

Knowledge and attitude of basic life support skills among female school teacher in Al-Madinah, Saudi Arabia

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ABSTRACT

Background and Objectives: Basic life support (BLS) is the care provided by first responders in case of cardiac or respiratory arrest in order to save someone's life. This study aimed to assess the knowledge and attitude of BLS skills among female school teachers in Al-Madinah. **Materials and Methods:** This cross-sectional study was conducted among 302 female teachers in 24 governmental school Al-Madinah city in 2019 by using a self-administrated questionnaire. T-test and ANOVA test were used to compare mean knowledge scale across variables. **Results:** The majority aged 41–50 years (46%). Only 30.5% had completed cardiopulmonary resuscitation (CPR) training and 73.9% had trained more than 2 years ago. Most of them (94.7%) wanted more training in CPR. The main reason to attend CPR training was to avoid unnecessary death (48.7%). The mean knowledge scale was (5.63 ± 1.49) . There was a significant difference in the knowledge score between those who had observed CPR and those who had not observed CPR ($P = 0.045$). **Conclusion:** The knowledge and skills of BLS were low among female school teachers. Teachers' attitude toward CPR training was positive.

Keywords: Basic life support, cardiopulmonary resuscitation, teachers

Introduction

American Heart Association (AHA) defines basic life support (BLS) as the care provided by first-responders in case of cardiac or respiratory arrest in order to save someone's life.^[1] The main caregivers for school students are teachers as they are the first-responders in case of emergency events in schools. If cardiopulmonary resuscitation (CPR) and defibrillation are done in effective maneuver, the survival rate can reach 50%.^[1-4] In the United States, nearly half of out-of-hospital cardiac arrests (OHCA) are witnessed and 92% of them die which indicates the need for BLS training among non-health professionals particularly school graduation.^[5,6] In Saudi Arabia,

cardiovascular diseases (CVDs) including heart attacks and strokes are the cause of 14% and 11% of deaths in 2010.^[7] Previous studies among school teachers, community member and university students in Saudi Arabia showed inadequate knowledge of BLS and a positive attitude toward training in BLS courses.^[8-13] International studies among school teachers found the same results.^[14-17] Increasing the percentage of the population trained in CPR is an integral part of an overall strategy to improve community response to OHCA.^[17] In schools, teachers are the primary people who can help the students and perform first aid on them, so that they can prevent complications and unnecessary death. BLS is not mandatory in Saudi Arabia for school teachers and hence they probably lack good knowledge and practical skills which result in either delay recognition of the victim's situation or lack of CPR skills in aim to save someone's life. This study aimed to assess the knowledge and attitude of BLS skills among female school teachers in Al-Madinah, Saudi Arabia.

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Methods

This descriptive cross-sectional study was conducted among female governmental school teachers in Al-Madinah city during the year 2019. Al-Madinah city is located in the northwestern region of Saudi Arabia with a total number of female school teachers 11,204 and 536 female governmental schools including elementary, intermediate, and secondary levels.^[18] A multistage sampling technique was used by dividing Madinah into four sectors and by selecting four schools randomly from each sector (two primary, two secondary, and two elementary schools). From the 24 selected schools, all-female teachers were approached. Male governmental school teachers and private school teachers were excluded.

A validated and self-administered Arabic questionnaire was used in this study.^[8] The questionnaire included five parts. The first part included questions about sociodemographic data and previous training states. The second part included 10 questions about the knowledge and skill of BLS. The third part included eight questions to assess attitudes to learn and practice CPR. The fourth part included questions about the barriers to perform CPR. The last part assessed the resuscitation experience in BLS. A pilot study was conducted among 20 teachers to assess the feasibility and understandability of the questionnaire.

Data were analyzed by using the SPSS software version 23. Categorical variables were described by frequency and percentage while continuous variables were described by mean \pm SD. For the knowledge and skills questions, the true response was given 1 and the wrong 0. The 10 questions were summed to obtain a total knowledge score. A normality test was conducted and showed that the total knowledge scale was normally distributed t-test and ANOVA test was used to compare mean knowledge scale across variables. The accepted level of significance was below 0.05 ($P < 0.05$).

Ethical consideration

The study was approved by the ethical committee of the institutional review board in Al-Madinah, Saudi Arabia (Reference number: IRB-290). The objectives and benefits of the study were explained to the participants. Participants' confidentiality and anonymity were assured. Signed consent was obtained from those who agreed to participate. The date was at 31/3/2019.

Results

A total of 302 out of 370 teachers returned the complete questionnaire, with a response rate of 81.6%. All participants were Saudi and the majority aged 41–50 years (46%). About 36.4% were high school teachers, 34.8% were elementary school, and 28.8% were intermediate school teachers. Only 30.5% had completed CPR training. Most of those who had training, had it more than 2 years ago (73.9%) and 39.1% of them were trained inside the schools [Table 1]. The mean (SD) knowledge scale

was 5.63 (1.49). The questions with the highest proportion of correct responses were “the emergency phone number” (75.8%), “what to do if victim is breathing but not response to verbal stimuli” (73.8%), and “respondent kneels next to victim’s torso during CPR” (72.5%). Questions with the lowest proportion of correct responses were “who is allowed to use an AED” (8.3%), “depth and fast of chest compressions” (13.6%), and “the purpose of AED use” (16.6%) [Table 2]. The main reasons mentioned for no previous CPR training were “not sure where

Table 1: Demographic characteristics and basic life support training among female school teachers in Al-Madinah, Saudi Arabia (n=302)

Variables	n (%)
Age	
21-30	11 (3.6)
31-40	112 (37.1)
41-50	139 (46)
51-60	40 (13.2)
Grade	
Elementary	105 (34.8)
Intermediate	87 (28.8)
High school	110 (36.4)
Previous CPR training	
Yes	110 (30.5)
No	210 (69.5)
Where took the CPR training	
Inside school	36 (39.1)
Red crescent	16 (17.4)
Private organization	4 (4.3)
Work	17 (18.5)
Other	19 (20.7)
When took the CPR training	
Between 0 and 6 months	8 (8.7)
Between 7 and 12 months	10 (10.9)
Between 13 and 24 months	6 (6.5)
More than 2 years	68 (73.9)

Table 2: Knowledge and skills regarding basic life support among female school teachers in Al-Madinah, Saudi Arabia (n=302)

Questions	Correct response n (%)	Incorrect response n (%)
Correct emergency phone number	229 (75.8)	73 (24.2)
What to do in an apparently lifeless adult person	165 (54.6)	137 (45.4)
The patient is breathing but shows no response to verbal stimuli	223 (73.8)	79 (26.2)
Combinations of chest compressions and ventilations	94 (31.1)	208 (68.9)
Deep and fast of chest compressions	41 (13.6)	261 (86.4)
Purpose of an AED	50 (16.6)	252 (83.4)
Who is allowed to use an AED?	25 (8.3)	277 (91.7)
Does the respondent kneel next to the torso?	219 (72.5)	83 (27.5)
Hand-placement on the torso	207 (68.5)	95 (31.5)
Chest compression frequency	64 (21.2)	238 (78.8)

to attend a course (42.2%)” and “little time” (36.1%). The majority of the teachers (94.7%) wanted more training in CPR and 94% wanted to take a free CPR course. The main reason that encouraged participants to attend CPR training was to “avoiding unnecessary death” (48.7%). In the opinion of the participants, the main reason that makes people afraid to apply BLS was the lack of proper knowledge and skills (57.6%) [Table 3]. There is a significant difference in knowledge score between those who had CPR observation (5.42 ± 1.45) and those who did not observe CPR (5.77 ± 1.51) ($P = 0.045$) There is no significant association between in knowledge score and other variables [Table 4].

There is a significant difference in knowledge score between those who had CPR observation (5.42 ± 1.45) and those who did not observe CPR (5.77 ± 1.51) ($P = 0.045$) [Table 5].

Table 3: Basic life support training attitude among female school teachers in Al-Madinah, Saudi Arabia (n=302)

Variables	n (%)
Reasons for no previous CPR training	
Little interest	3 (1)
Little time	109 (36.1)
Not sure where to attend course	128 (42.4)
Costs	6 (2)
No answer	56 (18.5)
Reasons people are afraid to apply BLS to victim	
Afraid of contagious diseases through mouth to mouth breath	33 (10.9)
Causing potential harm to the person in need	51 (16.9)
Afraid of legal consequences	28 (9.3)
Emotional factors	16 (5.3)
Lack of proper knowledge and skills	174 (57.6)
Do you want more training?	
Yes	286 (94.7)
No	16 (5.3)
Reason for more CPR training	
Heart disease within the family	17 (95.6)
Wish of avoiding unnecessary death	147 (48.7)
Other reason	98 (32.5)
No answer	40 (13.2)
Willing to take a free CPR course	
Yes	284 (94)
No	18 (6)
Do you think CPR training should be mandatory?	
Yes, at school	125 (41.4)
Yes, to obtain the driving license	20 (6.6)
Yes, training should be mandatory in every job	85 (28.1)
No, CPR training should be optional	72 (23.8)
Is CPR already part of the educational curriculum?	
Yes	125 (41.4)
No	177 (58.6)
CPR training should be a requirement to receive teacher certification	
Yes	85 (28.1)
No	217 (71.9)
Do you think each school should have AED?	
Yes	212 (70.2)
No	90 (29.8)

Discussion

This study revealed that knowledge and skills of BLS among female school teachers are inadequate. This finding is similar to that reported in previous studies from Saudi Arabia and Palestine.^[8,13,19]

Post cardiac arrest survival depends on the quality of CPR and rapid defibrillation.^[20] Our assessment showed that almost two-thirds of respondents had low knowledge regarding CPR skills and AED use. AED is a life-saving device act to restore normal heart rhythm, that can be used by trained non-healthcare professionals as CPR courses include instructions about AED use.^[2] Thus, OHCA survival will improve more with a combination of CPR and AED than performing CPR alone.^[21]

Studies found that the majority of teachers had no previous CPR training, although no significant difference in BLS knowledge and skills were found among those who had CPR training and those who have not. This finding could be explained by the fact that most of them had training more than 2 years ago.^[8,13] Moreover, a previous study found that a regular period of CPR training was necessary to refresh knowledge and skills, and this also could be achieved through the implementation of BLS courses in the educational curriculum and by making it mandatory for teachers' certification.^[22] Previous studies on teachers before and after BLS training found an improvement in BLS sequence and quality of chest compression after training.^[16,23]

Participants in this study did not attend CPR training because they were not sure about the place of the CPR courses. The same reason was reported in previous studies.^[8,19] This issue highlights the need for an adequate number of BLS training

Table 4: Association between sociodemographic characteristics, knowledge, and skills assessment among female school teachers in Al-Madinah, Saudi Arabia

Variables	Mean Score	Standard deviation	P
Age			
21-30	5.63	± 1.56	0.41
31-40	5.42	± 1.54	
41-50	5.69	± 1.47	
51-60	6.02	± 1.36	
Place of CPR training			
Inside school	5.41	± 1.44	0.25
Red crescent	5.56	± 1.26	
Private organization	4.75	± 1.7	
Other workplace	5.17	± 1.74	
Others	5.57	± 2.03	
When Took the CPR training			
Between 0 and 6 months	4.83	± 1.02	0.52
Between 7 and 12 months	6.0	± 1.41	
Between 13 and 24 months	5.80	± 1.3	
More than 2 years	5.38	± 1.71	

Table 5: Association between training, experience, knowledge, and skills assessment among female school teachers in Al-Madinah, Saudi Arabia (n=302)

Variables	Mean score	Standard deviation	P
Previous CPR training			
Yes	5.40	± 1.59	0.081
No	5.74	± 1.44	
Observe CPR skill on victim			
Yes	5.42	± 1.45	0.045
No	5.77	± 1.51	
Participate in CPR			
Yes	5.00	± 1.41	0.179
No	5.66	± 1.49	

centers. Financial factors were the main barrier to take CPR courses in the United States.^[17]

Most teachers in this study want to learn CPR skills and the main reason for learning was to avoid unnecessary death. Similar findings were reported in the previous studies.^[8,15] Nearly half of the participants had observed CPR on victims in this study, which is higher than that reported in the previous study.^[8]

In conclusion, the knowledge and skills of BLS were low among female school teachers. Teachers' attitude toward CPR training was positive. BLS training should be mandatory for every citizen, especially for teachers' certification as they are responsible for school students. BLS training centers should be conducted for teachers by a trained health care professional to achieve high-quality training. Regular BLS training should be mandatory to gain the required skills.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

References

- Kleinman ME, Brennan EE, Goldberger ZD, Swor RA, Terry M, Bobrow BJ, *et al.* Part 5: Adult basic life support and cardiopulmonary resuscitation quality: 2015 American Heart Association guidelines update for cardiopulmonary resuscitation and emergency cardiovascular care. *Circulation* 2015;132 (18 Suppl 2):S414-435.
- Mao RD, Ong ME. Public access defibrillation: Improving accessibility and outcomes. *Br Med Bull* 2016;118:25-32.
- Hasselqvist-Ax I, Riva G, Herlitz J, Rosenqvist M, Hollenberg J, Nordberg P, *et al.* Early cardiopulmonary resuscitation in out-of-hospital cardiac arrest. *N Engl J Med* 2015;372:2307-15.
- Berger S. Survival from out-of-hospital cardiac arrest: Are we beginning to see progress? *J Am Heart Assoc* 2017;6:1-3.
- McNally B, Robb R, Mehta M, Vellano K, Valderrama AL, Yoon PW, *et al.* Out-of-hospital cardiac arrest surveillance—cardiac arrest registry to enhance survival (CARES), United States, October 1, 2005-December 31, 2010. *MMWR Surveill Summ* 2011;60:1-9.
- Cave DM, Aufderheide TP, Beeson J, Ellison A, Gregory A, Hazinski MF, *et al.* Importance and implementation of training in cardiopulmonary resuscitation and automated external defibrillation in schools: A science advisory from the American Heart Association. *Circulation* 2011;123:691-706.
- Mokdad AH. Global non-communicable disease prevention: Building on success by addressing an emerging health need in developing countries. *J Health Spec* 2016;4:92-104.
- Al Enizi BA, Saquib N, Zaghoul MS, Alaboud MS, Shahid MS, Saquib J. Knowledge and attitudes about basic life support among secondary school teachers in Al-Qassim, Saudi Arabia. *Int J Health Sci* 2016;10:415-22.
- Al-Turkistani HK. Awareness and knowledge of pediatric cardio-pulmonary resuscitation in the community of Al-Khobar city. *J Family Community Med* 2014;21:125-9.
- Owaid Alsharari A, Alduraywish A, Ali Al-Zarea E, Ibrahim Salmon N, Sheikh A, Sayed M. Current status of knowledge about cardiopulmonary resuscitation among the university students in the northern region of Saudi Arabia. *Cardiol Res Pract* 2018;2018:1-9.
- AlYahya IA, Almohsen HA, AlSaleem IA, Al-Hamid MM, Arafah AM, Al Turki YA, *et al.* Assessment of knowledge, attitude, and practice about first aid among male school teachers and administrators in Riyadh, Saudi Arabia. *J Family Prim Care* 2019;8:684-8.
- Alsayil SN, Alzahrani SM, Alhawiti WM. Awareness of basic life support among medical and nursing students at Tabuk University. *Basic Res J Med Clin Sci* 2016;5:53-7.
- Alharbi MM, Horaib YF, Almutairi OM, Alsuaidean BH, Alghoraibi MS, Alhadeedi FH, Alrowithi AS. Exploring the extent of knowledge of CPR skills among school teachers in Riyadh, KSA. *J Taibah Univ Med Sci* 2016;11:497-501.
- Patsaki A, Pantazopoulos I, Dontas I, Passali C, Papadimitriou L, Xanthos T. Evaluation of Greek high school teachers' knowledge in basic life support, automated external defibrillation, and foreign body airway obstruction: Implications for nursing interventions. *J Emerg Nurs* 2012;38:176-81.
- Mpotos N, Vekeman E, Monsieurs K, Derese A, Valcke M. Knowledge and willingness to teach cardiopulmonary resuscitation: A survey amongst 4273 teachers. *Resuscitation* 2013;84:496-500.
- López MP, Martínez-Isasi S, Barcala-Furelos R, Fernández-Méndez F, Santamariña DV, Sánchez-Santos L, *et al.* A first step to teaching basic life support in schools: Training the teachers. *An Pediatr (English Edition)* 2018;89:265-71.
- Sasson C, Haukoos JS, Bond C, Rabe M, Colbert SH, King R,

- et al.* Barriers and facilitators to learning and performing cardiopulmonary resuscitation in neighborhoods with low bystander cardiopulmonary resuscitation prevalence and high rates of cardiac arrest in Columbus, OH. *Circ Cardiovasc Qual Outcomes* 2013;6:550-8.
18. Ministry of Education, Saudi Arabia. Available from: <https://www.moe.gov.sa/ar/Pages/StatisticalInformation.aspx>. [Cited 2020 Jan].
 19. Ghrayeb FA, Amro NR, Rahseed O, Yagi H, Amro R, Amro B. Knowledge and attitude of basic life support (BLS) among school teachers in Hebron, Palestine. *Int J Res Med Sci* 2017;5:2477-82.
 20. O'Connor M, Cattlin CS. Cardiopulmonary resuscitation and post-resuscitation care. *Anaesth Intensive Care Med* 2018;19:629-33.
 21. Fordyce CB, Hansen CM, Kragholm K, Dupre ME, Jollis JG, Roettig ML, *et al.* Association of public health initiatives with outcomes for out-of-hospital cardiac arrest at home and in public locations. *JAMA Cardiol* 2017;2:1226-35.
 22. Nori JM, Saghafinia M, Motamedi MK, Hosseini SK. CPR training for nurses: How often is it necessary? *Iran Red Crescent Med J* 2012;14:104-7.
 23. Khademian Z, Hajinasab Z, Mansouri P. The effect of basic CPR training on adults' knowledge and performance in rural areas of Iran: A quasi-experimental study. *Open Access Emerg Med* 2020;12:27-34.