



# An Evaluation of the Level of Knowledge of First-Aid of Hospital Healthcare Personnel in Turkey and the Need for Refresher Training

## Türkiye'deki Hastane Sağlık Personelinin İlk Yardım Bilgi Düzeyinin ve Bilgi Tazeleme Eğitimine Duyulan İhtiyacın Değerlendirilmesi

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### ABSTRACT

**Objectives:** The aim of this study was to evaluate the level of knowledge of first-aid of healthcare personnel in a training and research hospital and to assess the necessity for refresher training.

**Methods:** The study data were obtained from 2 questionnaires, each consisting of 4 sections, one applied before training and one after training. The first section of the first questionnaire applied pre-training comprised personal information and opinions of the training. The first section of the second questionnaire applied post-training questioned the participant's views on the training. In the second section of both questionnaires, opinions were asked of the benefit and necessity for the training modules, and in the third section, opinions of the duration of the training. The fourth section of both questionnaires was the same with questions to determine the level of knowledge of the participants.

**Results:** The study included a total of 261 healthcare personnel, comprising 102 (39.1%) males and 159 (60.9%) females. While 32.6% of the respondents had previously received first-aid training apart from professional training, 67.4% had not received such training. Compared to their pre-training views, a statistically significant increase was determined in the post-training views of the respondents on the benefit of the modules related to patient approach, basic life support, and managing bleeding and shock, and the necessity of the training module on bleeding and shock. In the evaluation which showed the extent of the development of the knowledge of the participants pre- and post-training, the rate of correct answers was found to be statistically significantly high after training compared to pre-training.

**Conclusion:** First-aid training is a necessity of all sections of society and the results of this study demonstrate quite clearly that even if first-aid training which is professionally required has been taken and there is a need for periodic updates with refresher courses.

**Keywords:** Approach to emergency patients; first-aid training; healthcare personnel; level of knowledge.

### ÖZET

**Amaç:** Bu çalışmanın amacı, bir eğitim ve araştırma hastanesindeki sağlık personelinin ilk yardım konusundaki bilgi düzeyini değerlendirmek ve tazeleme eğitiminin gerekliliğini değerlendirmektir.

**Yöntem:** Çalışma verileri, biri eğitim öncesi ve biri eğitim sonrası olmak üzere 4 bölümden oluşan 2 anketten elde edildi. İlk anketin uygulamalı ilk bölümü, kişisel bilgiler ve eğitime ilişkin görüşlerden oluşuyordu. Eğitim sonrası uygulanan ikinci anketin ilk bölümü, katılımcının eğitim hakkındaki görüşlerini sorguladı. Her iki anketin ikinci bölümünde, eğitim modüllerinin faydası ve gerekliliği konusunda görüşler, üçüncü bölümde ise eğitimin süresine ilişkin görüşler sorulmuştur. Her iki anketin de dördüncü bölümü, katılımcıların bilgi düzeyini belirlemeye yönelik sorularla aynıydı.

**Bulgular:** Çalışmaya 102 (% 39.1) erkek ve 159 (% 60.9) kadın olmak üzere toplam 261 sağlık personeli dahil edildi. Ankete katılanların % 32.6'sı mesleki eğitim dışında daha önce ilk yardım eğitimi alırken, % 67.4'ü böyle bir eğitim almamıştı. Ankete katılanların eğitim sonrası görüşlerinde hasta yaklaşımı, temel yaşam desteği, kanama ve şok yönetimi ile ilgili modüllerin yararına ve eğitimin gerekliliğine ilişkin eğitim sonrası görüşlerinde istatistiksel olarak anlamlı bir artış tespit edilmiştir. modül kanama ve şok üzerinde. Katılımcıların eğitim öncesi ve sonrası bilgilerinin ne ölçüde geliştiğini gösteren değerlendirmede, eğitimden sonra doğru cevap oranı eğitim öncesine göre istatistiksel olarak anlamlı derecede yüksek bulunmuştur.

**Sonuç:** İlk yardım eğitimi toplumun tüm kesimleri için bir zorunluluktur ve bu çalışmanın sonuçları oldukça net bir şekilde göstermektedir ki, profesyonel olarak gerekli olan ilk yardım eğitimi alınmış olsa bile, tazeleme kursları sağlık personeli için periyodik güncellemelere ihtiyaç vardır.

**Anahtar sözcükler:** Acil hastalara yaklaşım; bilgi düzeyi; ilk yardım eğitimi; sağlık personeli.

First-aid is defined as the implementations made in any accident or life-threatening event without medication, to save life or to prevent a worsening of the condition until help can be provided by healthcare personnel.<sup>[1,2]</sup> In this context, healthcare personnel may find themselves in a situation in their daily lives outside of their healthcare institution where they can help or even save a life with a simple and effective intervention without any healthcare equipment until full equipment and medical support arrives at the scene. Therefore, all individuals in society, regardless of whether or not first-aid training has been received, should be able to make first-aid intervention in an emergency situation which requires first-aid.<sup>[3]</sup>

In institutions providing healthcare education, first-aid lessons are a compulsory part of the curriculum. However, to the best of our knowledge, there have been no studies in Turkey which have evaluated whether or not these first-aid lessons have met their targets, whether the lesson content covers sufficient knowledge and skill to be able to administer first-aid and whether or not there is a need to repeat this training. Furthermore, there is a strong possibility that even if working in a healthcare institution, over time some knowledge becomes outdated and if not put to practical use, some knowledge is forgotten.

The aim of this study was to evaluate to evaluate the level of knowledge of first-aid of healthcare personnel in a training and research hospital and to assess the necessity for refresher training.

## Methods

In this study, a total of 8 h first-aid training was delivered to healthcare personnel working at our hospital between the years 2014 and 2016. The training comprised 6 h of theory, of 1 h each on the subjects of approach to an emergency patient, basic life support, bleeding and shock, orthopedic emergencies, and environmental emergencies and 2 h of

applications related to these subjects. A questionnaire was completed before and after completion of the training.

The study population comprised healthcare workers who had graduated from any department of a medical faculty or healthcare further education college. With the consideration of reaching the whole population, sampling selection was not applied and of the 484 employees who participated in the training; the study was conducted on 261 employees who agreed to participate and were within the scope of the study.

The study included personnel who were in specialist teams in the areas of the emergency service, intensive care and trauma. Permission was obtained from the relevant institutions before starting the study. The aim of the study was explained to the participants, and the research data was obtained from 2 questionnaires, each of 4 sections, which the volunteer participants were requested to complete in writing before and after the training.

The first section of the first questionnaire administered before the training comprised 5 questions to elicit personal information and the respondent's views on the training. The first section of the second questionnaire administered after the training consisted of 7 questions. The second section of both questionnaires was the same and questioned the benefits and necessity of each of the training modules. In the third section, the respondents were asked their opinion of the duration of the training. The fourth section of both questionnaires was also the same and consisted of 10 questions prepared by the specialists who delivered the training, with the aim of determining the level of knowledge of the respondents.

Statistical analyses of the data obtained in the study were applied using IBM SPSS v. 22 software (IBM SPSS, Turkey). In the evaluation of the data, descriptive statistical methods were used (mean, standard deviation, frequency). In the comparison of qualitative data, the McNemar test was used. A value of  $P < 0.05$  was considered statistically significant.

## Results

The study was conducted on a total of 261 healthcare personnel, comprising 102 (39.1%) males and 159 (50.9%) females with a mean age of 36.12±8.52 years (range, 21–58 years). The sample was composed of 37.2% auxiliary healthcare personnel, 36.4% doctors and 26.4% nurses. While 32.6% of the

respondents had received previous first-aid training apart from their professional training, 67.4% had not received any other training.

The views of the respondents to the first-aid training before taking the training are shown in Table 1 and the post-training views are shown in Table 2.

**Table 1. The pre-treatment opinions of the respondents to training**

	n	%
Have you previously taken any first-aid training? (apart from professional training)		
No	176	67.4
Yes	85	32.6
In an emergency situation, do you think you would be able to make a first-aid intervention?		
No	145	55.6
Yes	116	44.4
Do you think that the first-aid training that you are going to receive will be useful?		
No	13	5
Yes	248	95
Have you previously been in an emergency situation of a first-aid intervention outside of work?		
No	187	71.6
Yes	74	28.4
If you have been in such a situation, do you think that you were successful?		
No	199	76.2
Yes	62	23.8

**Table 2. The post-treatment opinions of the respondents to training**

	n	%
Do you think that the first-aid training that you received will be useful?		
No	8	3.1
Yes	253	96.9
After this training, do you think you would be able to implement a first-aid intervention in an emergency event?		
No	48	18.4
Yes	213	81.6
What is your opinion of the practical implementation module of the training?		
Sufficient	176	67.4
Insufficient	54	20.7
Long	1	0.4
Short	30	11.6
Are you considering taking this training again as a refresher course? At what intervals?		
I am not considering it	34	13
Once a year	134	51.3
Once every 2 years	71	27.2
At longer intervals	22	8.4
Where do you think is the most appropriate setting for this training?		
Schools	142	54.4
Universities	78	29.9
Workplaces	142	54.4
On demand	32	12.3
Would you recommend this training to your friends and colleagues?		
No	3	1.1
Yes	258	98.9
Is it appropriate to give this training in the form of videos on the Internet?		
No	28	10.7
Yes	233	89.3

The pre- and post-training views of the respondents in respect of the benefits of the training modules are summarised in Table 3 and their views on the necessity of the modules in Table 4. Compared to their pre-training views, a statistically significant increase was determined in the post-training views of the respondents on the benefit of the modules related to patient approach, basic life support, and managing bleeding and shock, and the necessity of the training module on bleeding and shock. A statistically significant increase was determined in the views that the module on orthopedic emergencies was not necessary in the results of the post-training questionnaire compared to pre-training.

The pre- and post-training views of the respondents in respect of the duration of the training are summarised in Table 5. A statistically significant difference was determined in respect of these views ( $p=0.001, p<0.05$ ).

The evaluations which showed the extent of the development of the knowledge of the participants pre- and post-training are summarised in Table 6. It can be understood from the table that the rate of correct answers to all the questions was found to be statistically significantly high after training compared to pre-training ( $p=0.005, p<0.05$ ).

**Table 5. Pre- and post-training evaluation of the length of the training**

Length of training	Pre-training	Post-training	p
	n (%)	n (%)	
Sufficient	147 (56.3)	177 (67.8)	0.001*
Insufficient	35 (13.4)	38 (14.6)	
Long	41 (15.7)	13 (5)	
Short	38 (14.6)	33 (12.6)	

McNemar test. \* $P<0.05$ .

## Discussion

Although events which require first-aid occur in many different forms, the results and the damage suffered by individuals may cause serious healthcare problems. To reduce the damage to a minimum, first-aid is a topic which all individuals in a society should know<sup>[4-6]</sup> because everybody may encounter events which require first-aid at any time in their life. In addition to the need for training, when the current literature in Turkey is examined, that there are very few studies which have evaluated whether or not first-aid lessons have met their targets, and whether the individuals

**Table 3. Pre- and post-training evaluation of the benefits of the training modules**

Which of the training modules do you think are most needed?	Pre-training	Post-training	p
	n (%)	n (%)	
Approach to an emergency patient	140 (53.6)	163 (62.5)	0.021*
Basic life support	205 (78.5)	224 (85.8)	0.020*
Bleeding and shock	115 (44.1)	147 (56.3)	0.003*
Head, chest and abdominal injuries	108 (41.4)	113 (43.3)	0.661
Orthopedic emergencies	84 (32.2)	93 (35.6)	0.368
Environmental emergencies	105 (40.2)	123 (47.1)	0.108

McNemar test. \* $P<0.05$ .

**Table 4. Pre- and post-training evaluation of the necessity of the training modules**

Which of the training modules do you think are unnecessary?	Pre-treatment	Post-treatment	p
	n (%)	n (%)	
Approach to an emergency patient	37 (14.2)	27 (10.3)	0.203
Basic life support	6 (2.3)	13 (5)	0.167
Bleeding and shock	21 (8)	5 (1.9)	0.002*
Head, chest and abdominal injuries	23 (8.8)	20 (7.7)	0.743
Orthopedic emergencies	26 (10)	49 (18.8)	0.005*
Environmental emergencies	42 (16.1)	40 (15.3)	0.894

McNemar test. \* $P<0.05$ .

Table 6. Pre- and post-training evaluation of knowledge related to the training (Q: Question)

	Pre-treatment n (%)	Post-treatment n (%)	P
Q1 (Approach to an emergency patient)			
Incorrect	170 (65.1)	140 (53.6)	0.005*
Correct	91 (34.9)	121 (46.4)	
Q2 (Basic life support)			
Incorrect	128 (49)	96 (36.8)	0.002*
Correct	133 (51)	165 (63.2)	
Q3 (Basic life support)			
Incorrect	147 (56.3)	55 (21.1)	0.001*
Correct	114 (43.7)	206 (78.9)	
Q4 (Orthopedic emergency)			
Incorrect	73 (28)	37 (14.2)	0.001*
Correct	188 (72)	224 (85.8)	
Q5 (Bleeding and shock)			
Incorrect	143 (54.8)	53 (20.3)	0.001*
Correct	118 (45.2)	208 (79.7)	
Q6 (Approach to an emergency patient)			
Incorrect	204(78.2)	153 (58.6)	0.001*
Correct	57(21.8)	108 (41.4)	
Q7 (Bleeding and shock)			
Incorrect	130 (49.8)	98 (37.5)	0.003*
Correct	131 (50.2)	163 (62.5)	
Q8 (head, chest and abdominal injuries)			
Incorrect	85 (32.6)	41 (15.7)	0.001*
Correct	176 (67.4)	220 (84.3)	
Q9 (Environmental emergency)			
Incorrect	72 (27.6)	31 (11.9)	0.001*
Correct	189 (72.4)	230 (88.1)	
Q10 (Environmental emergency)			
Incorrect	100 (38.3)	62 (23.8)	0.001*
Correct	161 (61.7)	199 (76.2)	

McNemar test. \*p&lt;0.05.

receiving the training have sufficient knowledge and skill to be able to administer first-aid, is another subject.<sup>[7-19]</sup> In other countries, research on this subject is ongoing.<sup>[19]</sup>

With first-aid, which is the integration of simple but effective and important applications, it is possible to save life. Furthermore, in the acquisition of first-aid knowledge, it is just as important to learn what must not be done as what must be done. This is mandatory for healthcare personnel.<sup>[20-26]</sup> Consequently, even if healthcare personnel who have graduated from healthcare institutions have knowledge of first-aid from their professional education, when encountering any event outside the healthcare institution when the necessary medical equipment is not available; they are in the same situation as any member of the public. The results of this study showed that 28.4% of the respondents had been

in a situation outside work which required first-aid intervention. Only 23.8% of the study participants believed that they could be successful in such a situation, which indicates how necessary this training is for healthcare personnel. Therefore, there is a need for everybody, regardless of whether or not they have had healthcare training, to have training in basic first-aid and to be able to apply this knowledge. It is also important that there is participation in professional training courses after graduation and that this is repeated at specific intervals. In the current study, approximately, one-third (32.6%) of the respondents had received first-aid training in addition to their professional training. Despite this, 95% believed that the training would be beneficial, even at the start of the training. This rate increased to 96.9% at the end of the training. Before the training sessions were

applied, fewer than half of the respondents (44.4%) thought that they would be able to make a first-aid intervention. That this rate increased to 81.6% in the post-training evaluation is the most significant finding of the study showing the benefit of the training. Other findings also demonstrated the benefit of the training, primarily that 51.3% of the respondents thought that the training should be repeated once a year and 27.4%, once every 2 years. In addition, 98.9% of the study respondents would recommend the training to their friends and colleagues. Training in the form of videos on the Internet was requested by 89.3%.

Although there was an increase from pre- to post-training in the views of the benefits of all the training modules, this increase was only at a statistically significant level for the modules related to the approach to an emergency patient, basic life support and managing bleeding and shock. The module thought to be of most benefit by the healthcare personnel both before and after the training was the module related to basic life support, and the least, beneficial module was stated to be orthopedic emergencies. The greatest positive difference in the opinions of the benefits was seen to be in the module concerning bleeding and shock. Similarly, from pre- to post-training, it was only in respect of the bleeding and shock module that there was a statistically significant decrease in the thought that it was unnecessary. In contrast, there was a statistically significant increase from pre- to post-training in the opinion that the orthopedic emergencies module was not necessary. This can be attributed to first-aid being mostly related to respiration and those with cardiac arrest followed by individuals who are bleeding or in a state of shock. In the same way, on the subject of orthopedic emergencies, it was concluded that the respondents believed that fractures are not generally life-threatening and they would be limited in what they could do.

As there are no data available on how long first-aid training given to healthcare personnel should be, there is a need for evaluation. This training course was planned as 8 h in the consideration that healthcare personnel already have basic knowledge of human anatomy and physiology. Knowledge of the basic first-aid skills was delivered to the healthcare personnel within that period. It was attempted to roughly estimate how long this period should be by asking the training participants. A statistically significant difference was determined pre- to post-training in the opinions of the 8-h period of training. The most striking difference was that those who thought that 8 h was long significantly decreased at the

end of the training period. In contrast, the rate of those who thought the 8-h period was sufficient increased. This can be attributed to the great number and intensity of in-service training courses provided in our institution.

In all training given, the most practical way of measuring the efficacy of the training is to evaluate the level of knowledge related to the training. A widely used method is to test the training participants before the training and apply the same test again after the training. The difficulty in this method is to attempt to determine to what extent the differences between the two tests are related to the training and to define whether or not the positive increase in the results reflects the application.<sup>[25]</sup> In the current study, the repeated test method was used to evaluate the training. Although this first-aid training was given to healthcare personnel and these participants already had some basic knowledge on this subject before the training, the highest mean correct response rate was 72.4% in the test administered before the training and the lowest mean correct response rate was 21.8%. After completion of the training course, these results increased to the highest mean correct response rate of 88.1% and the lowest mean correct response rate of 41.4%. Despite a statistically significant increase in the correct response rate to all the questions compared to the pre-training results, there still seem to be deficiencies in the first-aid knowledge of healthcare personnel.

The main limitation of this study was that the time period required for the training was not known. In addition, there was no standard defined for the initial educational level of the training participants. When delivering the first-aid training, as it was accepted that doctors, nurses and auxiliary healthcare personnel already have basic health knowledge related to first-aid, these groups within the study were not evaluated separately but were accepted as a single group of healthcare personnel. Another limitation on this subject was that the evaluation of the knowledge to learning transition was only made using the test re-test method. The study control group method, which is the most widely used training evaluation method with the capacity for the most effective measurement, was not used. Even though, it is possible to determine the presence of factors other than the training which affect performance in that method, no control group was formed for the present study from personnel who did not receive the training. That the study was conducted in a single center could also be considered a limitation. However, as there has been no other study in Turkey of first-aid training for health-

care personnel which has been this comprehensive and included this number of participants, the results of this study can be considered of value as an initial evaluation.

## Conclusion

First-aid training, which is necessary for all sections of society, is mandatory for healthcare personnel even if they have received training on the subject of first-aid as a requirement of their professional education, and it is extremely clear that there is a need for this to be repeated and updated at regular intervals. In the evaluations related to whether or not previously unknown knowledge has been learned after the training, even if various knowledge measurement methods are applied, such as examinations, the situation for first-aid is somewhat different. This is because having learned first-aid knowledge means that the knowledge and skills in question can be applied. That what has been learned becomes a reflex is often of the utmost importance in application. Even if we are not going to encounter an emergency situation at any moment, there is a need for healthcare personnel to regularly update and refresh their knowledge in respect of the knowledge remaining current as if an emergency incident could occur at any moment.

## Disclosures

**Peer-review:** Externally peer-reviewed.

**Conflict of Interest:** None declared.

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