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Original Research Article

Knowledge and attitude of basic life support (BLS) among school teachers in Hebron, Palestine

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ABSTRACT

Background: Patients in all settings fully expect that they will be resuscitated if they have a cardiac arrest. It is therefore necessary to increase the number of qualified people, including school teachers and students who can play a vital role in performing basic and advanced cardiac life support at the scene of a medical emergency. Since life threatening events, such as cardiac arrest, must be responded to within six minutes, the retention of skills becomes a key concern in all urgent cases. The purpose of this study was to assess the existing knowledge of BLS among primary and secondary school teachers in Hebron, Palestine.
Methods: After approval from Institute Ethical Committee and informed consent from the participant, the present study was conducted among primary and secondary school teachers. A self-administered questionnaire based on knowledge and attitude of BLS was used to collect data.
Results: In general, only 42.5%of school teachers knew about CPR, but 57.5% had no previous information about CPR. Sources of information about CPR included television (26.5%), nurses and Drs (25.8), and the Internet (18.7%). Approximately 53% agreed that CPR training courses should be mandatory. Only 18.1% of teachers didn't know the contact numbers for emergency services.
Conclusions: This study has highlighted a critical issue that a majority of school teachers have limited knowledge about CPR. We recommend the mandatory implementation of CPR and basic life-support training for all school teachers across Palestine, and the need for incorporation of the BLS teaching into the Palestinian schools' curricula without delay.

Keywords: Attitude, Basic life support, Cardiopulmonary resuscitation, Knowledge, School teachers, Palestine

INTRODUCTION

Cardiac arrest (CA) is an immediate medical emergency situation that happens outside hospital settings in 70% of the cases and carries a high level of mortality risk.[1] Nowadays, patients in any setting expect that they will be resuscitated in the event of a cardiac arrest. Many advances have taken place over the years to ensure that these expectations are met, as well as to guarantee the overall safety of the patient. However immediate cardiopulmonary resuscitation (CPR) after collapse can double or triple survival rates. In contrast, if CPR is delayed survival chances decrease by 7-10% for every minute passing by. CPR, the first link in the chain of survival, is most effective when started immediately after a patient's collapse so that the brain does not sustain permanent injury. When the heart stops, the absence of oxygenated blood can cause irreversible brain damage

within a few minutes. Death will occur within 10 minutes. CPR involves both basic life support (BLS) and advanced cardiac life support (ACLS); if either of these actions is neglected or delayed, survival is unlikely. BLS is rapid identification of signs of cardiac arrest, stroke, foreign body airway obstruction and starting basic steps to maintain circulation and breathing.[2] It can be given by health care providers as well as bystander. Recent studies show that the survival of out-of-hospital cardiac arrest (CA) is determined by immediate cardiopulmonary resuscitation (CPR) provided by bystander if it's given in a right way well in time.

Other advanced cardiac life support skills, including intubation, intravenous access, and medication administration, must also be performed within an appropriate time frame to achieve success. These are complex skills that are taught to health care professionals in hospitals, as outlined by the American Heart Association (AHA), so that they may effectively prevent an emergency cardiac event from resulting in death.

However, it has been recommended by the American Heart Association (AHA) in 2004, to train all teachers and students on CPR, moreover, in agreement with the guidelines of the International Liaison Committee on Resuscitation (ILCOR), it has been strongly recommended to include Basic Life Support (BLS) in the school curriculum.[3]

Although different countries have included the teaching of BLS into the curriculum of high school students, as did Norway, which since the beginning of the sixties has established the compulsorily teaching of CPR to schoolchildren, the curriculum of the Palestinian schools is still lacking such topics. Schools are ideal places to teach the adolescents about BLS, considering that adolescents are usually able to perform chest compressions with the same efficacy as adults, and are usually present at the scene of a medical emergency, such as homes, malls, airports, stadiums etc.; in Palestine, approximately 1.1 million students are enrolled in high school in public schools.[4] It is therefore necessary for school teachers and adolescents to receive basic and advanced cardiac life support education.

School teachers are expected to play a vital role in performing BLS on school adolescents in urgent cases, but little is known about their actual capacity to perform BLS. Unfortunately, after reviewing the literature, no previous studies have been conducted in Palestine to assess the knowledge of BLS among school teachers. For this reason, we carried out this study to assess the knowledge of school teachers about BLS.

METHODS

A cross-sectional study with anonymous self-administered questionnaire about BLS knowledge was carried out among school teachers at public schools in Hebron, Palestine. The study was conducted for six weeks and began in March 2017. Nine schools were chosen randomly to be part of the study. Six were primary schools, and three were secondary schools. 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. The teachers signed the informed consent and then completed the questionnaire. The sample included 155 men and women employed as teachers in the Palestinian governmental primary and secondary schools.

Survey instrument and pilot study

A predesigned instrument validated in Arabic language was self-administered by the participants to collect the required study data. The questionnaire was developed specifically for this study; however, many of the knowledge and skills questions were extracted from earlier validated questionnaires.[5-8] The proposed questionnaire was then reviewed by a panel of a community, nurses and family medicine experts and its face, construct, criterion, and content validity all evaluated until fully validated instrument has become on hand. The questionnaires consisted of 31 questions in 3 scales, including a) demographic data, e.g. age, gender, level of education, marital status, teaching experiences, sources of information about CPR, b) includes 8 questions to determine the attitude regarding BLS 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., and c) consisted of 15 questions to assess the level of knowledge about basic life support. Pilot study was conducted on a sample of teachers; minimal changes were made after the pre-testing.

Statistical analyses

After data collection, the data were reviewed, organized, tabulated and statistically analyzed using SPSS version 23 (Statistical Package for Scientific Studies). Descriptive statistics (e.g. Frequencies and chi-square) were used to analyze the demographic and attitude-based data. Inferential statistics were used to given a mean score of knowledge and also tested the hypothesis using independent t-test and one way ANOVA to determine if there is a significance difference between the knowledge of (BLS) and socio- demographic variables. A 15-point scale was computed for the knowledge and skills assessment. Each correct answer was allotted one point and the total points out of fifteen 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. All tests were conducted at level of

significance α = 0.05; results with p-values<0.05 will be considered statistically significant.

RESULTS

Out of 160 questionnaires distributed to teachers, a total of 155 were returned, with a response rate of 96.9%. Among all the participants, 64 (41.3%) were male, and 91 (58.7%) were female. There were four age categories; most of the teachers were either aged 30-39 (36.1%) or 40-49 (30.0%).

The educational levels of the teachers were as follow: 20 Diploma degree holders, 126 Bachelor degree holders and 9 Master degree holders. Knowledge-wise, the preliminary data analysis revealed that the main sources of information about BLS as indicated by the teachers was the TV marked by more than quarter of the teachers (26.5%), followed by the nurse and doctors (25.8%), internet (18.7%), university (14.2) and others (10.3%). The least likely sources of information were the articles and newspaper, (3.2%) and (1.3), respectively. Of all respondents, 20.6% (32/155) of school teachers had completed CPR training, while the majority 79.4% (123/155) had not (Table 1).

Table 1: The teachers' demographic characteristics (n = 155).

Characteristic	Numbers	Percentages (%)
Gender		
Male	64	41.3
Female	91	58.7
Age-group		
Between 20 to 29 years	38	24.5
Between 30 to 39 years	56	36.1
Between 40 to 49 years	47	30.3
More than 50 years	14	9.0
Level of education		
Diploma	20	12.9
Bachelor's	126	81.3
Master	9	5.8
Sources of information about CPR		
University	22	14.2
TV	41	26.5
Internet	29	18.7
Articles	5	3.2
Newspaper	2	1.3
Nurses and doctors	40	25.8
Others	16	10.3
Previous CPR training		
Yes	32	20.6
No	123	79.4

General knowledge of BLS

Teachers' performance on the knowledge and skills assessment (15 questions) was low (42.5%). The questions with the highest proportion of correct responses were the emergency phone number (81.9%) and if you confirm somebody is not responding to you even after shaking and shouting at him, what will be your immediate action (58.1%). On the other hand, questions with the lowest proportion of correct responses were depth of chest compression in infant (21.9%) and "you find someone unresponsive in the middle of the road", what will be your first response (25.2%) (Table 2).

Table 2: Knowledge and skills assessment regarding BLS and CPR among school teachers in Hebron, Palestine (n=155).

General idea of items	Correct answers (n)%	Incorrect answers (n)%
Recognized cardiac arrest	75 (48.4)	80 (51.6)
Man collapsed what next	39 (25.2)	116 (74.8)
Ratio of chest compression and ventilation	52 (33.5)	103 (66.5)
Chain survival of BLS	71 (45.8)	84 (54.2)
Checking for responsive what next	90 (58.1)	65 (41.9)
Location for checking pulse	72 (46.5)	83 (53.5)
Location of hands for CPR	81 (52.3)	74 (47.7)
Giving breathing in infant	56 (36.1)	99 (63.9)
Depth of chest compression in adult	54 (34.8)	101 (65.2)
Depth of chest compression in children	51 (32.9)	104 (67.1)
Depth of chest compression in infant	34 (21.9)	121 (78.1)
Rate of chest compression	40 (25.8)	115 (74.2)
Number of emergency service	127 (81.9)	28 (18.1)
Choking for pregnant women	68 (43.9)	87 (56.1)
Location for abdominal thrust during choking	78 (50.3)	77 (49.7)

Attitude of teachers toward BLS

Overall, the attitude toward CPR training was positive. The majority of teachers (71%) reported that CPR should be mandatory for citizens and 77.4% reported should be mandatory for teachers (Table 3). The results showed that, only 21.9% of the teachers had ever attended previous training courses, indicating that 78.1% of the teachers had never attended previous training courses and are thus incompetent to perform CPR, exposing students to a hazard in case of emergency situations. The results revealed that the majority of the respondents (71%) were not willing to perform mouth to mouth ventilation (Table 3). Nearly 37% of participants stated that lack of time is one factor affecting practice of CPR, followed by "do not know where to follow training" stated by almost 36% of participants (Table 3).

Table 3: Training status among school teachers in Hebron, Palestine (n=155).

Items	Number	Percentage (%)
If you had no previous CPR training, what was the reason?		
Lack of time	57	36.8
Limited interest	40	25.8
Do not know where to follow training	55	35.5
Costs	3	1.9
Reasons for reluctance?		
Fear of causing further harm to patient	100	64.5
Fear of acquiring infection	10	6.5
Fear of taking responsibilities	19	12.3
Not confident	26	16.8
The reason for lack of knowledge about BLS?		
Busy in job	65	41.9
Lack of interest	26	16.8
No professional training available	61	39.4
Medical emergencies are not commonly happened	3	1.9
Who should be trained in BLS?		
ER Health personnel	18	11.6
All health personnel	27	17.4
General people	110	71.0
Do you think CPR training should be mandatory?		
Yes, at school	46	29.7
Yes, training should be mandatory in every job	83	53.5
No, CPR training should be optional	26	16.8
Have you ever attended a workshop on BLS?		
Yes	34	21.9
No	121	78.1
Would you perform mouth to mouth ventilation for persons even if who is male or female?		
Yes	45	29.0
No	110	71.0
Emergency training should be required in teacher preparation programs.		
Strongly disagree and disagree	15	9.7
Neutral	20	12.9
Strongly agree and agree	120	77.4

Analysis of knowledge by socio-demographic characteristics of respondents

To examine the effect of training, the mean skill score was compared between those with and without previous training (Table 4). There were significant differences between groups (p=0.001). Further, there were no significant differences in the mean skill score between those who had observed CPR previously and those who had not (p=0.126). In addition, no significant difference was detected in the mean skill score based on teaching experiences (p=0.720) (Table 4).

Table 4: Effect of training and experience on knowledge and skills assessment among school teachers in Hebron, Palestine (n=155).

Variable	Group (n)	Mean (SD)	p-value from t-test/ANOVA
Previous training in CPR	Yes (32)	7.90 (3.88)	0.001
	No (123)	6.05 (2.32)	
Observed CPR performance	Yes (34)	7.32 (4.04)	0.126
	No (121)	6.19 (2.31)	
Teaching experience	Less than 5 years (44)	6.36(2.64)	0.720
	Between 6 to 19 years (83)	6.59(2.79)	
	More than 20 years (28)	6.10(3.14)	

DISCUSSION

The study indicated that school teachers had low level of knowledge and skills regarding basic life support techniques, specifically CPR. A study finding in Saudi Arabia supported our finding that school teachers lack CPR training and has limited knowledge and few skills.[9,10] Our findings are in line with similar study in the United Kingdom that CPR knowledge among teachers is little.[11] This is probably as a result of the low percentage (21.9%) of the study subjects that had been exposed to any form of CPR training. The poor knowledge of the CPR as reflected in their responses to the various questions in the questionnaire as shown in Table 2 is consistent with the report of Patsaki et al.[12] where the number of incorrect answers to knowledge questions was found to be directly related to the absence of a previous course. The positive attitude towards CPR in this study was similar to previous findings indicating the important role of CPR in saving patients life.

In addition, as shown in this study, responding to a victim who is of a different gender is possibly deterrence as well. This is especially so if the potential responder is a female responding to a male victim. In this study, only 29% of the respondents were willing to do mouth to mouth ventilation on a stranger or trauma victim. Of which 54.7% males and 11.0% are females. On the other hand, most of the participants 71% were opposed to performing mouth to mouth ventilation on a stranger or trauma victim. Similar study conducted at Asahikawa Medical College Hospital a sample size of total 4223

individuals (male 50%) completed the questionnaire, including high school students, teachers, emergency medical technicians, medical nurses and medical students. The study concluded that most people, and health care providers are unlikely to perform mouth to mouth ventilation, remarkably on a stranger and low trauma victim, but are more likely to perform Chest Compression (CC) only.[13] The possible explanation for this barrier, is the socio-cultural influence in Palestine.

The findings of this study are similar to those of previous studies. In this study the school teachers revealed that "lack of time", followed by "do not know where to follow training" are major factors affecting practice of CPR.

The source of information about CPR was mostly television (26.5%), while Doctors/and or nurses and the internet contribute 25.8% and 18.7%, respectively. This indicates the importance of the media to increase the awareness of the community. With the advancement of technology, there is a high accessibility of information about CPR through the internet and media.[14]

Strength and limitation of this study

Although present study sample was a convenient sample and not randomly selected, the present study has teachers from both primary and secondary school covering 9 schools which gives a considerable spread and a fair idea of the true knowledge and attitude of Hebron teachers towards cardiopulmonary resuscitation (CPR) since there is no other published data on CPR concerning teachers hitherto in Palestine.

CONCLUSION

This study has revealed a critical issue that most school teachers lack adequate knowledge of CPR. We recommend that CPR/BLS training and refreshing courses should be mandatory to all teachers at schools. However, the results stress the need for incorporation of the BLS teaching into the Palestinian schools' curricula without delay and teachers should capitalize on children's willingness to learn this subject as one of basic emergency life-saving skills and reinforce skills performance on an annual or more frequent basis.

Recommendations

There is an urgent need to get Palestinian school teachers trained in CPR so as to make them ready for the urgent need of training Palestinian school students accordingly, in line with the growing global trend.

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