you do?		
Don't know	18	4.4
Call for emergency	86	21.2
Call him by his name or pat him on the shoulder	135	33.3
Transfer the patient to the nearest hospital	34	8.4
Begin resuscitation of the casualty	133	32.8
When performing the CPR, what will you start with?		
Giving breath orally	11	2.7
Chest compression	80	19.7
Opening the airway (head tilt chin lift)	280	69.0
Don't know	35	8.6
What is the ratio of chest compressions to oral breath in adult CPR?		
15 compression to 1 breathing	50	12.3
15 compression to 2 breathing	110	27.1
30 compression to 1 breathing	35	8.6
30 compression to 2 breathing	52	12.8
Don't know	159	39.2
We use during chest compressions for infants		
One finger	14	2.3
Two fingers	244	40.5
Don't know	70	11.6
One-hand	29	4.8
Two hands	49	8.1
We use during chest compressions for adults		
One finger	12	2.0
Two fingers	105	17.4
One-hand	54	9.0
Two hands	196	32.6
Don't know	39	6.5
Place "area" of compressions		
On the fifth and six rips	64	15.8
On the lower part of the sternum	87	21.4
On the sixth and seventh rips	15	3.7
Don't know	240	59.1

Table 5 illustrates the association between demographics and BLS knowledge of the study participants. The Source of information and the training course the student attended correlated significantly with knowledge score, whereas the college of the participants nor study level did not correlate.

Table 3. Participants' Knowledge Level about BLS

Item	Frequency	Percent (%)
SUM		
0	57	14.0
1	68	16.7
2	105	25.9
3	105	25.9
4	47	11.6
5	22	5.4
6	2	0.5

Table 4. Participants' total knowledge score about BLS

Knowledge score		N = 406
Total score	Range	(0-6out of 6)
	Mean ± SD	2.22 ± 1.404
Knowledge degree	Good (50%-100%)	71 (17.5%)
	Poor (< 50%)	335 (82.5%)

Table 5. Association between demographics of the studied participants and knowledge of BLS

Demographic data and total knowledge score		
	Chi-Square	PV
Source of information	.093	.001**
Training Courses	.481	.000**
College	.012	.816
College/Study Level	-.006	.900

** $p < .01$

4. Discussion

The study examined non-medical undergraduate students' knowledge of BLS and related skills at King Faisal University. Resuscitation "is the action of saving life or consciousness of one apparently dead".[16] Optimizing all the steps required to improve outcomes is the primary objective of cardiac arrest management.[17]

Three hundred and thirty-five (82.5%) of the participants had poor knowledge about BLS. The mean value of the corrected answers was 2.22 ± 1.404. Similar to another study conducted by a Saudi faculty at a women's university in Saudi Arabia to evaluate BLS knowledge, 87.9% of the participants had very low knowledge scores in BLS.[15]

The lack of structured training courses in first aid in universities and non-medical colleges can be attributed to the poor BLS and CPR knowledge in our study.

In a study in Jazan University, they found that the overall knowledge of BLS/CPR training among Jazan University students is not sufficient enough and needs major improvements to save lives in the near future.[2]

As perceived by participants, there was a lack of knowledge about BLS in our study. A total of 27.1% of participants did not have any prior information about BLS. These results are similar to the results of Alanazi A. et al, who found that more than 40% had low prior knowledge about CPR.[18] Another study carried out in Taif, SA, found that the mean participants scored 64.8% for first aid knowledge.[19] According to Al Harbi et al., 54.8% of respondents did not know about BLS.[20]

These results may be interpreted as a lack of interest to know and inadequate knowledge about the importance of the topic.

With regards to the source of information, it was clear that they selected a non-suitable source. The participants (7.6%) gained knowledge about BLS from watching movies and TV series. In terms of the percentage of students who took BLS courses, 25.1% are reported to have done so.

It is likely that poor attendance to BLS classes in our population can be attributed to various factors, but the main one may be the students' lack of awareness of the importance of BLS/CPR. Students in non-medical colleges may not realize well the value of this life-keeping measure.

In the present study, the source of information and the training course the student attended correlated significantly with knowledge score, whereas the college level of the participants did not correlate. The association of BLS course attendance with high scores is estimated presuming students become more informed of BLS as they took the training courses, while correlating with the source of information may be explained by the high percentage for the source of information is come from reading books.

5. Conclusion

In conclusion, our study found that the knowledge level of BLS is lower than average representing the value of training courses at all non-medical university colleges. The present study exposed the understanding and familiarity of BLS/CPR and attitude towards BLS training of the students of non-medical colleges at King Faisal University, Saudi Arabia. The results indicate that the overall knowledge of BLS/CPR training among non-medical colleges at King Faisal University students is not adequate and needs significant improvements in order to save lives.

5.1 Recommendation

From the findings, we recommended a mandatory introductory course of BLS/CPR including first-aid must be introduced for the non-medical students in the first year.

5.2 Data availability

The entire data set is available without restriction.

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CONFLICTS OF INTEREST DISCLOSURE

This study was conducted without any conflict of interest.

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