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Evaluation of Teachers' Knowledge in Tokat Province Before, Immediately After and 6 Months After Basic Life Support Training

Tokat İl Merkezinde Görev Yapan Öğretmenlerin Temel Yaşam Desteği Eğitimi Öncesi, Sonrası ve 6 Ay Sonrası Bilgi Düzeyleri

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Abstract

Aim: In our study, it was aimed to determine the knowledge levels of teachers about BLS and the factors affecting them, along with detecting the short and long term effects of education with the evaluations made after the training.

Material and Method: This descriptive study's sample consisted of 134 teachers working in Tokat province. Teachers were educated on BLS using CPR manikins. A total of 3 measurements were made; before, immediately after and 6 months after the training.

Results: It was determined that the teachers had considerable deficiencies in their level of BLS knowledge before the training and a statistically significant increase was observed in their level of BLS knowledge after the training compared to before the education. At the 6th month after the training, the level of BLS knowledge was found to be significantly higher than the pre-training scores .

Conclusion: There is a need for the training of BLS, which will be given to teachers and other saviors among the people, with the intention of raising awareness about BLS and informing society. In order to keep the information up to date, it is necessary to provide BLS training at certain intervals.

Keywords: Basic life support, education, teacher

Öz

Amaç: Çalışmamızda öğretmenlerin TYD konusunda bilgi düzeylerini ve bunu etkileyen faktörleri saptamak, eğitim sonrası yapılan değerlendirmeler ile de eğitimin kısa ve uzun dönemdeki etkilerini öğrenmek amaçlandı.

Gereç ve Yöntem: Tanımlayıcı tipte olan çalışmanın örneklemini Tokat il merkezinde görev yapan 134 öğretmen oluşturdu. Öğretmenlere uygulama mankenleri kullanılarak TYD eğitimi verildi. Eğitim öncesinde, eğitimden hemen sonra ve eğitimden 6 ay sonra olmak üzere toplam 3 ölçüm yapıldı.

Bulgular: Öğretmenlerin eğitim öncesinde TYD bilgi düzeylerinde önemli eksikliklerin olduğu, verilen eğitim sonrasında TYD bilgi düzeylerinde eğitim öncesine göre istatistiksel olarak anlamlı artışın olduğu tespit edildi. Eğitim sonrası 6. ayda ise TYD bilgi düzeylerinde, eğitim sonrası puanlara göre anlamlı azalma olmasına rağmen, eğitim öncesi puanlara göre anlamlı derecede yüksek olduğu tespit edildi.

Sonuç: TYD konusunda farkındalık yaratmak ve toplumun bilinçlendirilmesi adına öğretmenlere ve diğer halktan kurtarıcı kişilere verilecek TYD eğitimine ihtiyaç vardır. Bilgilerin güncel tutulabilmesi için belirli aralıklarla TYD eğitiminin verilmesi gerekmektedir.

Anahtar Kelimeler: Eğitim, öğretmen, temel yaşam desteği

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INTRODUCTION

Cardiopulmonary arrest is a sudden and unexpected termination of respiration and/or circulation in the person due to any reason. Clinically, the individual has apnea, loss of consciousness, and lack of heart rate. Cardiopulmonary resuscitation ensures when sudden cardiac arrest due to a reversible etiology occurs in the period until the heart begins to work normally, meeting the metabolic requirements of the myocardium and brain to provide the necessary blood and oxygen.[1]

The resuscitation process defined two levels: basic life support (BLS) and advanced life support (ACLS).[2] BLS is the first step of applications. The most important factors affecting the survival rate in patients without of hospital cardiac arrest are BLS applications initiated at the scene by witnesses and the arrival time of the health personnel. In cases where health personnel have exceeded 4 minutes of the arrival time on the scene, it has been shown that BLS by the witnesses of the event directly affects the survival rates.[3,4] It is known that first aid services should not only be left to health personnel, but community involvement would also be much more effective, given that time is very important in first aid applications.[5]

Although there is not enough data on how BLS applications are known and applied in our country, in the studies on different occupational groups (police, teachers, nurses, doctors, fire brigade personnel, ambulance personnel), there is lack of knowledge and skills on the first aid.[6-10] These studies show that pre-hospital care training is insufficient, and no specific training standard has been established.[8]

Training on BLS applications consists of several motor learning skills. Psychomotor learning is gained by frequent applications, the repetition of skill increases durability. Suggestions on how often the re-training should be performed vary. However, it is suggested that knowledge and skills decrease between two weeks and one year after training. The duration of the interval between training sessions is not clearly defined, but it is recommended not to last longer than 6 months.[11,12] Repetitive training and evaluations are required because BLS knowledge and skills may be forgotten within a short period of 3 to 6 months.[13]

In this study, we aimed to determine BLS knowledge level and the affecting factors in the teachers who work in Tokat city center, and to learn the short- and long- term effects of training by the assessments after training.

MATERIAL AND METHOD

After obtaining the institution permission from Clinical Research Ethics Committee decision (18.12.2015 and 83116987-530) and Provincial Directorate of National Education, data collection was initiated.

Tokat Provincial Education Directorate determined the schools and teachers who participated in the training and informed them by a written document. The purpose of the study was explained and the informed consent forms prepared based upon Helsinki Declaration were distributed; written and verbal consent of the participants was obtained. The study was started with 134 teachers who accepted to participate in the study. In the surveys collected after 6 months, 10 teachers were not reached due to an address change and 124 teachers' data was analyzed. There was no sample selection in the study, volunteerism was the basis.

The data were pooled with a study form consisting of 10 multiple choice questions targeting the measurement of the BLS knowledge and skill level and the information form containing the socio-demographic characteristics prepared by the researcher in line with the relevant literature. The teachers were given 10 points to every correct answer to BLS questions, and rated by 100 points.

BLS training was given by academicians of University Department of Emergency Medicine. The training consisted of 9 sessions. Visual presentation was created by a trainer utilizing the European Resuscitation Council (ERC) and American Heart Association (AHA) algorithms in accordance with the literature information. The training with visual presentation lasted 75 minutes in total (45 min + 30 min). After the presentation, BLS training brochure, which was prepared by the trainer, was given to the teachers. Adult, child, and infant models were used in training for the practice skills. Demonstration (demonstration-making) technique was used in practice training. At the end of the training, BLS training attendance certificate was distributed to each participant. The data were collected 3 times before the training program, immediately after education and 6 months after training. Data on the study was obtained by a face to face survey method.

Statistical Analysis

Package statistical software was used in calculations (IBM SPSS Statistics 19, SPSS inc., an IBM Co., Somers, NY). Descriptive analyses were performed to provide information about the general characteristics of the study groups. Data of continuous variables were presented as mean ± standard deviation; data of categorical variables were presented as n (%). Independent sample T test or one way variance analysis was applied for comparison of numerical values by the groups. Analysis of variance was used in repeated measurements to examine the effect of time on the variables; Two-way variance analysis was used in repeated measurements to examine the effect of the group and the time together. P values smaller than 0.05.were considered statistically significant.

RESULTS

Totally 134 teachers were participated in current study. 80 (%59,7) were male and 54 (40,3%) were female. The mean age of female teachers was 31.48, the mean age of male teachers was 36.5, and the overall age mean was 34.47. 91% of teachers (122) in the study were license graduates, 35,1% (47) worked in high schools, 35,1% (47) have worked for 11-20 years.

85,1% of teachers (114) were not previously involved in BLS training, whereas 5.2% were involved in BLS training.[7] 99,3% of the teachers participating in the study (133) believed the necessity of the BLS training (**Table 1**).

Table 1. Distribution of demographic features of teachers

Variables		n	%
Age	21-30 age	20	14.9
	31-40 age	51	38.1
	41-50 age	46	34.3
	51 and over	17	12.7
Sex	Male	80	59.7
	Female	54	40.3
Training status	License	122	91.1
	Y. license	12	8.9
School	Primary school	38	28.4
	Secondary school	30	22.4
	High school	47	35.1
	Meb (Arge)	10	7.5
	Kindergarten	9	6.6
Job	Manager	24	17.9
	Teacher	110	82.1
Service year	0-10 year	40	29.9
	11-20 year	47	35.1
	21-30 year	35	26.0
	31 and over	12	9.0
Has he/she studied BLS before?	Yes	20	14.9
	No	114	85.1
Has he applied BLS before?	Yes	7	5.2
	No	127	94.8
Is BLS training necessary?	Yes	133	99.3
	No	1	0.7

The matched results associated with the comparison of the scores obtained from the surveys applied before, immediately after and 6 months after BLS training of teachers participating in the study were presented in **Table 2**. When the results were investigated, total score average was 48,95±14,44 before training, 83,95±13,06 immediately after training and 62,5±11,02 six months after training. So, the scores after training were significantly increased as compared to the scores before training It was found that the scores after training was higher than scores of 6 months after training and it was statistically significant (p<0,001). However, in spite of this significant decrease, total scores of the teachers 6 months after training were significantly higher as compared to the average scores before training. A statistically significant difference in overall mean scores was found before training, immediately after training and 6 months after training (F:312,787; p<0,001).

Table 2. Comparison of test scores of the teachers

Scoretype	Test time	N	Mean±SD	F	P
Total Score	Before training	124	48.95±14.44 (a)	312.787	<0.001
	After training	124	83.95±13.06 (b)		<0.001
	6 months after training	124	62.5±11.02 (c)		<0.001

The upper indices of the small character are based on row; the upper indices of the large character are used for comparison on column basis. The same upper indices shows statistical in significance. *P value is considered statistically significant when the value is below 0.05.

When the effect of educational status of the teachers on BLS scores was investigated (Table 3); higher license degree teachers had higher BLS scores as compared to license teachers before training, immediately after training and 6 months after training. This score difference was not significant after training (p=0,412), but statistically significant before training and 6 months after training (respectively p=0,035, p=0,026). However, the educational status of the teachers did not lead to a significant difference in BLS overall scores (F=0,554; p=0,554) (**Table 3**).

The effect of previous BLS training on BLS scores of the teachers was presented in Table 4. The previous BLS training status led to statistically significant difference in pre-training BLS scores (p=0,032). So, in the test before training, the scores of the teachers with previous BLS training were significantly higher. The previous BLS training status did not lead to significant difference in the tests performed immediately and 6 months after training (respectively p=0,755, p=0,464). In addition, previous BLS training status did not lead to significant difference in BLS overall scores (F=2,718; p=0,068) (**Table 4**).

Table 3. Comparison of teachers' BLS training status by BLS scores

Variable		Before training	After training	6 months after training	
Training status	License	48,52±14,41(a)	83,77±12,68(b)	61,95±11,09(c)	F=286,932;p<0,001*
	H.license	50,91±15,78(a)	87,27±12,72(b)	70±6,67(c)	F=22,294;p<0,001*
		t=2,131; p=0,035*	t=0,822; p=0,412	t=2,255; p=0,026*	
			F=0,554; p=0,554		

The upper indices of the small character are based on row; the upper indices of the large character are used for comparison on columnbasis. The same upper indices shows statistical insignificance. * P value is considered statistically significant when the value is below 0.05.

Table 4. Comparison of teachers' previous BLS training status by BLS scores

Variable		Before training	After training	6 months after training	
Training	Yes	55±10(a)	85±11,47(b)	64,21±11,7(a)	F=36,907;p<0,001*
	No	47,46±14,92(a)	84,04±12,95(b)	62,19±10,92(c)	F=279,576;p<0,001*
		t=2,173; p=0,032*	t=0,312; p=0,755	t=0,734; p=0,464	
			F=2,718; p=0,068		

The upper indices of the small character are based on row; the upper indices of the large character are used for comparison on columnbasis. The same upper indices shows statistical in significance. * P value is considered statistically significant when the value is below 0.05.

DISCUSSION

Every part of chain of survival equally important for successful CPR. The reduction of poor outcome is related with quality knowledge and skills about resuscitation. Resuscitation is a process requiring continuous training. In this context, theoretical training is important as well as practical training. Recommendations for current information and applications on cardiopulmonary resuscitation (CPR) are published in the guidelines. Following these guidelines is important for increasing the success of resuscitation.[14] In our country, studies on the awareness, knowledge levels and attitudes of individuals regarding CPR and BLS are limited.[15] BLS training should be performed to public and it should be repeated for updating knowledge and skills.[16]

Test results of the teachers before training showed that BLS knowledge level is not sufficient (48.95±14.44). Türkan et al reported that BLS knowledge and skill levels of the police, fire brigade staff, teachers are not sufficient, and the lowest success rate was among teachers in their study on several occupation groups (health personnel, police, fire brigade staff, teacher).[6] In another study. first aid information score average of the teachers was 11.9±2.9 out of 20 scores, suggesting that their first aid information was not sufficient. [17] Even among the studies with the involvement of the health care personnel, some of the studies suggested that their BLS knowledge levels were neither sufficient nor updated.[18,19] The results of present study are similar with literature.

The study showed that the average scores of the teachers after training (83.95±13.06) were significantly increased as compared to the scores before training (48.95±14.44). Özyürek et al showed that the average scores of the teachers at the end of the first aid training significantly increased as compared to the scores before training.[20] In the study with the students of the education faculty, Bildik et al showed that there were significant increases in the pre-post training scores.[21] All these results show the benefit of BLS training. Besides it may point willing to learn of people whether in health personnel.

In this study, the scores of the teachers 6 months after training (62.5±11.02) decreased significantly as compared to the scores immediately after training (83.95±13.06). However, in spite of this significant decrease, the scores of the teachers 6 months after training were significantly higher as compared to the scores before training (48.95±14.44). In the similar studies, many participants on CPR training had sufficient knowledge and skill level in the early period following the training, However, they had difficultly remembered this knowledge and skills in time.[22] In a study evaluating the knowledge and skill levels of the nursing students immediately after and 3 months after BLS training, the success rate of the students decreased significantly after 3 months.[16] In their study, Nyman and Sihvonen compared the nurses who were trained in the last 6 months and the nurses who were trained more than 6 months ago, and they identified that BLS knowledge level began to decrease after 6 months.[23] Similar to our study, all these study results showed that the knowledge and skill levels of the participants generally decreased after 6 months.

These results showed the importance and the necessity of the continuity and repetition of the training sessions. Therefore, it is very important for the rescuers to participate in the training sessions at specific intervals in order to keep their BLS knowledge level up to date after the training.

In the test results of the teachers before the training, the average scores of the high-license graduates were found to be higher than those of the license-graduates. The higher education level may be associated with increased health literacy. In the test results of the teachers immediately after the training, the educational status did not affect the scores significantly. In the test results 6 months after the training, a similar difference was observed just like pretest results. The results indicate that that the difference arising from the education level of the participants has disappeared with the TYD training in the acute period. Although over time, this difference has reappeared.

The pre-training average scores of the teachers with previous BLS training were significantly higher as compared to the ones without previous BLS training. This result showed the importance and the necessity of the BLS training. In the test results immediately after training and 6 months after training, no significant difference was observed between the teachers with previous BLS training and the ones without previous BLS training. The difference between the teacher groups might be eliminated owing to BLS training sessions. In our study, previous BLS training status of the teachers did not lead to any significant difference on overall BLS scores. There are many studies in line with our study result in literature.[17,,20,24,25]

Limitations

There are some restrictions in our study, only theoretical knowledge of the participants has been evaluated. The practice skills were not tested through direct observation and were tried to be tested with information questions that measure the skill level. Since it is a survey study, it was answered based on thoughts, memory factor and experiences. Therefore, objective measurement and evaluation could not be performed.

CONCLUSION

In currents study, BLS knowledge level of the teachers before training was found to be lower than the desired level. After one-day training, BLS knowledge levels significantly increased than before training. At the 6th month following the training, BLS knowledge levels of the teachers significantly decreased as compared to the scores immediately after the training, however, they were significantly high as compared to the scores before the training. In order to create and raise BLS awareness for all individuals, the studies on teachers and different occupation groups were required. To update information, BLS training sessions should be planned periodically.

ETHICAL DECLARATIONS

Ethics Committee Approval: After obtaining the institution permission from Clinical Research Ethics Committee decision (18.12.2015 and 83116987-530) and Provincial Directorate of National Education, data collection was initiated.

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Referee Evaluation Process: Externally peer-reviewed.

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

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