

Evaluation of Usefulness of Cardiopulmonary Resuscitation Education on Public Health Physicians

Ahmet Baydin¹, Latif Duran², Erdiñç Şengüldür³, Celal Katı², Leman Tomak⁴, Ali Kemal Erenler⁵

^{1,2,3} Department of Emergency Medicine, Ondokuz Mayıs University, Samsun, Turkey

⁴ Department of Biostatistics, Ondokuz Mayıs University, Samsun, Turkey

⁵ Department of Emergency Medicine, Hitit University, Çorum, Turkey

Correspondence: Ahmet Baydin, MD
Ondokuz Mayıs University, Department of Emergency Medicine, Samsun-Turkey
Email: abaydin@omu.edu.tr

ABSTRACT

Objective: Cardiopulmonary resuscitation (CPR) is a life-saving process in which many disciplines are involved. In this study, our aim was to evaluate CPR knowledge of public health physicians and determine usefulness of education on this important topic.

Methods: A total of 337 public health physicians were involved in an educational course and asked to answer a questionnaire both before and after the course. The questionnaire involved 26 questions and participants' personal identifiers were hidden. The results of two questionnaires were compared.

Results: We achieved improvement in knowledge of 315 participants. In majority of the participants, the number of the right answers increased up to 6 to 10 points. We also determined that those who attended to a similar educational course before were more successful than those who did not.

Conclusion: Education on CPR is essential for every discipline involved in medicine. Increasing the knowledge of physicians may decrease mortality and morbidity related to sudden cardiac arrest. Institutions must be encouraged for continuous educational organizations and participation of health care providers from different disciplines must be assured.

Key words: Cardiopulmonary resuscitation, education, public health physician

INTRODUCTION

Cardiopulmonary arrest (CPA) can be defined as the sudden and unexpected interruption of respiration and/or circulation [1]. In clinical practice, it refers to the "absence of cardiac mechanical activity." The diagnosis in clinics is confirmed with unresponsiveness, pulselessness, and apnea. Cardiopulmonary resuscitation (CPR) refers to interventions aimed to maintain vitality in a patient whose life is interrupted [2].

Resuscitation of a patient with CPA is a time-sensitive process that requires coordination between a numbers of health providers [3]. Additionally, effective CPR in the clinical setting, avoiding hyperventilation, and post-resuscitative care are other factors positively affecting mortality and morbidity [4].

Primary care clinics are essential places for community medicine. Cardiac arrests in these clinics are uncommon but have a high life-threatening potential. A swift and appropriate response to these events is crucial for patient survival. This response includes physician knowledge, willingness and preparedness for performing basic CPR and defibrillation as appropriate [5].

General practitioners are the medical role models in the community and, as such, are expected to remain up-to-date with current resuscitation practices [6]. In this study, we applied a questionnaire to public health physicians both before and after a CPR education.

METHODS

A CPR education was organized for public health physicians working in city of Samsun

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in the supervision of Ondokuz Mayıs University for three months period. After ethical approval from the Local Ethics Committee, before and after the education, the participants were asked to answer a questionnaire for evaluation of knowledge on CPR management. We distributed the same questionnaires both before and after the course in order to make a comparison. The questionnaire included 26 questions and no personal identifiers in order to ensure confidentiality and anonymity. Each question was given 1 point, so the highest point was determined to be 26. All participants were selected among volunteers. A total of 360 family physicians were trained. But, statistical data were obtained from 337 physicians. Twenty-three doctors were excluded from the study because the questionnaire was missing. The participants were divided into 8 subgroups and each group was educated for 6 hours of practical training and 4 hours of theoretical training per week. The participants have also undergone a practical education during the course, however, due to difficulties in evaluation of practical skills objectively, participants were exempted from a practical examination.

Statistical Analyses

For statistical analyses, SPSS 17.0 program was used. Data were given as arithmetic mean plus/minus standard deviation, median (minimum-maximum) and frequency (%). Comparison of data given as frequency was performed by Pearson’s Chi-square analysis. $p < 0.05$ was considered as statistically significant.

RESULTS

A total of 360 volunteer public health physicians attended to CPR education were enrolled into the study. Twenty-three doctors were excluded from the study because the questionnaire was missing. Of the participants, 224 (66.5%) were male and 113 (33.5%) were female. When 2 questionnaires were compared according to participants’ gender, any statistical significance could not be determined. Basic characteristics of the participant are summarized in Table 1.

When answers to the questionnaires were compared before and after the education according to numbers of the right and wrong answers, it was determined that number of right answers increased after the educational course in 315 participants (93.5%).

It was also determined that majority of the participants (n=141, 41.8%) achieved 6 to 10 points improvements after the education. Additionally, 118 (35%) of the participants have given the right answer after the education to questions to which they have given wrong answer before the education. The evaluation of usefulness of the course according to participants’ success is summarized in Table 2.

A total of 164 participants have mentioned that they have attended a similar course at least once after graduation from medical school. It was determined that participants who got a similar course previously were more successful than those who did not get any education about CPR since medical school, however,

any statistical significance could not be obtained according to previous educational status.

Table 1. Basic Characteristics of the Course Participants

	Count	%
Gender		
Male	224	66.5
Female	113	33.5
Age, year (mean ± SD)	44.4±7.6	
Graduation		
Ankara Medical School	5	1.5
Ataturk University	24	7.1
Cerrahpaşa Medical School	7	2.1
Dicle Medical School	7	2.1
Ege University	9	2.7
Erciyes University	8	2.4
Osmangazi University	5	1.5
İstanbul University	23	6.8
Karadeniz Technical University	25	7.4
Marmara Medical School	2	0.6
Ondokuzmayıs University	175	51.9
Hacettepe University	2	0.6
Uludağ Medical School	4	1.2
Cumhuriyet University	15	4.5
Kocaeli University	3	0.9
Yeditepe University	2	0.6
Kırıkkale University	1	0.3
Dokuz Eylül Medical School	4	1.2
Gazi Medical School	5	1.5
Trakya University	1	0.3
Harran University	1	0.3
Çukurova Medical School	3	0.9
Anadolu University	1	0.3
Pamukkale University	1	0.3
Konya Meram Medical School	1	0.3
Adnan Menderes Medical School	2	0.6
İzzet Baysal Medical School	1	0.3
Working Years		
1-10 years	45	13.4
11-20 years	160	47.5
21-30 years	110	32.6
31 years and over	22	6.5
Previous Education on CPR after Graduation		
Once at least	164	48.7
None	173	51.3

SD: Standard Deviation, CPR: Cardiopulmonary Resuscitation

Table 2. Increase in number of right answers

Increase after the education	n	%
1-5 points	138	40.9
6-10 points	141	41.8
11 and over points	36	10.7
Both same	14	4.2
Decrease	8	2.4

DISCUSSION

Our study revealed that when educated appropriately, knowledge and awareness of public health physicians can be increased on important issues, particularly CPR. Sudden cardiac arrest is a medical emergency. If not treated immediately, it causes sudden cardiac death. With fast and appropriate medical care, survival is possible. Sudden cardiac arrest is classified into two groups as in-hospital and out-of-hospital. Cardiopulmonary resuscitation is an evolving life-saving technique of modern medicine that comprises a series of lifesaving actions that improve the survival rates following SCAs [7]. It is obvious that every physician must be informed and alert for possible instances. Educational courses are essential to keep physicians' knowledge fresh and questionnaires are the best tools to evaluate the usefulness of the education, particularly in life-and-death situations such as CPA and CPR.

A similar study in Israel revealed that primary care clinics in Israel are woefully underprepared to provide effective CPR. It was also reported that physicians were unwilling to participate such questionnaires. Low rate of participation was likely to be related to belief that the issue is irrelevant as the likelihood of being required to perform CPR in a clinic is very low [5]. In our study, participants were encouraged and motivated to respond the questionnaires. Thus, we could obtain a high rate of participation. In case we have used the methods of previous studies such as on-line survey, a considerable decrease in the number of the participants would be inevitable.

In this educational course, participants were public health physicians. This was an opportunity for us to evaluate their knowledge and attention on the subject. Many out-of-hospital patients receive initial treatment by bystanders or by emergency medical services; however, some patients experiencing early symptoms may seek help from their primary physician/urgent care center and/or collapse in the clinic itself. In the United States, it was reported that 2% of persons who survived out-of-hospital cardiac arrest were treated initially in a clinic [8-10]. Public health physicians may be perceived as if they are distant from patients requiring CPR, however, as the first-line physicians; they may be close to the problem more than they think. Health care professionals and trainees are invariably expected to know about it, as they frequently face life-threatening situations in their daily practices [11]. Increasing the knowledge may only be possible by regularly continuing educational courses strengthened by recent developments in the field of CPR. The increase in right answers after the course may be considered as an indicator of the importance of the education.

To evaluate the experience, knowledge and attitudes of local primary health-care doctors towards resuscitation in out-of-hospital cardiac arrest, Ong et al. conducted a survey study including practitioners working in both public and private hospitals. According to their results, 13.0% of private and 10.6% of public had witnessed a cardiac arrest in their clinics in the past year. They also found that while 92.3% of public doctors had defibrillators in their clinics, only 26.1% of private doctors had defibrillator.

They concluded underlining the importance of initiatives to equip, educate and encourage defibrillation by general practitioners in their community [12]. Similarly, according to Colquhoun et al., the clinic physician's response to a cardiac arrest in their clinic depends on multiple factors, including training and the availability of equipment and supplies. If the response is appropriate, survival may be quite high; survival of patients treated by primary care physicians equipped with defibrillators has been reported to be as high as 34% [13]. Public health physicians should be motivated either by equipment and education for a more accurate CPR intervention.

In conclusion, as in all fields of medicine, continuing education of healthcare providers on CPR is essential to decrease mortality and morbidity related to this life-threatening condition. Our study revealed that educational efforts may enhance knowledge and skills of public health physicians who may face CPA in their daily practice. Governmental organizations may support educational courses -like ours- in order to refresher knowledge of physicians on CPR.

Conflict of Interests: The authors declare that they have no conflict of interest.

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