ARAŞTIRMA MAKALESİ / RESEARCH ARTICLE

Evaluation of Knowledge Levels of Sports Science Students on First Aid and Basic Life Support

Spor Bilimleri Öğrencilerinin İlk Yardım ve Temel Yaşam Desteği Konusunda Bilgi Düzeylerinin Değerlendirilmesi

Nazan YÜKSEL[*] iD
Azize AYDEMİR[**] iD
Mustafa AYYILDIZ[***] iD

Abstract

The study was conducted to reveal the knowledge university students studying sports sciences about first aid and basic life support (CPR). A total of with a mean age of 21.15±2.12 years who reached 803 university students. Data were collected using a questionnaire which consisted of a total of 36 questions under three parts. The questionnaire was prepared based on the 2015 guidelines of the American Heart Association and European Resuscitation Council.

It was found that 75,6 % of the university students had low level of first aid knowledge, and 99,7 % had low level of basic life support knowledge 83,3% of the university students received first aid training before, and 40 % reported that they received the training two years ago. One significant finding is that the first aid (25,82±14,26) and CPR (45,23±22,88) scores of the university students who considered themselves competent in applying first aid were found to be lower than the others(p<0,05). The first aid knowledge level (56,40±21,12) of those who received applied first aid and CPR training was higher than those who received only theoretical (53,13±21,65) training (p<0,05). The students of the Coaching Education Department gave the highest number of correct answers to the First Aid and CPR questions. Almost all university students (88,4%) stated they wanted to receive first aid and CPR training. Our findings revealed that 90,4% of the Department of Physical Education and Sports Teaching students wanted to receive training, which shows that the students in the teaching programs are more sensitive about first aid and CPR.

It was found that the first aid and CPR knowledge level of the university students studying sports sciences were low and, they were aware of this situation. Having received first aid training within the last year and both theoretical and practical training positively affected the level of knowledge.

Keywords: First aid, basic life support, sports sciences, university student

* Öğretmen, Milli Eğitim Bakanlığı, Samsun Yakakent Çok Programlı Anadolu Lisesi, Samsun, Turkey, nznyuksel@hotmail.com,ORCİD: 0000-0001-5097-598X

** Dr. Öğr.Gör, Yozgat Bozok Üniversitesi SHMYO, Yozgay, Turkey, azizeaydemir@hotmail.com, ORCID: 0000-0002-4751-7088

*** Prof. Dr. Ondokuz Mayıs Üniversitesi Tıp Fakültesi, Samsun, Turkey, mustafaayyildiz64@gmail.com, ORCID: 0000-0002-6594-3080

Öz

Araştırma, spor bilimleri alanında öğrenim gören üniversite öğrencilerinin ilk yardım ve temel yaşam desteği (TYD) konusundaki bilgi düzeylerini belirlemek amacıyla yapılmıştır.

Araştırma kapsamında yaş ortalaması 21,15±2,12 olan toplam 803 üniversite öğrencisine ulaşılmıştır. Veriler, üç bölümden oluşan toplamda 36 soru bulunan bir anket kullanılarak toplanmıştır. Anket soruları, Amerikan Kalp Derneği ve Avrupa Resüsitasyon Konseyi'nin 2015 kılavuzlarına göre hazırlanmıştır.

Üniversite öğrencilerinin %75,6'sının ilk yardım bilgi düzeyinin ve %99,7'sinin temel yaşam desteği bilgi düzeyinin düşük olduğu belirlendi. Üniversite öğrencilerinin %83,3'ü daha önce ilk yardım eğitimi aldığını ve %40'ı eğitimi iki yıl önce aldığını bildirdi. İlk yardım uygulama konusunda kendisini yeterli gören öğrencilerin ilk yardım (25,82±14,26) ve TYD (45,23±22,88) puanlarının diğer gruplardan daha düşük olması anlamlıdır (p<0,05). Uygulamalı ilk yardım ve TYD eğitimi alanların ilk yardım bilgi düzeyinin (56,40±21.12) yalnızca teorik (53,13±21.65) eğitim alanlardan yüksek olması anlamlıdır (p<0,05). İlkyardım ve TYD sorularına en fazla doğru cevabı Antrenörlük Eğitimi Bölümü öğrencilerinin verdiği bulunmuştur. Üniversite öğrencilerinin tamamına yakını (%88,4) ilk yardım ve TYD eğitimi almak istediğini belirtmiştir. Bulgularımız Beden Eğitimi ve Spor Öğretmenliği Bölümü öğrencilerinin %90,4'ünün eğitim almak istediği yönündedir, bu da öğretmenlik programlarındaki öğrencilerin ilk yardım ve TYD konusunda daha duyarlı olduklarını göstermektedir.

Spor Bilimleri alanında öğrenim gören öğrencilerin İlk yardım ve TYD bilgi düzeyinin düşük olduğu ve bu durumun farkında oldukları bulunmuştur. Son bir yıl içinde ilk yardım eğitimi alınmış olması ile eğitimin teorik ve uygulamalı alınmış olması bilgi düzeyini olumlu yönde etkilemektedir.

Anahtar Kelimeler: İlk yardım, temel yaşam desteği, spor bilimleri, üniversite öğrencisi

INTRODUCTION

People are exposed to many dangers and risks of accidents in their work environments, schools, travels, homes and other settings. Accidents are generally classified as traffic, work, industrial, sports, school and home according to the place and causes (Kayırhan and Günergök, 2020). Especially during sports training, many injuries and situations that require emergency action may be experienced. Sports is one of the causes of major injuries for the 11-18 age group in Europe and North America. Reports indicate that a quarter of all injuries at school are serious, and deaths from sports activities are rare. However, in the 15-19 age group in the US, a total of 30 sports activities led to death in a 6-year period (Abernethy et al. 2008). Thus, it has become important for sports trainers to have adequate equipment for first aid practices against possible sports accidents.

In case of any accident, injury or illness, the non-medicated practices that are performed without seeking medical equipment until professional health support is provided at the scene in order to prevent the worsening of the situation are defined as first aid. As it is understood from this definition, the application is carried out with the aim of eliminating the life-threatening danger of the patient/the injured, ensuring the continuation of vital functions, and facilitating recovery by preventing the worsening of the condition (First Aid Regulations, 2015). The first aider must have the skills to assess the situation quickly and calmly, to cope with life-threatening conditions while protecting himself from danger, to understand the severity of the injury, to activate the emergency call for medical help, and to provide Basic Life Support (CPR) (Amro and Qtait 2017; Orhan and Aydın, 2020).

Sudden cessation of breathing and circulation due to various reasons is defined as cardiopulmonary arrest. In such a situation, CPR is essential to maintain the airway, breathing and circulation of the patient/injured (Kara et al, 2015). The CPR practice should be started immediately after the sudden cardiac arrest. If no intervention is made within 4 minutes following cardiac arrest, oxygenation of the tissues will be impaired, brain damage will begin between 4-10 minutes and irreversible damage may occur after 10 minutes (Kara et al, 2015). Therefore, high-quality cardiac compression is life-saving until emergency health services arrive, which supports the advanced life support process. The prerequisite for providing effective first aid and CPR is to have sufficient knowledge, skills and training in this regard.

CPR knowledge and skills have been defined as a duty for health care workers as well as other health personnel working in risky situations in the 1998 Europe Resuscitation Council guide (Soysal, 2016). The Resuscitation guide is updated and published every five years by the International Liaison Committee on Resuscitation (ILCOR), which provides guidance on first aid practices (ATTDER). In Turkey, the Ministry of Health continues to work on creating a standard CPR training program for the public and providing people with skills through first aid courses. In addition, the Ministry of National Education and universities include first aid courses in their curricula for students studying in programs that are more likely to encounter injuries both in the field of health and during their professional lives. The aim is to ensure that students perform standard, effective and quality applications in situations that require first aid and CPR, starting from their education period and throughout their professional life. The trainings aim to equip students with skills such as evaluating the patient/injured, making quick and correct decisions, being confident in himself and his knowledge, being able to perform first aid correctly, knowing first aid priorities, being calm, and calming the injured. These trainings are given theoretically to university students in the 4th semester, covering 14 lessons for one hour a week.

This study was conducted to evaluate the first aid and CPR knowledge levels of university students studying sports sciences. The results of the study are expected to show the effectiveness of first aid and CPR training and be a guide in terms of determining the deficiencies in this respect and making the necessary plans for the future.

METHOD

This descriptive study was conducted to reveal the knowledge levels of university students studying in the field of sports sciences about first aid and CPR. At the same time, it is aimed to determine whether the current information and training programs are followed and revised in the universe where the research is conducted. Research "The first aid training that Sports Science students receive periodically with applied and theoretical methods ensures that the knowledge is permanent." carried out within the framework of the hypothesis.

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and Human Sciences Ethics Committee (13.10.2017/ issue; 45428382-050-E.104311) and the written permission from the managers of the institution where the study would be conducted.

The target population of the study consisted of the students of the Faculty of Sports Sciences, Department of Physical Education and Sports Teaching (DPEST), Department of Coaching Education (DCE), Department of Sports Management (DSM) (n: 803; 21.15±2.12 years age; %33.4 female) in Samsun province, Turkey. No sample selection was performed, aiming to reach the whole target population, and 96% of the target population was reached. The remaining 4% of the target population could not be included in the study because five students did not agree to participate and 36 students were in a sports camp at the time of the study. A total of 803 university students participated in the research, and 83.3% of this training received First Aid and CPR training.

Data Collection: Data were collected using a questionnaire developed by the researchers in line with the 2015 updated guidelines (ERC, 2015; AHA, 2015) of The European Resuscitation Council (ERC) and American Heart Association (AHA), which are the sources of CPR and CPR training programs. The questionnaire consists of a total of 36 questions to determine the socio-demographic characteristics of the students (12), CPR knowledge and skills (12), and first aid knowledge and skills (12). Standard courses on this subject are given in the light of current AHA and ERC guidelines. For this reason, a validated and reliable data collection tool could not be used in the study, and the validity and reliability of the data collection tool were supported by taking expert opinion. The opinions of four emergency medicine specialists were received to questions' relevance and clarity and their scoring. The questionnaire was finalized after a pilot test administered to10 undergraduate and 10 high school students, who were not included in the main study.

The Questionnaire Form: It consists of three parts as Student Information Form, Basic Life Support Knowledge/Skill Questions, and First Aid Knowledge/Skill Questions. The first part was used to reveal the socio-demographic characteristics of the students. The second part of the questionnaire aims to reveal the CPR knowledge/skill level of students and the highest score that can be obtained from this part of the questionnaire is 100. Items 1, 6, 8, and 10 are scored out of 5, while the other items are scored out of 10 points. The score ranges and what they indicate are as follows: 0-69 low level of knowledge, 70-79 moderate level of knowledge, 80-89 good level of knowledge, and 90-100 very good level of knowledge. The third part of the questionnaire aims to reveal the first aid knowledge/skill level of students and the highest score that can be obtained from this part is 100. Items 1, 8, 9, and 10 are scored out of 5 points, while the other items are scored out of 10 points. The score ranges and what they indicate are as follows: 0-69 low level of knowledge, 70-79 moderate level of knowledge, 80-89 good level of knowledge, and 90-100 very good level of knowledge. The questionnaire was administered face-to-face by the first researcher between 30/10/2017-30/01/2018 in the schools where the students studied. Before the questionnaire was administered, the students were informed about the aim of the study and they signed a consent form. It took about 25±5 minutes for the students to answer the questions.

Tablo 1. Questions

Content of first-aid questions		Content of CPR questions	
1	Aim of first aid	1	Aim of CPR
2	Primary evaluation	2	Cardiac pressure/artificial respiration rate
3	Methods of haemostasis	3	Checking vital signs
4	Prioritizing the injured	4	Adult cardiac pressure
5	Recognizing shock	5	CPR application order
6	Intervention in nosebleeding	6	Pulse control
7	Intervention in chest injuries	7	Depth (quality) of cardiac compression
8	First aid for burns	8	The use of AED
9	First aid for fractures	9	Exhalation time
10	First aid for tick bite	10	Recognizing complete airway obstruction
11	First aid in epileptic seizure	11	CPR termination criteria
12	First aid for dislocation	12	Irreversible brain damage

Data Analysis: Statistical analyses were performed using SPSS 24.0. Frequency (number), percentage, median, minimum-maximum values, standard deviation and mean values were calculated for the descriptive analysis of the data. The Mann Whitney U, Chi-square, and Kruskal-Wallis tests were performed to analyze the data that did not show normal distribution. The statistical significance level was set at $p < 0,05$.

RESULTS

23% of the students studied in the DPEST, 30,2% in the DCE and 25% in the DSM. The mean age of the DPEST students was 20,19±1,91 years, and 61% were male. 41,9% of DPEST students receive education at the 1st grade, 14,8% in the 2nd grade, 38,6% in the 3rd grade, and 4,7% in the 4th grade level. The mean age of the DCE students was 20,95±2,31 years and 73,5% were male. 43,9% of DCE students are in the 1st grade, 11,3% in the 2nd grade, 20% in the 3rd grade, 24,8% in the 4th grade level. The mean age of the DSM students was 22,32±2,14 years and 63.4% were male. 3,9% of DSM students receive education in the 1st grade, 14% in the 2nd grade, 31,9% in the 3rd grade and 50.2% in the 4th grade level. 78% of the DPEST students, 74,5% of the DCE students and 98.8% of the DSM students received first aid and CPR training. 55,4% of the DPEST students received first aid training 1-2 years ago, while 37,2% of the DCE students and 51,2% of the DSM students received first aid training more than two years ago. It was found that 75,5% of the DPEST students, 71,9% of the DCE students and 97,2% of the DSM students received first aid and CPR training at university. 56% of the DPEST students received applied first aid training, while 71,1% of the DCE students and 76,8% of the DSM students received theoretical first aid training. 52,8% of the DPEST students, 58,6% of the DCE students and 54,7% of the DSM students stated that they felt partially competent in applying first aid and CPR. 90,4% of the DPEST students, 88,4% of the DCE students and 89,1% of the DSM students reported that wanting to receive CPR and first aid training (Table 2).

Table 2. Sociodemographic, first aid and CPR characteristics of the student groups

Characteristics		DPEST		DCE		DSM	
		(n)	(%)	(n)	(%)	(n)	(%)
Gender	Female	92	39,0	82	26.5	94	36,6
	Male	144	61,0	228	73,5	163	63,4
	Total	236	100	310	100	257	100
Received first aid and CPR training	Yes	184	78,0	231	74,5	254	98,8
	No	52	22,0	79	25,5	3	1,2
	Total	236	100	310	100	257	100
Grade level	1. grade	99	41,9	136	43,9	78	34,8
	2. grade	35	14,8	35	11,3	64	28,6
	3. grade	91	38,6	62	20,0	42	18,8
	4. grade	11	4,7	77	24,8	40	17,9
	Total	236	100	310	100	224	100
How many years ago was the training received?	1 year	60	32,6	64	27,7	39	15,4
	2 years	102	55,4	81	35,1	85	33,5
	More than 2 years	22	12,0	86	37,2	130	51,2
	Total	184	100	231	100	254	100
Where was the training received?	High school	28	15,2	55	23,8	4	1,6
	University	139	75,5	166	71,9	247	97,2
	Driving course	12	6,5	5	2,2	3	1,2
	Other	5	2,7	5	2,1	-	-
	Total	184	100	231	100	254	100
Mode of training	Theoretical	81	44.0	178	77,1	195	76,8
	Applied	103	56,0	53	22,9	59	23,2
	Total	184	100	231	100	254	100
Feeling competent about applying first aid	Yes	23	9.9	36	11.7	20	7.9
	Partially	123	52,8	180	58,6	139	54,7
	No	87	37,3	91	29,6	95	37,4
	Total	233	100	307	100	254	100
Willingness to receive training on first aid and CPR	Yes	208	90,4	274	88,4	228	89,1
	No	22	9,6	36	11,6	28	10,9
	Total	230	100	310	100	256	100

DPEST: Department of Physical Education and Sports Teaching – **DCE:** Department of Coaching Education – **DSM:** Department of Sports Management-**CPR:** Basic Life Support

The comparison of the mean first aid and CPR knowledge level scores with the socio-demographic characteristics is presented in Table 3. The CPR knowledge level of the male students ($27,48\pm13,23$) was found to be higher than that of the female students ($24,13\pm13,04$), and the first aid knowledge level of the female students ($55,07\pm21,25$) was found to be higher than that of the male students ($49,31\pm22,42$). The differences between genders were statistically significant ($p<0,001$). One significant finding is that those who received CPR and first aid training before had higher CPR ($27,16\pm13,42$) and first aid ($54,06\pm21,54$) knowledge scores than those who did not receive training ($p<0,001$). Another statistically significant finding is that those who received training on CPR a year

ago had a higher CPR (30,57±13,49) score than those who received it 2 years ago and more than 2 years ago (p<0,001). Those who received first aid and CPR training in the driving course were found to have higher (58,50±18,29) first aid knowledge level than those who received training in other training environments (p<0.001). The first aid knowledge level (56,40±21,12) of those who received applied first aid and CPR training was higher than those who received only theoretical (53,13±21,65) training. The students who felt partially competent in first aid and CPR had higher CPR (27,69±13,19) and first aid (52,71±22,07) knowledge levels than those who felt competent or incompetent (p<0,05). One statistically significant finding is that the first aid knowledge level of those who were willing to receive first aid and CPR training (52,70±21,95) was higher than those who did not want to receive training (42,16±21.69) (p<0.001).

Table 3. Comparison of students' demographic characteristics and CPR and First Aid knowledge levels

Characteristics		CPR score		Test	First aid score		Test
	(n)	x̄ ± SS	Min-Maks		x̄ ± SS	Min-Maks	
Gender	Female	24,13±13.04	0-70	U 100547	55,07±21,25	0-75	U 100586
	Male	27,48±13.23	0-100	p <0.001	4,31±22,42	0-100	p <0.001
School/ Department	DPEST	25,44±12,47	0-60	χ2 5.074 p 0.16	56,36±20,81	5-100	χ2 0,525 p 0,76
	DCE	28,37±13,21	0-70		55,42±22,27	5-100	
	DSM	27,39±14,09	0-75		54,77±20,86	5-100	
Received first aid and CPR training	Yes	27,16±13,42	0-75	U 81299.5 p <0.001	54,06±21,54	0-100	U 66581 p <0,001
	No	23,69±12,39	0-60		42,39±21,94	0-100	
Where was the training received?	High school	28,22±14,08	0-60	χ2 7.77 P 0.10	48,28±22,47	0-100	χ2 36,80 p < 0,001
	University	27,08±13,30	0-75		56,59±20,78	5-100	
	Driving course	28,75±14,32	5-50		58,50±18,29	5-85	
	Other	22,22±11,42	0-50		38,75±19,29	5-70	
How many years ago was the training received?	1 year	30,57±13,49	0-65	χ2 17,44 p <0,001	55,34±20,85	5-100	χ2 3,602 P 0,308
	2 years	25,34±12,81	0-65		54,86±22,29	0-100	
	More than 2 years	27,07±13,65	0-75		52,46±21,10	5-100	
Mode of training	Theoretical	27,26±13,77	0-75	U 61755.5 p 0.917	53.13±21.65	0-100	U 56554.5 p 0.04
	Applied	26,89±12,51	0-65		56.40±21.12	5-100	
Feeling competent about applying first aid	Yes	25,82±14,26	0-65	χ2 13,69 p 0,001	45,23±22,88	5-95	χ2 9,594 p <0,05
	Partially	27,69±13,19	0-75		52,71±22,07	0-100	
	No	24,27±12,74	0-60		51,05±21,98	0-100	
Willingness to receive training on first aid and CPR	Yes	26,39±13,24	0-75	U 59912,5 p 0,69	52,70±21,95	0-100	U 44515 p <0,001
	No	26,12±13,38	0-60		42,16±21,69	5-100	

DPEST: Department of Physical Education and Sports Teaching – **DCE:** Department of Coaching Education – **DSM:** Department of Sports Management – **CPR:** Basic Life Support

It was found that 779% of the DPEST students, 73,1% of the DCE students and 77% of the DSM students had alow level of first aid knowledge. It was further revealed that 11,9% of the DPEST students, 19,4% of the DCE students and 14,8% of the DSM students had a moderate level of first aid

knowledge. It was also found that 8,9% of the DPEST students, 5,5% of the DCE students and 6,6% of the DSM students had a good level of first aid knowledge, and 1,3% of the DPEST students, 1,9% of the DCE students, and 1,6% of the DSM students had a very good level of first aid knowledge. Considering the whole sample, it was found that 75,6% of the students had low levels of first aid knowledge, 15,7% had a moderate levels of levels of first aid knowledge, and 6,8% and 1,3% had a good and very a good levels of first aid knowledge, respectively. It was revealed that 100% of the DPEST and DCE students and 99,6% of the DSM students had a low CPR knowledge. 0,2% of the DSM students were found to have a moderate CPR knowledge. It was revealed that 99,7% of all students had a low CPR knowledge level and 0.2% had a moderate CPR knowledge level (Table 4).

Table 4. Distribution of students' first aid and CPR knowledge levels

School/ Department	First aid knowledge level								CPR knowledge level							
	Low (0-69)		Moderate (70-79)		Good (80-89)		Very good (90-100)		Low (0-69)		Moderate (70-79)		Good (80-89)		Very good (90-100)	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
DPEST	183	77,5	28	11,9	21	8,9	3	1,3	236	100	0	0	0	0	0	0
DCE	226	73,1	60	19,4	17	5,5	6	1,9	309	100	0	0	0	0	0	0
DSM	198	77	38	14,8	17	6,6	4	1,6	256	99,6	2	0,8	0	0	0	0
Total	607	75,6	126	15,7	55	6,8	13	1,6	801	99,7	2	0,2	0	0	0	0

DPEST: Department of Physical Education and Sports Teaching – **DCE:** Department of Coaching Education – **DSM:** Department of Sports Management – **CPR:** Basic Life Support

The majority of the students answered the questions about the purpose of first aid (57,2%), methods of stopping bleeding (68,4%) and tick bites (69,9%) correctly. The questions with the lowest rate of correct answers were prioritizing of the injured (38.7%), recognizing shock (31,3%) and first aid for epileptic seizure (49%). The DCE students gave the most correct answers to the first aid questions (Figure 1).
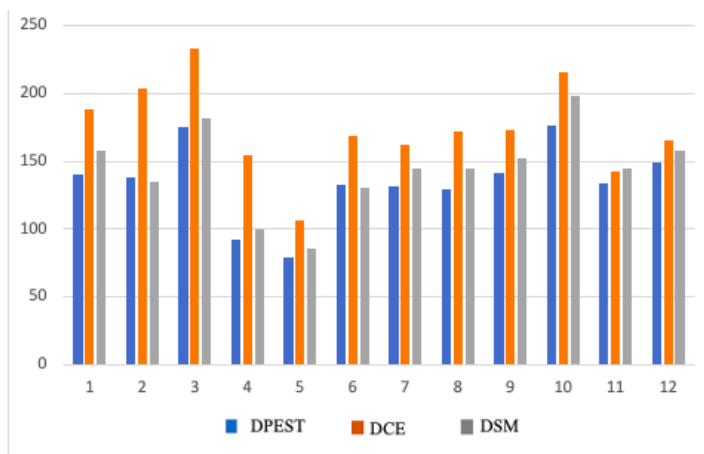

Figure 1: Distribution of students' correct answers to first aid questions

The rate of correct answers was found to be high in the questions regarding the aim of CPR (59,2%), pulse control (56,9%), and recognizing complete airway obstruction (57,5%). The questions with the lowest rate of correct answers are related to checking vital signs (12,8%), the order of CPR application (7,2%), and artificial respiration to the casualty (5,07%). The DCE students gave the most correct answers to the CPR questions (Figure 2).
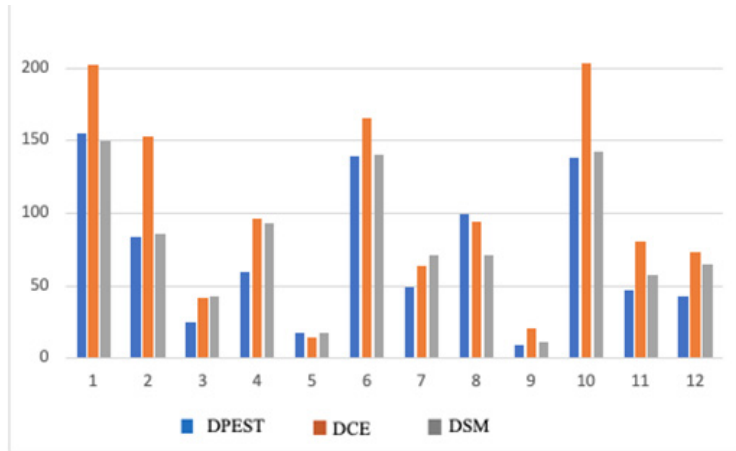

Figure 2: Distribution of students' correct answers to CPR questions

DISCUSSION

In this study, we investigated the knowledge levels university students who studied sports sciences and who were trained in first aid and CPR. In this section, the discussion of the research findings is presented in line with the literature.

The CPR knowledge levels of male students (27.48±13.23) and the first aid knowledge levels of female students (55.07±21.25) were found to be statistically significantly higher (p<0.001). Similarly, in their studies on the first aid knowledge level of teachers or students, Usta et al. (2017), Aktaş et al. (2019), and Orhan et al. (2020) found that female teachers and students had higher levels of knowledge than male teachers and students (Usta, Küçük and Torpuş, 2017; Aktaş et al, 2019; Orhan and Aydın, 2020). Contrary to our research, Saruhan et al. (2018) stated that male students' first aid knowledge level was higher than female students (Saruhan et al., 2018). On the other hand, Kara et al. (2015) reported that gender had no effect on the level of first aid knowledge (Kara et al., 2015). Although there are different results regarding the gender variable in the literature, it is believed that women are more sensitive about first aid due to the protective instinct related to motherhood.

It was revealed that 83,3% of the university students received first aid training before, and 20,3% of these students reported that they received the training a year ago. One significant finding is that those who received first aid training a year ago had a higher level of knowledge than those who

received the training earlier, and those who received the training in a driving course had a higher level of knowledge than those who received the training in high school, university and other courses (p<0,001). Contrary to our research, Altındiş et al. (2017) found that the first aid training received in driving courses did not contribute positively to the education level of the people. They even emphasized the necessity of investigating the seriousness of the training given in driving courses (Altındiş et al., 2017). It is thought that the lack of standards in first aid training is the reason for the difference between the results of the two studies.

The first aid (42,39±21,94) and CPR (23,69±12,39) knowledge levels of the university students who received first aid and CPR training before were higher than those who did not receive training before (54,06±21,54; 27,16±13,42) (p<0,001). Similarly, Aktaş et al. (2019) found that those who received first aid training before had a higher level of knowledge than those who did not (Aktaş et al., 2019). Usta et al. (2017) found that the knowledge level of university students who had a first aid course in their curriculum was higher than those who did not have a first aid course in their curriculum (Usta et al., 2017). However, Nayır et al. (2011), Özyürek et al. (2013), and Sönmez et al. (2014) reported that previous training had no significant effect on first aid knowledge (Nayır et al., 2011; Özyürek et al., (2013; Sönmez et al., 2014). Studies present different findings on the subject; however, when similar findings are examined, it is noteworthy that these clustered in recent years or in the distant past. Therefore, we believe that supporting the theoretical first aid training with practical training (using a simulator) has a positive contribution to the results. Our research findings showed that receiving first aid training as applied (56,40±21,12) and only as theoretical (53,13±21,65) leads to a statistical difference in knowledge levels (p<0,05).

More than half (55.1%) of the sports science university students reported that their first aid and CPR knowledge was partially sufficient. Ironically the first aid (25,82±14,26) and CPR (45,23±22,88) scores of the students who considered themselves competent in first aid application were found to be lower than the other groups (p<0,05). Altındiş et al. (2017) drew attention to the fact that some students considered themselves competent in first aid, but could not prove this with their level of knowledge (Altındiş et al., 2017). In the present study, 64.9% of the students considered themselves competent or partially competent in first aid application, but it was found that 75.6% had low level of knowledge about first aid and 99.7% had low level of knowledge about CPR. We believe that the students in our study were not well aware of the importance of first aid and the fact that even a simple wrong practice could lead to vital results, which may be the reason behind the negative results. In this case, it is inevitable that courage stemming from ignorance will lead to devastating results.

In our study, almost all the university students (88,4%) stated that they wanted to receive training on first aid and CPR. It is significant that the students with high first aid (52,70±21,95) and CPR (42,16±21,69) knowledge scores wanted to receive training (p<0,001). Sönmez et al. (2014) reported that 97.3% of the teachers, Orhan et al. (2020) found that 96% of the pre-service teachers, and Usta et al. (2017) stated that 55.2% of the university students wanted to receive first aid training (Orhan and Aydın, 2020; Sönmez et al., 2014; Usta et al., 2017). Our findings revealed that 90,4% of the DPEST students wanted to receive training, which shows that the students in the teaching programs

are more sensitive about first aid and CPR. First aid practices are a part of daily life, which may have contributed to the high level of awareness about the lack of enough training.

It was found that the rate of correct answers was over 50% in four of the 12 questions about CPR and in ten of the 12 questions about first aid. Kara et al. (2015) stated that in the questionnaire consisting of questions about CPR, the rate of correct answers of nurses was over 50% only in two questions out of 11 questions. This finding was attributed to the fact that the trainings were given more than six months ago and the trainers did not follow the current guidelines, but instead shared old information (Kara et al., 2015). Çiftçi Sivri et al. (2021) investigated the CPR knowledge levels of dentists and pharmacists and found that the knowledge level of both groups was low before the training (10.16±2.16; 9.53±1.80), but as a result of the trainings provided, a significant difference was observed in knowledge levels (Çiftçi Sivri et al., 2021). Our research results are more positive than those found in the literature. However, we believe that even more positive results could have been achieved if the students in our study had not received first aid and CPR trainings a long time ago and if all students had received practical training.

It was found that first aid knowledge was very good in 1.6%, good in 6.8%, moderate in 15.7% and low in 75,6% of the university students. While this finding is compatible with some studies which focused on students and teachers in Turkey and abroad, it does not coincide with some studies. Although Altındiş et al. (2017) reported that 92,5 % of the students did not have sufficient knowledge about first aid, Temel et al. (2018) found that the level of knowledge of the students was moderate (Altındiş et al., 2017; Temel et al., 2018). Amro and Qtait (2017) found that the mean first aid score of the teachers in their study was 71.41%, whereas Gowri and Missiriya (2017) found that 78% of the teachers did not have sufficient knowledge about health care (Amro and Qtait, 2017; Gowri and Missiriya, 2017). Although the countries where the studies were conducted are different, it is generally believed that teachers and teacher candidates should be equipped with first aid skills. Sönmez et al. (2014) reported that 68.2% of teachers encountered a situation that required first aid in their professional life, and the results of the study provide important evidence in this regard (Sönmez et al., 2014).

Consistent with some research results, it was found that one of the three questions that students answered most correctly was related to the aim of first aid (57,2%) (Temel et al., 2019; Yetiş and Gürbüz 2018). Again, 68.4% of the students answered the question about the methods of haemostasis correctly. Contrary to our findings, Temel et al. (2019) reported that the rate of answering the question regarding bleeding management correctly was below 35%, while Usta et al. (2017) found the rate of correct answers as 32.9% (Temel et al., 2019; Usta et al., 2017). Joseph et al. (2014) stated that 70% of the medical students had a moderate level of knowledge about bleeding (Joseph et al., 2014). In addition, nearly half of the students in our study (49%) answered the question about giving first aid to a person with epileptic seizure correctly. However, Altındiş et al. (2017) found this rate to be 26.7% (Altındiş et al., 2017). Temel et al. (2019) found that the vast majority of the students knew the symptoms of airway obstruction. Consistent with this finding, we also found that more than half of the students (57,5%) were able to recognize complete airway obstruction (Temel et al., 2019).

Yetiş and Gürbüz (2018) revealed that nearly half of the students had incorrect knowledge about respiration, and similarly, in our study, the majority of the students answered the question about artificial respiration incorrectly (Yetiş and Gürbüz, 2018). Altındiş et al. (2017) found that nearly half of the students knew the correct order of first aid to the unconscious injured. However, in our study, the rate of answering the question about the order of first aid application correctly was quite low (7,2%) (Altındiş et al., 2017). Although the rate of correct answers to the questions varies, it is clearly seen that the university students need a comprehensive first aid training. Our study showed that the subjects that need special attention during first aid and CPR training are determining the priority order of the injured, recognizing shock, applying first aid to the person having epileptic seizure, checking vital signs during CPR, the order of CPR application, and providing artificial respiration to the injured. Orhan et al. (2020) also argue that students need first aid training particularly on external bleeding, fractures, trauma, epilepsy, diabetes and burns (Orhan and Aydın, 2020).

CONCLUSION

Our study revealed that the first aid and CPR knowledge level of the university students studying sports sciences was low and they were aware of this situation. Almost all the university students wanted to receive training on first aid and CPR. It was found that the university students needed more training on determining the priority order of the injured, recognizing shock, applying first aid to the person having epileptic seizure, checking vital signs during CPR, the order of CPR application, and providing artificial respiration to the injured. Having received first aid training within one year, both theoretically and practically, had a positive effect on the level of knowledge.

Success in a subject comes with planned and continuous education. It is recommended that the subjects related to basic first aid practices should be included more in the undergraduate curriculum of teacher training programs. Trainings can be organized to increase the knowledge level of the students and to update and reinforce the existing knowledge. The scope of the training activities to be carried out should be expanded considering the subjects on which students have low level of knowledge. In addition, giving applied and face-to-face trainings including a variety of visuals, the question-answer technique, and small group studies, and ensuring active participation of the participants can make a difference in terms of increasing the level of knowledge. It is recommended that all First Aid and CPR educators update their training materials every five years in line with the published guidelines.

Limitations: Only the theoretical knowledge of the students about first aid and CPR were evaluated. Their skills were not measured with practical applications. The data collection process was carried out only in Samsun province in a cross-sectional manner, which limits the generalizability of the results.

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