Knowledge and Attitudes about Basic Life Support among Secondary School Teachers in Al-Qassim, Saudi Arabia

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Abstract

Objective: Despite the strong evidence that basic life support including cardiopulmonary resuscitation (CPR) improves survival rates after cardiac events, the awareness and training among citizens of Saudi Arabia is low. The study objective was to determine the current level of knowledge and CPR-skills among secondary school teachers. The second objective was to assess their attitudes and willingness to participate in regular CPR training.

Method: A cross-sectional study was conducted in the secondary schools in Al-Qassim region in 2015. Thirty of 99 schools were randomly selected; ten teachers from each school were enrolled. Teachers completed the questionnaire. T-tests were used to examine whether participants with either previous CPR training or previous resuscitation experiences had higher scores on the skills test than those without training or experience

Results: The study included 305 teachers (80% Saudi nationality); 75.4% were males and 66.5% were between the ages of 31 and 50. Among the teachers, 35.7% had completed CPR training previously; but overall, CPR knowledge and skills were low (mean =4.0, sd = 1.62). In fact, the average scores did not differ between those who had training and those who did not. The majority of teachers wanted more training (64.9%) and were willing to take a free course (78.4%).

Conclusion: In Al-Qassim, secondary school teachers lack CPR training and hence have little knowledge or skills. Teachers are willing and desire to have more CPR training available to them. Should health officials provide future training, teachers could serve the community better.

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In the event of cardiac arrest, basic life support can be effective to reduce the chance of death. According to the 2015 American Heart Association Guidelines, [1, 2] there are four links in the chain of survival: early recognition and call for help, early performance of cardiopulmonary resuscitation, early defibrillation, and post-resuscitation care. Scientific evidence suggests that survival rates can be improved significantly at each link in the chain. [3-6] For example, immediate cardiopulmonary resuscitation (CPR) can double or triple survival rates [5] and CPR plus defibrillation within five minutes can result in survival rates between 50-75%. [6] There are two critical components to successful resuscitation and reducing preventable deaths: 1) The presence of a person with knowledge to perform CPR and 2) the successful performance of CPR at the earliest possible time.

In order to increase the likelihood of having a CPR-skilled person present at the cardiac event, there must be an adequate number of people trained in the community. Studies have been conducted in Saudi Arabia to assess knowledge and attitudes toward basic life support. [7-9] These studies have assessed university students, specifically medical students, and the community members. The studies have shown that knowledge is quite low but attitudes are positive. Among student samples, around half of them scored lower than 50% on the knowledge questions [9] and in the community 80% are unaware of CPR. [8] There are no studies, to date, among teachers in Saudi Arabia; however, the international studies among teachers show on average that theoretical knowledge of basic life support is around 50%. [10] Further, international studies report that attitudes toward CPR training is positive—meaning that teachers, students, and parents all reported the willingness to participate in more training courses. [11-13]

Well-trained health professionals should be a priority; however, it would also be beneficial to have CPR-trained teachers. [14] Teachers have a special role in every community. They are educators and leaders, they are well-dispersed according to the schools, and because of their relationship to the community they are more likely to witness a cardiac event. With this rationale, we designed a study to assess the teachers in Al-Qassim, Saudi Arabia to determine their current knowledge and skills but also to assess their attitudes and willingness to participate in regular CPR training.

Methods

***Overview*:** The study had a cross-sectional research design and was conducted between February and May of 2015. The study protocol was approved by the Medical Ethical Research Committee at the Sulaiman Al-Rajhi Colleges in Al-Qassim, Saudi Arabia. The study was conducted in the secondary schools in the three most populated cities in Al-Qassim (Buraidah, Unaizah, and Bukayriyah). These three cities were selected because they comprise the majority of the population in the Qassim region; further, the rural populations may not have had equal access to CPR education. In the three cities, there are a total of 99 schools (59, 36, and 4 respectively); from which 30 schools were randomly selected. Teachers were recruited from the schools using convenience sampling. The inclusion criterion was to be a teacher in one of the chosen schools; the exclusion criteria were being any other staff in the chosen school or being a teacher from a different (not selected) school. Approximately, ten teachers from each school were enrolled into the study. The teachers signed the informed consent and then completed the questionnaire using paper and pencil. The sample included 305 men and women employed as teachers in the Saudi governmental secondary schools.

Measurements: The structured questionnaire was self-administered by the participants including demographic data, previous training and resuscitation experience, knowledge and skills of basic life support, and attitudes regarding willing to learn and teach CPR. The questionnaire was developed specifically for this study; however, many of the knowledge and skills questions were extracted from earlier validated questionnaires. [12, 15] The attitude assessment included eight questions; examples included whether teachers should be mandated to have CPR training, whether this should be linked to certification, and reasons for the previous lack of training. Our questionnaire was pre-tested on a sample of teachers; minimal changes were made after the pre-testing.

Analysis: Descriptive statistics (e.g. Frequencies & chi-square) were used to analyze the demographic and attitude-based data. A 10-point scale was computed for the knowledge and skills assessment. Each correct answer was allotted one point and the total points out of ten were computed. T-tests were used to examine whether participants with either previous CPR training or previous resuscitation experiences had higher scores than those without training or experience. Data were analyzed using SPSS, version 21.

Results

The study included 305 secondary school teachers recruited from Buraidah (63.3%), Unayzah (19.0%), and Bukayriyah (17.7%). The response rate for the questionnaire was 87% (305/350); we did not collect data on non-responders, the only reason mentioned was lack of time. The majority of the teachers were Saudi nationality (80.0%) and were male (75.4%). There were five age categories; most of the teachers were either aged 31-40 (48.5%) or 41-50 (22.0%). One-third of the sample had completed CPR training (36.7%) but many of them had done it more than two year before (42.6%). The training was obtained in various sites including school, work, and private organizations (Table 1).

Overall, the attitude toward CPR training was positive. The majority of teachers wanted more training (64.9%) and were willing to take a free course (78.4%). The reasons that they cited for wanting more training included a wish to prevent unnecessary death (40.4%), heart disease in family (17.2%), and other reasons (42.4%). Further, 78.7% reported that CPR should be mandatory for citizens and 54.1% reported should be mandatory for teachers' certification (Table 2).

Teachers performance on the knowledge and skills assessment (10 questions) was low (mean = 4.02, sd= 1.65). The question with the highest proportion of correct responses were the emergency phone number (62.6%) and should you kneel by the torso during CPR (58.4%). On the other hand, questions with the lowest proportion of correct responses were who can use the Automated External Defibrillators (AED) (17.4%) and the chest compression frequency (16.7%) (Figure 1a & 1b). To examine the effect of training, the mean skill score was compared between those with and without previous training. There were no significant differences between groups. Further, there were no significant differences in the mean skill score between those who had observed or performed CPR previously and those who had not.

Table 1. Demographic Characteristics and Basic Life Support Training among Secondary School Teachers in Al-Qassim, Saudi Arabia (n=305)

Variables	Percent (n)
Gender	
Male	75.4 (230)
Female	24.6 (75)
Age	
21-30	16.1 (49)
31-40	48.5 (148)
41-50	22.0 (67)
51-60	10.2 (31)
>61	3.3 (10)
Nationality	
Saudi	80.0 (244)
Non-Saudi	20.0 (61)
Socioeconomic status (Riyals/month)	
4000-7000	23.9 (73)
7001-10000	25.2 (77)
10001-13000	27.5 (84)
13001-16000	14.1 (43)
> 16001	9.2 (28)

City of Residence	
Buraidah	63.3 (193)
Unayzah	19.0 (58)
Bukayriyah	17.7 (54)
Previous CPR training	
Yes	36.7 (112)
No	63.3 (193)
Location of CPR training	
School	19.3 (59)
Red Cross	21.0 (64)
Private Organization	13.1 (40)
Work	15.7 (48)
Other	30.8 (94)
Time since previous CPR training	
< 6 months	16.4 (50)
7 to 12 months	18.4 (56)
13 to 24 months	22.6 (69)
> 2 years	42.6 (130)

Table 2. Attitudes toward Basic Life Support Training among Secondary School Teachers in Al-Qassim, Saudi Arabia (n=305)

Variables	Percent
Reasons for no previous training (n=189)	
Little interest	15.5 (49)
Little time	17.1 (64)
Not sure the location	36.8 (92)
Cost too much	6.2 (24)
No answer	24.3 (76)
Do you want more training?	
Yes	64.9 (198)
No	35.1 (107)
Reasons for wanting more training (n=198)	
Heart disease in family	17.2 (61)
Wish to prevent unnecessary death	40.4 (116)
Other	42.4 (128)
Willingness to take a free CPR training course	
Yes	78.4 (239)
No	21.6 (66)
Should CPR training be mandatory	
Yes –at school	37.4 (114)
Yes – to obtain driving license	16.4 (50)
Yes – on job site	24.9 (76)
No – should be optional	21.3 (65)
Should CPR training be mandatory for teachers' certification	
Yes	54.1 (165)
No	45.9 (140)
Schools should have an AED	
Yes	60.3 (184)
No	39.7 (121)

Figure 1. Knowledge and Skills Assessment among Secondary School Teachers in Al-Qassim, Saudi Arabia (n=305). 1a) Percent with Correct Responses of Individual Items, 1b) Distribution of Mean Scores.

Figure 1a

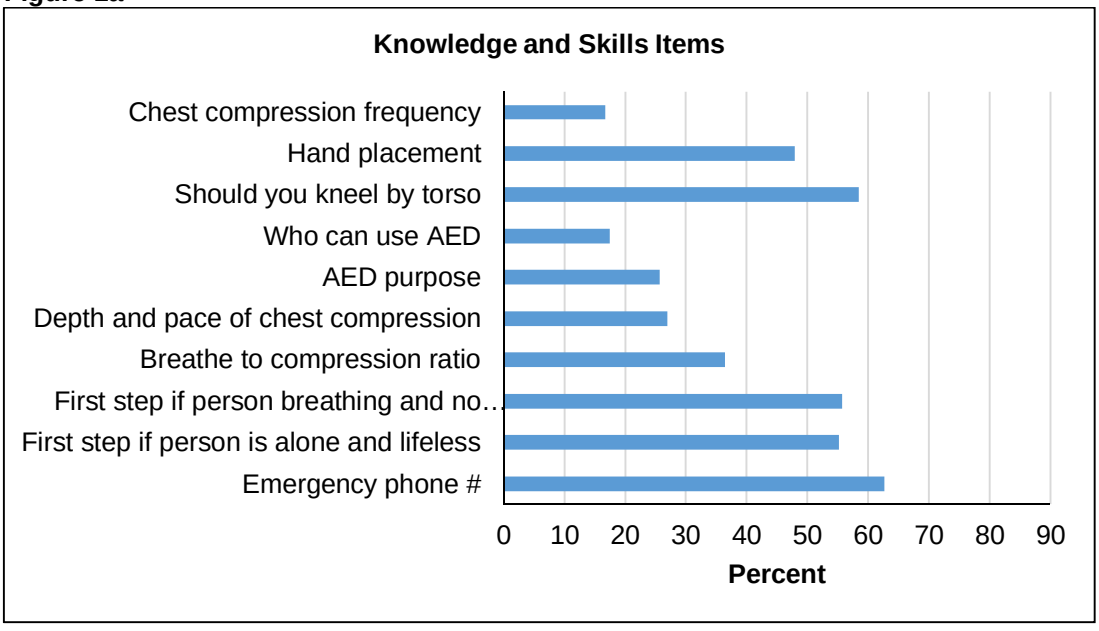

Figure 1b

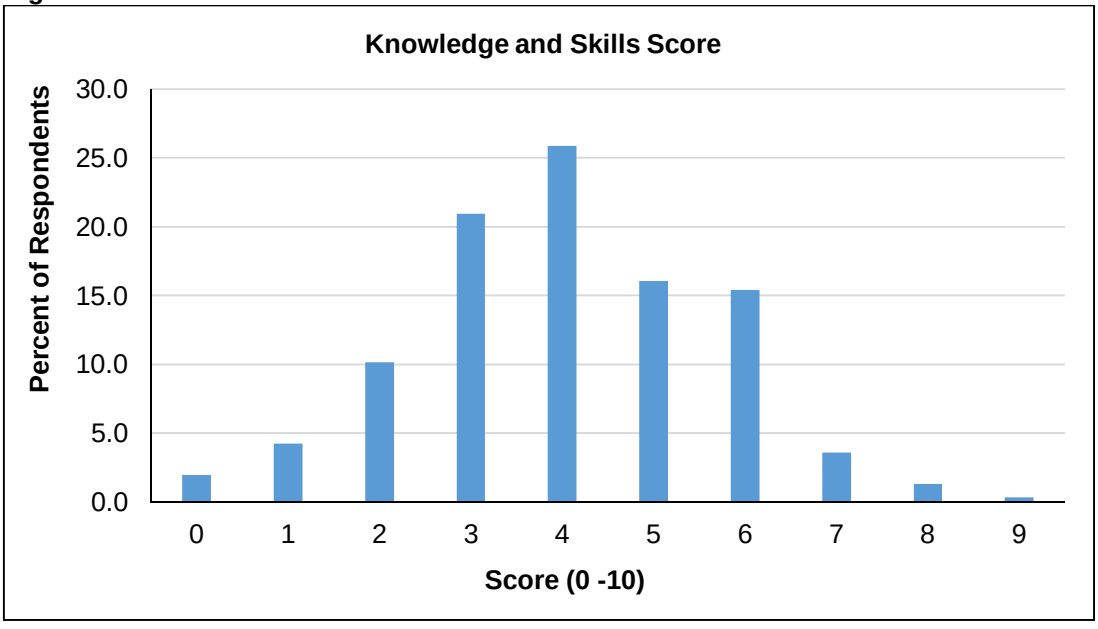

Table 3. Effect of Training and Experience on Knowledge and Skills Assessment among Secondary School Teachers in Al-Qassim, Saudi Arabia (n=305)

Variables	Mean Score (n)	p-value from T-test/Anova
Previous CPR training		0.76
Yes	4.1 (112)	
No	4.0 (193)	
Time since previous CPR training		0.27
< 6 months	4.1 (50)	
7 to 12 months	3.6 (56)	
13 to 24 months	4.0 (69)	
> 2 years	4.1 (130)	
Observed CPR performance		0.40
Yes	4.1 (144)	
No	4.0 (161)	
Performed CPR before		0.18
Yes	3.8 (88)	
No	4.1 (217)	

Discussion

The main finding of the study was that secondary school teachers have a low level of knowledge and skills regarding basic life support techniques, specifically CPR. Approximately, one-third of the sample reported having taken CPR courses; but those with training did not have higher scores than those without training. One potential explanation for the low knowledge is that the CPR training was taken more than two years prior to this study. Previous studies in Saudi Arabia have not examined knowledge among teachers but knowledge among community members and health workers was also low. [8, 9] Studies in other countries (e.g. United Kingdom & United States) support our finding that CPR knowledge among teachers is low. [12, 16, 17] The assessment tool employed in the studies was not identical but contained similar items such as knowledge of the emergency numbers as well as technique and sequence of steps while performing CPR; hence the findings are comparable. Further, our study showed that knowledge varied according to type of question; for example, there was higher knowledge on basic questions such as the emergency number and calling for help immediately while there was lower knowledge on the more technical skill questions such as the use of the AED and exact depth and frequency of compressions. It may be the case that teachers require annual or biannual courses to refresh their knowledge of the technical skills and increase their confidence to perform CPR.

Cardiac events are common and the need for resuscitation from a skilled person is necessary during such events. Since cardiovascular disease risk factors such as hypertension and obesity are increasingly prevalent in Saudi Arabia, the likelihood of cardiac events is more common. [19, 20] It is imperative to instate an adequate number and high-quality training courses to meet this need in the community. Teachers and school nurses have reported that they have had experienced life-threatening events in which CPR was necessary; [18] additionally, parental reports indicate that parents assume that all teachers have undertaken CPR training. [16] Currently, CPR training is not mandatory for teachers in Saudi Arabia and it is not part of the school curriculum. If CPR training were offered regularly to teachers, they would be well-positioned to provide CPR to those persons in need.

Studies abroad have assessed teachers' willingness to take CPR training courses, examined teachers' supported for mandatory certification, as well as evaluated the implementation of CPR training in schools. [12, 17, 21] The findings of these studies are similar to those of our study. Majority of teachers are willing to enroll in CPR training courses (>75%). In our study, more teachers supported mandatory training for the teachers' certification (54%) than compared to other studies (41%). When CPR training was introduced into the schools, in United Kingdom for example, it was very well received. [21] It has been shown that a

potential method of implementation of CPR training could be peer-teachers. [15, 22-24] For example, one set of teachers would be trained and subsequently those teachers would train other teachers; thus, reinforcing their own knowledge and skills.

The study had some limitations. The enrollment of female teachers was lower than male teachers; hence, there was imbalance in the ratio between female to male. This may have impacted the accuracy of the estimate of CPR knowledge and skills among the female teachers. The sample may have selection bias since we only selected the schools randomly but did not use any random procedure for selecting the teachers within the school. The study site selection may have limited the generalizability of the study findings; the study did not enroll schools from very small or rural areas of the Qassim region but only from the three most populated cities. Finally, this was a cross-sectional study and does not have any follow-up data.

The conclusion of the study is that secondary school teachers have a low level of knowledge and skills regarding basic life support techniques, specifically CPR. The knowledge gap could be addressed through regular training courses since the majority of teachers are interested to pursue more training for CPR.

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Disclosure of interests

The authors have no competing interests to declare.

Ethics

The Institutional Review Board at Sulaiman Al-Rajhi Colleges approved the study protocol (2014).

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