Original Article

HEALTH SCIENCES
MEDICINE

DOI: 10.32322/jhsm.1113486
J Health Sci Med 2022; 5(4): 984-988

Knowledge and attitudes toward basic life support: survey among school teachers

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Cite this article as: Aldinç H, Gün C. Knowledge and attitudes toward basic life support: survey among school teachers. J Health Sci Med 2022; 5(4): 984-988.

ABSTRACT

Aim: It is known that in cases of cardiac arrest, the chance of survival rates increases by 2-3 times with the bystander basic life support (BLS). Considering that children who spend a significant part of the day apart from their families at school have their teachers with them, it is understood how important the BLS knowledge and skills of teachers are. In our study, we analyzed the knowledge of primary, secondary and high school teachers about BLS and their thoughts about this training.

Material and Method: The study was conducted by face-to-face interview with 200 primary/secondary school and high school teachers working in Istanbul in 2019. The teachers participating in the study were evaluated with questionnaires related to their demographic characteristics, their level of knowledge about BLS and their thoughts about BLS training. Correct answers and "yes" answers were calculated with 1 point, incorrect answers and "no" answers were calculated with 0 points.

Results: In the BLS information levels survey of female participants, it was found that they scored statistically lower for questions "Do you know emergency medical service number?" and "Emergency medical service call-up in critical condition" ($p<0.05$). Again, female participants had a lower score in the answers to all questions in the BLS application/education request questionnaire according to their gender ($p<0.05$). Participants who had previously received BLS training were found to score higher on certain questions in BLS knowledge levels and BLS application/training request questionnaires.

Conclusion: In the study, it was found that primary/secondary and high school teachers lack the available BLS information. It was determined that people who have been trained in this subject are more willing to BLS training and applications than people who have not been trained in BLS.

Keywords: Cardiopulmonary resuscitation, education, cardiac arrest, school teachers

INTRODUCTION

It is known that the chance of cardiac arrest cases being brought back to life increases 2-3 times with the basic life support (BLS) applied by the witnesses at the scene (1). This is called "Bystander Resuscitation" in the literature (2). Considering that children spend most of their time away from their families at school, we can say that teachers play a critical role in emergency situations where BLS is required (3).

There are two factors necessary for a successful BLS: 1) The presence of a bystender with knowledge of BLS 2) The implementation of BLS as soon as possible and with success (4). Therefore, it is important that the teachers who are with the children are qualified to intervene early and correctly. In this way, it will be possible for teachers to provide students with the right BLS training in addition to increasing lifesaving (5).

In a study conducted on the BLS knowledge of teachers in Turkey, it was found that only 33.1% of them received this training. 47.5% of those who did not receive BLS training said that they could apply BLS to the student if necessary (3). Of course, it is not clear how correctly and effectively teachers in this group who do not have BLS training can do the application. The training of teachers in accordance with the current BLS algorithms published by the American Society of Pediatrics and the American Heart Association will be able to prevent erroneous and delayed interventions. As a result of these trainings, the point of view of teachers who avoid the application of BLS for fear of inexperience and ignorance may change to this critical intervention.

There are not many studies examining the relationship between primary/secondary and high school teachers and BLS in Turkey. We conducted a survey study with teachers working in primary/secondary and high schools in Istanbul.

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Received: 07.05.2022 **Accepted:** 23.05.2022

In this study, we examined the current knowledge levels of teachers about what to do in case of cardiopulmonary arrest and the current level of knowledge about BLS and their perspectives regarding receiving BLS training. We aimed to contribute to more effective planning in the standardization of this important training by analyzing the relationship of teachers' knowledge levels and attitudes towards BLS training with participant variables.

MATERIAL AND METHOD

The study protocol was approved by the Acıbadem Mehmet Ali Aydınlar University Medical Research Ethical Committee (Date: 04.11.2021, Decision No: 2021/21-15). All procedures were carried out in accordance with the ethical rules and the principles of the Declaration of Helsinki.

On November-December 2021, 212 teachers in private/public primary/secondary/high schools located in the Küçükçekmece district of Istanbul were invited to study. 200 teachers who volunteered among these teachers were included in the study signed an informed consent form. The study was conducted in the form of face-to-face interviews.

The teachers participating in the study were questioned in terms of demographic characteristics such as age, gender, class levels where they were teachers, whether they had received BLS training before.

Participants were asked some questions based on the American Heart Association (AHA) 2020 BLS Guide and their knowledge levels were evaluated. Then, questions were asked about their will to participate in BLS training and to practice and receive BLS training in real life. Correct answers and "yes" answer were evaluated with 1 point and incorrect answers and "no" answers were evaluated with 0 points (**Table 1**).

Statistical Analysis

According to the gender of the participants, their level of knowledge about BLS and their BLS application/training requests were analyzed by Pearson Chi-square Independence Test and Fisher Exact Probability Test. Again, according to the fact that they had previously received BLS training with the same method, their BLS knowledge levels and their will to receive training were analyzed.

Spearman's Rho Correlation Test was used to analyze the correlation between the age and the class levels they teach, and their BLS knowledge levels and their BLS application/training request.

In addition, the correlation between BLS knowledge levels and BLS application/training request was analyzed again with Spearman's Rho Correlation Test.

All analyses (IBM Inc., Armonk, NY, USA) were performed using the SPSS Statistics version 21.0.

Table 1. Assessment questionnaire

BLS knowledge assessment questionnaire
1. Do you know the survival rate with the bystander BLS?
2. Do you know the emergency medical service phone number?
3. Assessment of the patient's unresponsiveness, airway and breathing
4. Emergency medical service call
5. The correct ratio of chest compressions and rescue breathing
6. Accurate depth and speed of chest compressions
7. Has he considered using an automatic external defibrillator?
8. Does he know the purpose of using an automatic external defibrillator in patients with cardiac arrest?
Evaluation questionnaire related to BLS application/training request
1. I would like to participate in BLS training
2. I would like to start BLS when I witness cardiac arrest
3. I would like to start BLS and do chest compressions
4. I would like to start BLS and do mouth-to-mouth ventilation
5. I would like to start BLS and do chest compressions + mouth-to-mouth breathing
6. Reasons for not starting BLS;
Lack of information
Being afraid to make mistakes
The risk of infectious diseases
The patient's vomiting
Other reasons
7. I would like to give BLS training

RESULTS

105 male and 95 female participants were evaluated in the study. The general characteristics of the participants and the distribution of their responses to the survey questions are shown below (**Table 2**). There was a statistically significant difference between the groups according to the gender of the participants in terms of their answers to the questions in the BLS information levels survey: "Do you know emergency medical service phone number?" and "Emergency medical service call-up" ($p<0.05$). Again, according to their gender, a statistically significant difference was found between the groups in terms of answers to all questions in the application/training request questionnaire ($p<0.05$) (**Table 3**).

According to the fact that the participants had received BLS training before; in the knowledge levels survey, no statistically significant difference was found between the groups in terms of their answers to the questions: "Do you know the survival rate with the bystander BLS?", "Assessment of the patient's unresponsiveness, airway and breathing", "emergency medical service call" and "The correct ratio of chest pressure and a rescue breathing." ($p<0.05$). Again, according to the state of receiving BLS training, in BLS application/training request questionnaire, there was a statistically significant difference between the groups in terms of the answers ($p<0.05$) given to questions: "I would like

to start BLS and do mouth-to-mouth ventilation," "I would like to start BLS and do chest compressions + mouth-to-mouth ventilation" and "I would like to teach BLS" (**Table 4**).

Table 2. General characteristics of the participants and the distribution of their answers

	n	%
Gender		
Man	105	52.5
Woman	95	47.5
Age	38.13±9.17	36 (23-57)
Class levels		
1	14	7
2	35	17.5
3	26	13
4	19	9.5
5	21	10.5
6	11	5.5
7	6	3
8	17	8.5
9	11	5.5
10	17	8.5
11	12	6
12	11	5.5
Received BLS training before	19	9.5
BLS knowledge assessment questionnaire		
Do you know the survival rate with the bystander BLS?	5	2.5
Do you know the emergency medical service phone number?	187	93.5
Assessment of the patient's unresponsiveness, airway and breathing	8	4
Emergency medical service call	124	62
The correct ratio of chest compressions and rescue breathing	14	7
Accurate depth and speed of chest compressions	-	-
Has he considered using an automatic external defibrillator?	-	-
Does he know the purpose of using an automatic external defibrillator in patients with cardiac arrest?	-	-
Evaluation questionnaire related to BLS application/training request		
I would like to participate in BLS training	183	91.5
I would like to start BLS when I witness cardiac arrest	183	91.5
I would like to start BLS and do chest compressions	183	91.5
I would like to start BLS and do mouth-to-mouth ventilation	94	47
I would like to start BLS and do chest compressions + mouth-to-mouth breathing	94	47
I would like to give BLS training	164	82
Reasons for not starting BLS;		
The risk of infectious diseases	4	2
Being afraid to make mistakes	13	6.5

Table 3. Distribution of BLS knowledge levels and BLS application/training request rates according to gender of the participants

	Gender				X^2	p
	Man		Woman			
	n	%	n	%		
BLS knowledge assessment questionnaire						
Q1	5	4.8	-	-	4.64	0.061
Q2	104	99	83	87.4	11.194	0.001
Q3	5	4.8	3	3.2	0.334	0.724
Q4	84	80.0	40	42.1	30.399	0.000
Q5	5	4.8	9	9.5	1.701	0.192
Q6	-	-	-	-		
Q7	-	-	-	-		
Q8	-	-	-	-		
Evaluation questionnaire related to BLS application/training request						
Q1	103	98.1	80	84.2	12.363	0.000
Q2	103	98.1	80	84.2	12.363	0.000
Q3	103	98.1	80	84.2	12.363	0.000
Q4	67	63.8	27	28.4	25.075	0.000
Q5	67	63.8	27	28.4	25.075	0.000
Q7	98	93.3	66	69.5	19.236	0.000

Pearson Chi-Square Test, Fisher's Exact Test

Table 4. Distribution of BLS knowledge levels and BLS application/training request rates depending on whether they have been trained for BLS before or not.

	Received BLS training before				X^2	p
	No		Yes			
	n	%	n	%		
BLS knowledge assessment questionnaire						
Q1	-	-	5	26.3	48.853	0.000
Q2	168	92.8	19	100	1.46	0.617
Q3	-	-	8	42.1	79.386	0.000
Q4	105	58	19	100	12.868	0.000
Q5	6	3.3	8	42.1	39.744	0.000
Q6	-	-	-	-		
Q7	-	-	-	-		
Q8	-	-	-	-		
Evaluation questionnaire related to BLS application/training request						
Q1	164	90.6	19	100	1.95	0.379
Q2	164	90.6	19	100	1.95	0.379
Q3	164	90.6	19	100	1.95	0.379
Q4	75	41.4	19	100	23.675	0.000
Q5	75	41.4	19	100	23.675	0.000
Q7	145	80.1	19	100	4.609	0.028

Pearson Chi-Square Test, Fisher's Exact Test

A statistically significant correlation was found between the ages of the participants and the answers to the 1st and 2nd questions in the BLS knowledge levels questionnaire in the positive direction and a negative and statistically significant correlation was found between the class levels they teach and the answers to questions 2, 3 and 4 in the BLS knowledge levels questionnaire ($p<0.05$) (**Table 5**).

A statistically significant correlation was found between the ages of the participants and the answers to questions 1, 2, 3, 4 and 5 in the BLS application/training request questionnaire in a negative way and a statistically significant correlation was found in the negative direction between the answers to questions 4, 5 and 7 between application/training request for BLS and the class levels they teach ($p<0.05$)(**Table 5**).

Table 5. Correlation analysis for the age and class level of the participants and the relationship between BLS knowledge levels and BLS application/training request

	Age		Class level	
	r	p	r	p
BLS knowledge assessment questionnaire				
Q1	0.161	0.023	-0.082	0.250
Q2	0.170	0.016	-0.173	0.015
Q3	0.138	0.051	-0.222	0.002
Q4	0.127	0.073	-0.391	0.000
Q5	0.027	0.709	-0.095	0.179
Evaluation questionnaire related to BLS application/training request				
Q1	-0.196	0.005	-0.133	0.060
Q2	-0.196	0.005	-0.133	0.060
Q3	-0.196	0.005	-0.133	0.060
Q4	-0.244	0.000	-0.193	0.006
Q5	-0.244	0.000	-0.193	0.006
Q7	-0.109	0.126	-0.251	0.000

Spearman's Correlation Test

DISCUSSION

In our study, it was found that the proportion of participants who had previously received BLS training was only 6.5%. In a study conducted with a large group of primary, secondary and high school teachers in Belgium in 2013, this figure was found to be 59% (1). In a study conducted among secondary school teachers in 2016 (4) it was 36.7% and in a study conducted with primary, secondary and high school female teachers in 2020 (6) it was 30.5% and this rate was found to be remarkable according to the value of our study.

In our study, the proportion of teachers who knew the emergency medical service phone number was found to be 93.5%, and this proportion was 66% in the study (1), which found that teachers in the study had previously received 59% BLS training. The reason for this may be the lack of BLS training in our country and the associated excess of urgent health care needs. In addition, despite the high rate of knowing the emergency medical service phone number, the rate of people considering calling emergency medical services in case of arrest / unresponsive patient was found to be 62%. When we look at the subgroups, this ratio is 80% for men and 42.1% for women. Although the emergency medical service number is known by women, the fact that the emergency medical service call rate is significantly lower may be due to the fact that they feel more excitement and panic in case of such critical situation. As a matter of fact, in a study published in 2006, it was found that the stress level of female rescuers was significantly higher than that of men (7).

In a study conducted with teacher's training school students in South Africa, the proportion of BLS training received earlier was 8.9%, and the proportion of those who consider this training mandatory for all teachers was 90.5% (8). In our study, the proportion of those who want to study BLS was found to be 91.5% in a similar way. These rates indicate that even if they have not received enough training, teachers are aware of and willing to receive BLS training.

It is noteworthy that in our study, all teachers who had previously received BLS training responded positively to all questions related to the application, training and provision of BLS training. The fact that people with BLS training are more willing to apply BLS if necessary has been shown by similar results in many previous studies (9-12). The most important reasons for this request are to understand the importance of BLS and to be able to apply BLS correctly (12).

Especially in the 4th and 5th questions, where mouth-to-mouth ventilation is included, the positive response rate of people who have not received BLS training is only 41.4%. In an article published by Dobbie at al. (13) in 2018, when reasons for not wanting to practice BLS were examined between people who had not received BLS training and those who had received it, mouth-to-mouth ventilation practice had no relationship with the status of previous training. Nevertheless, in this study, the presence of blood and vomit in the environment as a reason for avoiding BLS was found to be significantly higher in people who did not have BLS training.

In addition to the requirement that secondary/high school teachers should have this training, the European Resuscitation Council and the American Heart Association recommend that BLS training be included in the secondary/high school training curriculum (1,5). There are also some studies related to this. In a study conducted with elementary school students in Thailand, it was found that although their physical strength is not as sufficient as that of adults, they are able to apply adequate BLS after training (14). The cost of providing this training to primary/secondary and high school students is a separate issue. Due to the high cost of the training provided by medical doctors in this regard, the role of medical faculty students in this training has been examined and found to be effective (15). There is even a study that shows that high school students can receive effective BLS training through peer teaching (16). It has been shown in a study that it is also meaningful for school teachers to provide BLS training within the educational curriculum in terms of effectiveness (17). In our study, it was found that most of the teachers participating in the study, especially teachers who had previously received BLS training, wanted to provide BLS training at school.

There are some limitations in our study. It has not been studied how teachers who have received BLS training receive it to a certain standard, how many years ago they received it. Another limitation is that the BLS knowledge of the teachers participating in the study is measured only theoretically.

CONCLUSION

The current BLS training rate among primary/secondary and high school teachers is at a low level. Teachers who receive training have a greater tendency to apply BLS in a critical situation, a greater desire to receive more training and provide BLS training at school. In order for this training to be given to teachers and then to be given to students through teachers, more extensive studies are required.

ETHICAL DECLARATIONS

Ethics Committee Approval: The study protocol was approved by the Acıbadem Mehmet Ali Aydınlar University Medical Researches Ethical Committee (Date: 04.11.2021, Decision No: 2021/21-15).

Informed Consent: All patients signed the free and informed consent form.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

Financial Disclosure: The author declared that this study has received no financial support.

Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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