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Assessment on Efficacy of Basic First Aid Training Provided to Academic and Administrative Staff of a State University

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ABSTRACT

Objective: *This study aims to assess the efficacy of first aid training provided to academic and administrative staff working at a state university.* ***Materials and methods:*** *The study sample included 318 academic and administrative staff members from a state university. Between the dates of December 15, 2017 to December 22, 2017, the study participants attended basic first aid training, the sessions of which lasted for 2 hours. Before and after the training, participants answered a 20-question survey questionnaire. Frequency, mean, Mann-Whitney U Test, Kruskal Wallis Variance Analysis, Wilcoxon T-test, McNemar chi-square analysis, and Spearman correlation for the analysis between variances, were used for the statistical assessment of data.* ***Results:*** *The mean age of the participants was 35.96 ± 8.96, 68.6% were female, 54.7% held a bachelor's degree. The mean posttest score of the participants was found to be 75.0 ± 15.6, which was significantly higher than their mean pretest score of 60.0 ± 14.5 ($p<0.05$). Significant differences were found in terms of gender, level of education, and having undergone first aid training before and first aid knowledge scores ($p<0.05$), and a negative significant relationship was found between age and first aid knowledge scores.* ***Conclusion:*** *Results of the study showed that the first aid training provided to participants substantially increased their knowledge level, which strongly suggests that the training was effective. It is recommended that training can be repeated periodically, and they must be made known and available to all segments of society through the cooperation of various institutions and organizations.*

Keywords: Universities, First aid, Training programs, Efficiency

INTRODUCTION

People encounter accidents at home, school, work, or on the street that requires first aid treatment. Simple yet effective first aid applied on time and at the site can help to save a person's life, prevent their permanent disability or diminish the seriousness of their injury [1-4].

Previous studies have shown that 10-35% of post-accident deaths occur in the first 5 minutes, and more than 50% occur in the first 30 minutes [2,3,5,6]. However, with the proper, knowledgeable application of first aid, 38% of deaths can be prevented at the site of the accident, and first aid treatment applied in the first five minutes has shown to be most effective [3,6]. In 80% of cases, the time taken by an ambulance to reach patients is 10 minutes or shorter in urban settings, and 16 minutes or shorter in rural areas. According to the American Heart Association (AHA), cardiac life-support ambulances should be able to reach an emergency scene in 8 minutes [7,8]. Yet, it typically takes more than 5 minutes for medical services to reach emergency situations and this could lead to serious issues, especially in cases where the circulatory system stops for more than 5 minutes, as this causes the brain to suffer irrecoverable damage, resulting in death [9-12]. The data shows how vital the matter of time is in saving lives. Therefore, to get the most effective results from first aid treatment it is important for trained people to perform the necessary initiatives before the professional health team arrives [2,13]. However, studies have found that the willingness of individuals to apply first aid at a scene of an emergency and the quality of first aid treatment are low around the world, but with

first aid training, the willingness can be increased and the quality can be improved [13-16]. Therefore, increasing the number of people who have been trained and know how to correctly apply first aid can decrease the number of deaths and serious injuries in cases around the world where first aid is needed [2,3,10,17]. Moreover, it has been emphasized that the health benefits derived from first aid will serve to improve the sense of social responsibility within society and strengthen societal values [18]. Knowledge and skills in performing first aid are especially important for personnel working in universities, where there is a dense population of young people and accidents and emergencies necessitating first aid can occur more frequently [19]. Some studies regarding this issue have recommended that studies assessing first aid knowledge in universities should not only include students, but also academic personnel, in order to fully identify any deficiencies in first aid capabilities [4,20]. A literature review showed that while there have been domestic-based and international-based studies assessing the efficacy of training on first aid, there have been no studies examining the efficacy of first aid training on knowledge level and skills that specifically involved academic and administrative personnel of universities [3,5,13,17,21]. Yet, academic and administrative personnel constitute a group that has a strong possibility of experiencing cases that require first aid. To this end, this study aims to assess the results of first aid training given to academic and administrative personnel working at a state university on their knowledge level of first aid treatment. The following research questions were developed for the study.

- What is the first aid knowledge score of participants before the training?
- What is the first aid knowledge score of participants after the training?
- Is there any difference between the participants' basic first aid knowledge scores before and after training?
- Is there any difference in the participants' basic first aid knowledge scores before and after training in terms of their socio-demographic characteristics?

MATERIALS AND METHODS

Subjects

The study was conducted using a single-group pretest-posttest model. The population of the study consisted of individuals who participated in the first aid training provided to the personnel of a state university from December 15, 2017 to December 22, 2017. Approval to conduct this study was obtained from the head of the personnel department of the related university. Moreover, informed consent forms were received from all participating personnel who voluntarily agreed to participate after providing them with information about the aim of the study. The study was conducted in agreement with the Helsinki declaration and approval was obtained from the Faculty of Medicine Clinical Research Ethics Committee (KÜ GOKAEK 2018/221). The sample of the study included 318 individuals who participated in this training and responded to the survey questionnaire in the pretest and posttest.

Data collection

The survey questionnaire was used as the data collection tool. This survey form includes two main parts, with the first part involving questions on the demographic characteristics (age, sex, education level, marital status, whether or not they had experienced an accident before, and whether or not they had received first aid training before) of the respondents, and the second part involving 20 questions on basic first aid, which were developed on the basis of the related literature. Each correct answer on the second part of the questionnaire assessing the knowledge level of the participants is scored 5 points, which means the highest possible total score is 100. It took approximately 15-20 minutes for the respondents to complete the survey questionnaire, both in the pretest and the posttest application. The study was conducted from December 15, 2017 to December 22, 2017, using a single-group pretest-posttest design. Before starting the training of the academic and administrative personnel who participated in the study, the participants first completed the survey questionnaire, which included both parts, the demographic characteristics part and the first aid questions part. Participants were then given training on basic first aid by a researcher. A computer, projector, and videos about first aid were used as training material. After completion of the training, the participants were asked to once again answer the survey questions on first aid. Out of the 431 participants who were trained, 113 were excluded for failure to complete either the pretest or posttest applications. Statistical assessments were performed by comparing the pretest and posttest scores of the remaining 318 participants.

Statistical Analysis

Statistical assessments were performed with the IBM SPSS version 20.0 (SPSS Inc., Chicago, IL, USA) package. Suitability to a normal distribution was determined by the Kolmogorov-Smirnov Test. Median (25-75%) and frequency (percentage) was calculated for numerical variables which did not show normal distribution and for categorical variables. The difference between groups in terms of numerical variables without normal distribution was determined using the Mann-Whitney U Test, Kruskal-Wallis Variance Analysis, and Dunn's multiple comparisons. Wilcoxon t-test and McNemar chi-square analysis were used for cases when the assumption of normal distribution independent samples for the difference between repeating measures were not met. Spearman correlation analysis was used to analyze the relationship between variables. Values of $p<0.05$ for the two-tailed hypothesis test were considered as an indication of statistical significance.

RESULTS

The socio-demographic data of the participants are given in Table 1, where it can be seen that their mean age was 35.96 ± 8.96, 68.9% were female, 54.8% had completed an undergraduate program, 66.7% were married, 84% never had a work-related accident, and 56.3% had not received first aid training before, out of the 23.5% who had received first aid training, they had received it 2-5 years ago, and of the 55.8% who had received training in driving school, 97.5% were interested in getting more information about first aid, 84.3% did not have work accident before.

Table 1 Demographic characteristics of the participants (n=318)

Characteristics		n	%
Mean age ± SD (min-max.) 35.96 ± 8.96 (19.00-80.00)			
Sex	Female	218	68.6%
	Male	100	31.4%
	Total	318	100.0%
Level of education	Secondary School	4	1.3%
	High School	24	7.5%
	Associate Degree	9	2.8%
	Undergraduate	174	54.8%
	Postgraduate	107	33.6%
	Total	318	100.0%
Marital status	Married	212	66.7%
	Single	106	33.3%
	Total	318	100.0%
Previous first aid training	Yes	179	56.3%
	No	139	43.7%
	Total	318	100.0%
Time of previous first aid training	This year	12	6.7%
	1 year ago	36	20.1%
	5 years ago	42	23.5%
	6-9 years ago	35	19.6%
	10-14 years ago	24	13.4%
	15-19 years ago	14	7.8%
	20 years or more	16	8.9%
	Total	179	100.0%
The institution where first aid training was received	Driving school	100	55.8%
	University of employment	36	20.1%
	School	22	12.3%
	University hospital of employment	19	10.7%
	First aid course	5	2.8%
	Total	179	100.0%

Willing to get information about first aid	Yes	310	97.5%
	No	8	2.5%
	Total	318	100.0%
Experienced a work accident before	Yes	50	15.7%
	No	268	84.3%
	Total	318	100.0%

Table 2 shows the correct answer percentage obtained by the participants to all 20 of the questions on first aid. Accordingly, 26.7% (n=85) of the participants correctly answered the first question under 'basic first aid applications' in the pretest, while this figure rose to 28% (n=89) in the posttest. While the number of those who responded correctly increased in the posttest, the difference between correct responses to this question on the pretest and the posttest was not statistically significant (p>0.05).

Table 2 Number and percentage of correct answers of participants on pretest and posttest (n=318)

Questions	Pre-Test Correct		Post-Test Correct		p-value
General First aid	**n**	**%**	**n**	**%**	**p[a]**
1. Definition of first aid	300	94.3	313	98.4	0.001*
2. Basic applications of first aid	85	26.7	89	28	0.880
3. Preliminary aim of first aid	210	66	187	58.8	0.068
4. Main characteristics of first aid	242	76.1	260	81.8	0.008*
5. Wrong information about first aid	295	92.8	282	88.7	0.189
Difference between first aid and immediate aid	290	91.2	286	89.9	1.000
Description of BLS	176	55.3	228	71.7	<0.001*
Description of immediate treatment	282	88.7	289	90.9	0.136
Basic Life Support (BLS) Applications	**n**	**%**	**n**	**%**	**p[a]**
Wrong behavior when calling 112	229	72	222	69.8	0.672
First step in Chain of Survival	121	38.1	159	50	<0.001*
Initiatives which should not be applied during BLS	302	95	298	93.7	0.359
Depth of chest compression	101	31.8	209	65.7	<0.001*
Number of pushes per minute to be applied in chest compression	100	31.4	191	60.1	<0.001*
Initiatives to be done in cases of loss of breathing after checking for consciousness	136	42.8	182	57.2	<0.001*
Other First Aid Applications	**n**	**%**	**n**	**%**	**p[a]**
Correct applications for lacerations or deep wound injuries	82	25.8	203	63.8	<0.001*
Initiatives not to be taken for someone who has had an epileptic seizure	161	50.6	232	73	<0.001*
Initiatives not to be taken for someone who has had a heart attack	104	32.7	155	48.7	<0.001*
Most severe burn type	221	69.5	279	87.7	<0.001*
Initiative not to be taken for someone who has suffered a burn	181	56.9	233	73.3	<0.001*
Coma position	171	53.8	255	80.2	<0.001*

[a]: McNemar Test; *p<0.05

On the basic first aid characteristics question, 76.1% (n=242) of the participants answered correctly on the pretest and 81.8% (n=260) on the posttest. This increase from the pretest to the posttest was found to be statistically significant (p<0.05). On the correct behaviors to be applied in first aid question, 72% (n=229) of the participants answered correctly in the pretest and 69.8% (n=222) in the posttest. Though there was a decrease in this figure from the pretest to the posttest, it was found to have no statistical significance (p<0.05).

On the first step in the chain of survival question, 38.1% (n=121) of the participants answered correctly in the pretest and 50% (n=159) in the posttest. This increase from the pretest to the posttest was found to be statistically significant (p<0.05). On the question of correct emergency treatment, 88.7% (n=282) of the participants answered correctly in the pretest and 90.9% (n=289) in the posttest. This increase from the pretest to the posttest was found to have no statistical significance (p<0.05).

On the description of BLS question, 55.3% (n=176) of the participants answered correctly in the pretest and 71.7% (n=228) in the posttest. This increase from the pretest to the posttest was found to be statistically significant (p<0.05).

On the depth of chest compression question, 31.8% (n=101) of the participants answered correctly in the pretest and 65.7% (n=209) in the posttest. This increase from the pretest to the posttest was determined to be statistically significant ($p<0.05$).

On the question of a number of pushes per minute in heart compression procedures, 31.4% (n=100) of the participants answered correctly in the pretest and 60.1% (n=191) in the posttest. This increase from the pretest to the posttest was determined to be statistically significant ($p<0.05$). On the question of a correct initiative to take if a person stops breathing, 42.8% (n=136) of the participants answered correctly in the pretest and 57.2% (n=182) in the posttest. This increase from the pretest to the posttest was determined to be statistically significant ($p<0.05$).

On the question of most suitable application to be performed in cases of lacerations or deep cuts, 25.8% (n=82) of the participants answered correctly in the pretest and 63.8% (n=203) in the posttest. This increase from pretest to posttest was determined to be statistically significant ($p<0.05$). On the question of initiatives not to be taken for epileptic seizures, 50.6% (n=161) of the participants answered correctly in the pretest and 73.0% (n=232) in the posttest. This increase from pretest to posttest was determined to be statistically significant ($p<0.05$).

On the question of initiatives not to be taken for heart attacks, 32.7% (n=104) of the participants answered correctly in the pretest and 48.7% (n=155) in the posttest. This increase from pretest to posttest was determined to be statistically significant ($p<0.05$). On the question of most severe burn type, 69.5% (n=221) of the participants answered correctly in the pretest and 87.7% (n=279) in the posttest. This increase from pretest to posttest was determined to be statistically significant ($p<0.05$).

On the question of initiatives not to be taken for burn victims, 56.9% (n=181) of the participants answered correctly in the pretest and 73.3% (n=233) in the posttest. This increase from pretest to posttest was determined to be statistically significant ($p<0.05$). On the question of coma position, 53.8% (n=171) of the participants answered correctly in the pretest and 80.2% (n=255) in the posttest. This increase from pretest to posttest was determined to be statistically significant ($p<0.05$).

The distribution difference between the mean scores of the participants on the pretest and posttest knowledge of first aid is given in Table 3, where it shows that the mean pretest score and posttest score of the participants was 60.0 ± 14.55 and 75.0 ± 15.69, respectively. This difference between the 2 was determined to be statistically significant ($p<0.001$).

Table 3 Pretest-posttest scores of participants (n=318)

Score	n	mean	median	min.	max	SD	z	p[e]
Pre-Test	318	59.80	60	50	70	14.55	-11.51	<0.001*
Post-Test	318	71.50	75	65	80	15.69		
[e]: Wilcoxon Signed Ranks Test; *p<0.05; min.: minimum; max.: maximum; SD: Standard Deviation								

Table 4 presents the relationship between the participants' socio-demographic information, like age, gender, level of education and status of having received or not received first aid training before, and their pretest-posttest scores. Accordingly, a negative statistically significant relationship was found between age and pretest scores [(r=-0.125; p<0.05)] posttest [(r=-0.175; p<0.05)], with older individuals having lower scores.

Table 4 Analysis of participants' pretest-posttest scores according to their socio-demographic characteristics (mean ± SD/ median 25th-75th Percentile)

Demographic Characteristic		Pretest	Posttest
Age	35.96 ± 8.96	60.0 (50.0-70.0)	75.0 (65.0-80.0)
	r	-0.125	-0.175
	p[b]	0.026	0.002
Gender	Female	60.0 (50.0-71.25)	75.0 (65.0-75.0)
	Male	55.0 (50.0-65.0)	70.0 (60.0-80.0)
	p[c]	0.008*	0.001*

Educational Status	Secondary School	50.0 (27.5-65.0)	50.0 (35.0-68.75)
	High School	57.5 (46.25-70.0)	67.5 (56.25-78.25)
	Associate Degree	60.0 (52.5-72.5)	70.0 (65.0-82.5)
	Undergraduate	62.5 (53.75-7.0)	75.0 (65.0-80.0)
	Postgraduate	55.0 (45.0-70.0)	75.0 (65.0-85.0)
	p^d	0.9	0.033*
			0.025^{+}; 0.022^{++}; 0.024^{+++}; 0.022^{++++}
Had First Aid Training Before	Yes	60.0 (50.0-75.0)	75.0 (65.0-85.0)
	No	55.0 (50.0-70.0)	70.0 (60.0-80.0)
	p^c	0.004*	0.015*

b: Spearman Correlation Analysis; c: Mann-Whitney U Test; d: Kruskal-Wallis Test; *p<0.05; +: Secondary School-Undergraduate; ++: Secondary School-Postgraduate; +++: High School-Undergraduate; ++++: High School-Postgraduate

The mean pretest scores of the female and male participants were found to be 60.0 ± 14.62 and 55.0 ± 13.98, respectively, while their mean posttest scores were 75.0 ± 14.21 and 70.0 ± 17.76, respectively. For the female participants, this difference was found to be statistically significant (p<0.05), and both the mean pretest and mean posttest scores were higher for the females compared to those of the males.

The mean pretest scores were 50.0 ± 20.61, 57.5 ± 13.96, 60.0 ± 12.24, 62.5 ± 13.29 and 55.0 ± 16.09 for those who had completed secondary school, high school, undergraduate and postgraduate programs, respectively, while the mean posttest scores for the same educational levels were 50.0 ± 18.87, 67.5 ± 20.08, 70.0 ± 10.03, 75.0 ± 15.26 and 75.0 ± 14.78, respectively. Statistically significant differences were found between level of education and mean posttest scores (p<0.05), specifically between those who had completed secondary school and those who had completed an undergraduate program (p=0.025), between those who had completed secondary school and postgraduate program graduates (p=0.022), and between those who had completed high school and undergraduate program graduates (p=0.022).

The mean pretest score of those who had received first aid training before was 60.0 ± 14.28 and 55.0 ± 14.45 for those who had not, the difference of which was statistically significant (p<0.05). The mean posttest score of those who had received first aid training before was 75.0 ± 16.49 and 70.0 ± 14.53 for those who had not, the difference of which was statistically significant (p<0.05).

DISCUSSION

First aid training is necessary for the well-being of a society in so far as it provides the individuals constituting society the capability of applying the correct initiatives in cases where human life is in jeopardy [2,3,13,22]. This study was aimed to assess the impact of training given to academic and administrative personnel working at a state university on their level of first aid knowledge. The related literature includes many studies investigating the first aid knowledge levels of groups with different characteristics, such as children, university students, drivers, and security personnel [5,16,17,21,23]. However, there was no study found examining the level of first aid knowledge specifically in academic and administrative personnel working in a university, making it difficult to make a comparative analysis of the findings from this study and the findings from other studies.

First aid is defined as "saving a life or preventing a case of accident or health emergency from becoming worse, without the aid of medication or medical device, until professional medical staff can arrive [24]. The study found that the number of correct answers to the questions on the first aid knowledge questionnaire, such as the definition of first aid and BLS and the characteristics defining medical staff, was high under the "General First Aid" section (p<0.05, Table 2). Andsoy, et al., found in their study assessing the effectiveness of first aid training given to security personnel in a state university that the number of correct answers given by the participants to the questions under the section of "General Information Regarding First Aid" in the posttest was higher than those in the pretest (53.3% to 78.5%), however, it was not statistically significant (p>0.05) [17]. These results reported by Andsoy were in agreement with those reported in the present study.

BLS had been previously described as protecting the airway of patients and supporting circulation without the use of medical devices; however, with the guideline change made in 2005, this description has been expanded and now applies to cases of sudden heart failure, for which the first aid treatment includes activating health systems early,

cardiopulmonary resuscitation application, and early defibrillation of patient using an external defibrillator [25-27]. The present study investigated the effect of the first aid training given to the participants on their knowledge of BLS applications. The percentage of correct answers given in the posttest compared to that in the pretest on the questions under "BLS Applications", which included the subjects of first step in the chain of survival, chest compression depth, the number of pushes per minute in chest compressions, consciousness check-in victims, and the initiatives to be performed if a patient stops breathing, was found to be significantly higher ($p<0.05$, Table 2). A study by Banfai, et al., assessing the effectiveness of a first aid program given to primary school students between the ages of 7 and 14 found that the BLS success rate of the students had risen according to the scores on their posttest, which the students took 4 months after the pretest [13]. Similarly, a study by Andsoy, et al., reported that the percentage of correct answers given on BLS after first aid training was significantly higher than before the training (34.8% to 60.5%); however, the result was not statistically significant ($p>0.05$) [17]. Furthermore, a comparative study by Abbas, et al., assessing the effects of first aid training on trained and untrained medical students found that the knowledge the trained students had on the BLS-related subjects of cardiopulmonary resuscitation rate and position of hands during CPR was significantly higher than that of those who were not trained ($p<0.05$) [28]. Given the importance of knowledge of BLS, the increasing number of correct answers observed in the posttest of the present study is an indication of the positive effect the training had on academic and administrative personnel.

The present study found that the percentage of correct answers under the heading of "other first aid applications" was significantly higher in the posttest, specifically on the questions of lacerations-wound injuries, epileptic seizures, heart attacks, burns, and loss of or disoriented consciousness ($p<0.05$, Table 2). A study by Maguluru, et al., assessing the effectiveness of first aid training on college students in a rural part of Guntur in India found that according to the posttest, a significantly higher number of students understood how to manage first aid procedures related to injuries, burns, sprains, dislocations, dog bites, insect bites, and nosebleeds ($p<0.05$) [16]. Similarly, in a study by Dasgupta, et al., assessing the effectiveness of health education in terms of providing knowledge on first aid measures in high school students studying in rural areas of West Bengal [29], it was reported that the first aid management success rates of students in cases of injuries, sprains, nose bleeds, foreign object in eye, fly and insect bites, epileptic seizures, and drowning were significantly higher after the training than before the training. Andsoy, et al., in their study it was found that the percentage of correct answers on first aid applications, except for BLS (bleeding, injury, fracture, dislocation, sprain) was significantly higher after training than before training; however, the difference failed to reach statistical significance ($p>0.05$) [17]. Finally, a study by Abbas, et al., showed that the success rate of trained students on questions under the category of "other first aid initiatives", such as those related to coma position, asthma, choking, heart attack, bleeding, burns, fractures, and poisoning, was significantly higher than that of untrained students ($p<0.05$) [28]. The results obtained in the present study, which showed a high level of improvement in first aid knowledge following the training, support those reported in the literature [16,17,28,29].

Greater awareness needs to be raised in trainers and administrators on the key role they play in improving the basic health knowledge of society, teaching first aid information and skills to all individuals within society, and increasing the will of individuals to take on first aid responsibility [5]. In the present study, which has aimed to determine whether there was a difference in the level of knowledge of university academic and administrative personnel before and after first aid training, a statistically significant difference was found between the scores obtained on the pre-test (60.0 ± 14.55) and those obtained on the post-test (75.0 ± 15.69) ($p<0.05$, Table 3), with the posttest scores being higher. In numerous studies assessing the effectiveness of first aid training, it has been reported that a significant increase in the knowledge level of first aid treatment resulted from the training [5,10,15,16,21,23,28-30].

In the assessment of pretest and posttest scores according to the ages of the participants, this study found that there was a significant decrease in the posttest scores from those obtained on the pretest as the age of the participant increased ($p<0.05$, Table 4). A study by Ülger, et al., assessing the effectiveness of the training given to ambulance personnel reported that the pretest and posttest scores were lower in the 36-55 age group compared to those of the 18-35 age group [30]. Likewise, a study by Bayraktar, et al., assessing the effectiveness of first aid training given to drivers found that younger drivers had significantly higher success scores than those of older individuals [23]. Finally, in a study by Nayir, et al., examining the level of knowledge and attitudes on the first aid of teachers working in the city center of the province of Isparta found a negative significant relationship between age and first aid knowledge scores, with first aid knowledge scores decreasing with age [31]. In contrast to these studies, a study by Ganfure, et al., assessing the first aid knowledge level, attitudes, practices, and related factors in kindergarten teachers reported that

kindergarten teachers older than 35 years had 4-fold more information on first aid than that of teachers younger than 25 years [18]. The fact that teachers older than 35 years were shown to have more first aid knowledge than younger teachers could be due to their higher levels of experience. Save for this last study mentioned, studies have largely found that first aid knowledge level decreased with increasing age, the results of which could be attributed to the possibility that relatively young individuals have more ability to understand and remember.

Both the pretest and posttest scores of the females were significantly higher than those of the males, both the pretest and posttest scores were significantly higher in women ($p<0.05$). A study by Özyürek, et al., assessing the effectiveness of basic first aid training given to high school teachers found that the mean pretest BLS and basic first aid training scores of female teachers (51.25) were higher than those of the male teachers, (47.04), yet the difference between the mean pretest and posttest scores of the females and males was not statistically significant ($p>0.05$) [5]. In a study by Altındiş, et al., assessing the level of first aid knowledge in university students, a statistically significant difference was reported between males and females in terms of having sufficient knowledge of first aid ($p=0.006$) and willingness to do first aid intervention ($p=0.004$) [6]. Moreover, the same study showed that 3.9% of males and 2.6% of females did not know the emergency number, a difference that was determined to have statistical significance ($p=0.008$). Other studies have also found that females had higher knowledge levels of first aid, the results of which could be attributed to the higher number of females compared to males that stayed at home in Turkish society, the greater interest females look after the children at home than males, and have a the greater exposure to visual and print news and programs that present information on first aid treatment [31,32].

Regarding the relationship between education level and the effectiveness of first aid training, there was a significant difference between the training status and posttest score in our study and that the posttest scores increased in correspondence with the increase in education level ($p<0.05$, Table 4). Similar to these results, a study by Aytac, et al., found that university graduates had a higher level of knowledge in first aid [3].

Our study found that pre-test and post-test scores of those who had received training in first aid after were significantly higher than those who had not received training before ($p<0.05$, Table 4). Aytac, et al., and Ganfure, et al., found similar results, while Özyürek, et al., further confirmed the importance of previously received basic first aid and BLS training in their study involving teachers, which found that previous training had a stronger positive impact on both pretest and posttest scores than that of educational level ($p>0.05$) [3,5,18]. These data are important as they reveal the positive effect of receiving early training in first aid and the role it has in significantly improving knowledge levels of first aid.

CONCLUSION

According to the results of the study, the first aid training resulted in a significant increase in the participants' level of knowledge, especially on the topics of BLS and other first aid applications; women who had been previously trained in first aid had significantly overall higher first aid scores; participants with a higher education level had significantly higher first aid scores, and finally, knowledge level of first aid decreased as age increased. In line with the obtained results, considering that much of the information gained after receiving first aid training can be forgotten, it is recommended that first aid training be repeated regularly to maintain its effect, that workplaces develop annual training plans, and that first aid training be updated to reflect any new information that emerges on the subject. Lastly, first aid training programs should be expanded to cover all layers of society, including children, as early as the nursery and kindergarten years.

Limitations of the Study

The results of this study cannot be generalized to all university personnel in Turkey, as the study sample included only academic and administrative personnel from one state university who took part in the first aid training organized between December 15, 2017 to December 22, 2017. Moreover, since the posttest was conducted right after the training, the results show only the short-term impact of the training.

DECLARATIONS

Conflict of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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