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

Amal S. Alhejaili¹, Riyadh A. Alghamdi¹, Sami A. R. Al-Dubai¹,²

¹Joint Program of Family Medicine Postgraduate Studies, Al-Madinah, ²Joint Program of Preventive Medicine Post Graduate Studies, Al-Madinah, Saudi Arabia

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-administered 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%.[2–4] 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.

Address for correspondence: Dr. Amal S. Alhejaili, Joint Program of Family Medicine Postgraduate Studies, Al-Madinah—42315, Saudi Arabia. E-mail: amalsalem.tu@gmail.com

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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. 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. 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 ± 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. A 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. was obtained. 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 to take CPR training” (219 (72.5%)), “between 13 and 24 months” (223 (73.8%)), “who is allowed to use an AED” (94 (31.1%))

| Variables | n (%) |
|-----------|-------|
| Age       |       |
| 21-30     | 11 (3.6) |
| 31-40     | 112 (37.1) |
| 41-50     | 143 (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 (36.5) |
| 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 1: Demographic characteristics and basic life support training 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 obversion (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 obversion (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 (5.6) |
| 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) |
| No, 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.\[8,15,19\]

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.\[21\] 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 | |
| Red crescent | 5.56 | ± 1.26 | 0.25 |
| 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 | |
| Between 7 and 12 months | 6.0 | ± 1.41 | 0.52 |
| Between 13 and 24 months | 5.80 | ± 1.3 | |
| More than 2 years | 5.38 | ± 1.71 | |
centers. Financial factors were the main barrier to take CPR courses in the United States.\(^6\)

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.

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