

**BLOOD TRANSFUSION KNOWLEDGE LEVELS OF
EMERGENCY DEPARTMENT WORKERS AND THE EFFECT OF TRAINING****ACİL SERVİS ÇALIŞANLARININ KAN TRANSFÜZYON BİLGİ DÜZEYLERİ VE
EĞİTİMİN ETKİSİ**Uğur TAKTUK¹, Figen ALBAYRAK OKÇİN²¹Ege University, Hospital Emergency Department, Izmir, Türkiye.²Ege University, Faculty of Nursing, Izmir, Türkiye.**ABSTRACT**

Objective: This research was conducted to evaluate the knowledge level of emergency service personnel about blood transfusion and to determine the effect of the training given on this subject on their knowledge level.

Method: It was conducted as a planned quasi-experimental study to investigate the blood transfusion knowledge levels of non-physician health professionals working in the adult emergency department and the effect of the training provided on this situation. It was conducted with a total of 87 volunteers. Two surveys were used to collect data: "Individual Identity Form" and "Blood Transfusion Practices Survey". The surveys used to collect data were collected online before and after the training.

Results: The average age of the participants was 27.87±3.87, 76.7% were women, 79.1% were university graduates, and 55.8% had professional experience between 1-3 years. The rate of blood transfusion practice in the emergency department was 76.7%, and 90.7% had blood transfusion training. The pretest knowledge average of the emergency service personnel was 53.31±17.73, and the posttest knowledge average was 84.59±12.35, and this difference was found to be statistically significant ($p < 0.05$).

Conclusion: It was determined that the knowledge of emergency medical personnel on blood and blood product transfusion increased after their training. This result shows the effectiveness of the planned blood transfusion training.

Keywords: Emergency Service; Blood Transfusion; Knowledge Level; Education.

ÖZET

Amaç: Bu araştırma, acil servis personelinin kan nakli konusundaki bilgi düzeylerini değerlendirmek ve bu konuda verilen eğitimin bilgi düzeylerine etkisini belirlemek amacıyla yapılmıştır.

Yöntem: Erişkin acil servisinde çalışan hekim dışı sağlık çalışanlarının kan transfüzyonu bilgi düzeylerini ve verilen eğitimin bu duruma etkisini araştırmak amacıyla planlı yarı deneysel bir çalışma olarak yapıldı. Toplam 87 gönüllü ile gerçekleştirildi. Verilerin toplanmasında "Bireysel Kimlik Formu" ve "Kan Transfüzyon Uygulamaları Anketi" olmak üzere iki anket kullanılmıştır. Verilerin toplanmasında kullanılan anketler eğitim öncesi ve sonrasında online olarak toplanmıştır.

Bulgular: Katılımcıların yaş ortalaması 27,87±3,87 olup, %76,7'si kadın, %79,1'i üniversite mezunu ve %55,8'i 1-3 yıl arası mesleki deneyime sahiptir. Acil serviste kan transfüzyonu uygulama oranı %76,7 olup, %90,7'si kan transfüzyonu eğitimi almıştır. Acil servis personelinin ön test bilgi ortalaması 53,31±17,73, son test bilgi ortalaması ise 84,59±12,35 olup bu fark istatistiksel olarak anlamlı bulunmuştur ($p < 0,05$).

Sonuç: Acil sağlık personelinin aldıkları eğitim sonrasında kan ve kan ürünleri transfüzyonu konusundaki bilgilerinin arttığı belirlendi. Bu sonuç planlanan kan nakli eğitiminin etkinliğini göstermektedir.

Anahtar Kelimeler: Acil Servis; Kan Nakli; Bilgi Düzeyi; Eğitim.

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INTRODUCTION

Blood is a vital fluid in the body that carries oxygen, hormones, vitamins, nutrients, and antibodies to the tissues, removes carbon dioxide and similar waste materials from the body, and also provides cellular defense. The process of giving blood directly to the circulatory system in cases of need due to various reasons such as bleeding, insufficient production of blood cells, or destruction of cells is called blood infusion (Göktaş et al., 2015). Due to the special tissue property of blood, blood transfusion is a practice defined as organ transplantation, saving the lives of millions of people. Health professionals should have sufficient knowledge and skills about giving the right blood to the right patient, informing the patient about transfusion, proper storage, preparation, administration of the blood to the patient, observing the patient for signs of reaction during the procedure, protection from complications that may arise from the procedure, and precautions to be taken in case of complications (Zucoloto et al., 2020; Vagnar, 2018; Kavaklıoğlu et al., 2017; Kadioğlu, 2020; Encan and Akın, 2019).

The level of knowledge of professionals with transfusion experience varies. These variances are related to variables such as the education level of individuals, their traditionalist approaches, the courses taken on this subject, and their professional experience time. The frequency of blood transfusion administration in the emergency department is likely being applied more due to patient circulation (Doğan et al., 2019). This may be a situation that brings with it the frequency of application, the risk of making mistakes that may be caused by the working environment that makes it necessary to be fast, and the frequency of encountering complications. It is necessary and important to investigate the existing situation to update the qualifications of emergency department health professionals in this regard. In some studies, it is seen that the level of blood transfusion knowledge of nurses is insufficient and they do not adhere to the principles of blood transfusion (Göktaş et al., 2015). The difference and importance of the study emphasizes the updating of blood transfusion knowledge of emergency room workers. This study was conducted to evaluate the blood transfusion knowledge levels of health professionals working in the emergency department unit and to increase the blood transfusion knowledge levels after the training was given.

MATERIALS AND METHODS

Aim of The Study

This study was conducted as a semi-experimental study planned to investigate the blood transfusion knowledge level of non-physician health professionals working in the adult emergency department and the effect of training on this.

The Design of the Research

The universe of this semi-experimental study consists of all non-physician healthcare personnel working in the Emergency Department of Ege University Hospital. Since there were 96 healthcare personnel in the total universe, no sample selection was made and an attempt was made to reach the entire universe. The known universe sampling method was used when calculating the universe size. Accordingly, although 80 participants were sufficient for 100 people according to a margin of error of 0.05, 87 healthcare personnel who agreed to participate in the study were included in the study. The 9 participants who did not participate in the online training were not included in the study (Yazıcıoğlu and Erdoğan., 2004).

Data collection Tools

2 Questionnaire forms were used to collect the data. “*Individual Identification Form*” consists of nine demographic questions. “*Blood Transfusion Practices Questionnaire*” consists of three sections and a total of 20 questions. In the preparation of the questionnaire form, the researchers prepared the questions after a review of the relevant literature (Encan, 2017; Vaghar, 2018).

Individual Identification Form

The form, which consists of nine questions in total, includes questions such as the age, gender, education level, working year, duration of work in the emergency room, and frequency of blood transfusion administration.

Blood Transfusion Practices Questionnaire

A literature review was conducted by the researchers and a blood transfusion practice questionnaire was created. The questionnaire was reviewed by two nurses working in the hemovigilance team at the hospital and corrections were made in the statements in line with their suggestions. For the content validity of the questionnaire consisting of 20 questions in total, the "Davis method" was used and the opinions of 10 experts consisting of nurse academicians and clinical experts were taken. Content validity scores were calculated and determined as 0.80 and above for each item. In line with expert opinion suggestions, wording changes were made in only 4 questions and revised questions were used in the questionnaire. The questions in the content of the questionnaire were prepared in three parts in total.

This questionnaire consists of three parts: before, during and after blood transfusion. In the first part of the questionnaire; There are 7 questions regarding the practices that should be done before blood transfusion, storage conditions for blood products, and their intended use. In the second part; There are 5 questions regarding the practices that should be performed during blood transfusion. In the third part; There are 8 questions about the practices that should be done after blood transfusion, types of reactions to blood and blood products, causes of reactions, and hemovigilance practices. Educational content; It was prepared by the researchers and was given its final form in line with the suggestions and contributions of the Hospital hemovigilance team and in-house training nurses. There are a total of 20 questions in the survey conducted to evaluate the knowledge levels of health professionals. There is only one correct answer to each question in the survey. Correct answers to each question were coded as '5' points, and incorrect answers were coded as '0' points. The total score range is determined as 0-100. It is anticipated that the data can be expressed more easily with this scoring. A score of 75 out of 100 (those who answered 15 questions correctly) was considered "successful". Since the questions were asked to professionals and it was accepted that they had knowledge on this subject, it was deemed appropriate to make such a scoring.

Ethical Dimension of Research

Before starting the research, approval was obtained from the Ege University Medical Research Ethics Committee (21-3.IT/78). In addition, the necessary permissions were obtained from the EU Hospital Emergency Department. Participants were asked to fill out the "Informed Consent" forms, and participants who accepted were included in the study.

Data Collecting

Since the data collection phase was carried out during the pandemic period, the trainings were held online. Online trainings were held outside of working hours and with the participation of small groups (10-15 people) to make the participants more productive. The consent of the participants was obtained through the online forms prepared before the training, and then the training content about the blood transfusion application was transferred as a PowerPoint presentation(online). After the training, the same questionnaire was applied to the participants again as a post-test.

Analysis of Data

The data obtained in the study were analyzed using the SPSS (Statistical Pack age for Social Sciences) Windows 25.0 program. Descriptive statistical analyses of the data (number, percentage, mean, standard deviation) were performed. The suitability of the normal distribution was checked with normality tests and the values of kurtosis and skewness. It was determined that the data met the assumption of normal distribution. In this case, the independent sample t-test, pre-test and post-test scores were used to compare quantitative data, and dependent sample t-test was used to compare the two groups. The Mann Whitney U test was used to compare the data of the groups with a low sample size, the Kruskal Wallis H test for the comparison of more than two groups, and the corrected Bonferroni test to determine which group belonged to which group.

RESULTS

The mean age of the individuals participating in the study was determined as 27.87 ± 3.87 . 76.7% of the individuals are female and 23.3% are male. It was determined that 79.1% of the individuals included in our study were undergraduate graduates and 66.3% were single. In the distribution of the participants' years of experience in the profession; It was determined that 55.8% had 1-3 years, 25.6% had 4-6 years,

11.6% had 7-10 years, 7% had 11 years or more experience. It was determined that the participants (30.2%) whose working times in the emergency department were examined, worked in the emergency department for a period of 7-12 months (Table 1).

Table 1. Distribution of the Participants According to Their Personal Characteristics

Variables	(Min-Max/Avg±SD)		
Age	(23-41 / 27.87±3.87)		
	n		
	%		
Gender	Female	66	76.7
	Male	20	23.3
Educational Status	Associate degree	3	3.5
	Bachelor's degree	68	79.1
	Post graduate degree	15	17.4
Marital Status	Married	29	33.7
	Single	57	66.3
Years of Experience	1-3 years	48	55.8
	4-6 years	22	25.6
	7-10 years	10	11.6
	11 years and over	6	7.0
Experience in the Emergency Department	0-6 ay	4	4.7
	7-12 months	26	30.2
	13-24 months	8	9.3
	25 months and over	48	55.8

SD: Standard Deviation

When asked about the frequency of blood transfusion, it was determined that 76.7% of them applied blood transfusion frequently, and 11.6% of them used blood transfusion continuously. It was determined that 90.7% of the participants received training on blood transfusion (Table 2).

Table 2. Distribution According to The Frequency of Blood Transfusion Administration

	n	%	
How often do you perform a transfusion procedure during a shift?	Rarely	3	3.5
	A few times	7	8.1
	Often	66	76.7
	All the time	10	11.6
Have you received any training on blood transfusion?	Yes	78	90.7
	No	8	9.3

There was a statistically significant difference between the pretest and posttest scores of the participants' blood transfusion knowledge levels. It was determined that the blood transfusion knowledge levels and post-test scores of the participants (84.59±12.35) were higher than the pre-test scores (53.31±17.73) ($p<0.05$) (Table 3).

Table 3. Categorized Tables of Blood Transfusion Knowledge Level Pretest-Posttest Values

	Min.	Max.	Median	Average	SD	t-test	p
The Level of Knowledge of Blood Transfusion Pre-test	15	90	55.0	53.31	17.73	-15.311	0.000*
Blood Transfusion Knowledge Level Post-test	45	100	85.00	84.59	12.35		

SD: Standard Deviation

t-test: Relationship analysis in dependent groups

$p<0.05$

Participants with a blood transfusion knowledge level of 70 or less were considered unsuccessful. While the failure rate was 88.4% before the training, this rate decreased to 17.4 after the training. The success rate increased from 11.6% at baseline to 82.6% after training (Table 4).

Table 4. Distribution of Participants' Blood Transfusion Application Questionnaire Success Scores

		Frequency		Percentage (%)	
		Pre-test	Post-test	Pre-test	Post-test
Valid	Unsuccessful	76	15	88.4	17.4
	Successful	10	71	11.6	82.6
	Total	86	86	100.0	100.0

Significant changes were observed in the answers to questions eight and twelve, which are questions about the steps during blood transfusion. 38 people were able to find the correct answers for the eighth question, 37 for the ninth question, 29 for the tenth question, 28 for the eleventh question, and 14 for the twelfth question. A change in the desired direction was also observed in the answers to the questions regarding the last section, and the post-transfusion steps, and the increase in correct answers increased significantly in all of them ($p < 0.05$) (Table 5).

Table 5. Distribution of the Answers Given by the Participants in the Pretest-Posttest to the Questions About Blood and Blood Product Transfusion

		Pre-test	Post-Test		Mc Nemar	P
			False	True		
1. Which of the following options is correct for general donor and donor blood groups in blood transfusion?	Pre-test	False	0 (0.0)	10 (100.0)	-	0.092
	True	3 (3.9)	73 (96.1)			
2. Which of the following should not be in the cabinet where blood products are stored?	Pre-test	False	26 (42.6)	35 (57.4)	17.357	0.000
	True	7 (28.0)	18 (72.0)			
3. Under what conditions should the platelet suspension be stored?	Pre-test	False	25 (39.1)	39 (60.9)	29.167	0.000
	True	3 (13.6)	19 (86.4)			
4. Which of the following options is one of the application purposes of blood transfusion?	Pre-test	False	17 (51.5)	16 (48.5)	-	0.093
	True	7 (13.2)	46 (86.8)			
5. Which of the following should be checked before transfusion in a patient to be transfused?	Pre-test	False	3 (21.4)	11 (78.6)	-	0.001
	True	0 (0.0)	72 (100.0)			
6. Which of the following options is/are the purpose of blood compatibility tests before blood transfusion?	Pre-test	False	2 (6.3)	30 (93.8)	18.382	0.000
	True	4 (7.4)	50 (92.6)			
7. Which of the following is true for blood group verification before blood transfusion?	Pre-test	False	22 (34.9)	41 (65.1)	20.898	0.000
	True	8 (34.8)	15 (65.2)			
8. When at the latest after the erythrocyte suspension is taken from the blood cabinet, the patient should start transfusion?	Pre-test	False	5 (11.6)	38 (88.4)	36.026	0.000
	True	0 (0.0)	43 (100.0)			
9. How long does it take to complete the transfusion of one unit of erythrocyte suspension?	Pre-test	False	6 (14.0)	37 (86.0)	19.114	0.000
	True	7 (16.3)	36 (83.7)			
10. How long does it take to complete the transfusion of one unit of platelet suspension?	Pre-test	False	11 (27.5)	29 (72.5)	12.250	0.000
	True	7 (15.2)	39 (84.8)			
11. Which of the following options is correct for the characteristics of the blood set that will facilitate the flow of transfusion in patients undergoing blood transfusion?	Pre-test	False	13 (31.7)	28 (68.3)	7.605	0.006
	True	10 (22.29)	35 (77.8)			
12. Which of the following is the correct choice of fluid to be given with blood and blood products in emergency situations?	Pre-test	False	0 (0.0)	14 (100.0)	-	0.004
	True	2 (2.8)	70 (97.2)			
13. Which of the following blood products has the highest risk of reaction?	Pre-test	False	1 (5.6)	17 (94.4)	-	0.003
	True	3 (4.4)	65 (95.6)			
14. Which of the following options is the most common cause of reactions during blood transfusion?	Pre-test	False	6 (12.8)	41 (87.2)	31.114	0.000
	True	3 (7.7)	35 (92.3)			

15. Which of the following options is among the immunological reactions of blood transfusion?	Pre-test	False	17 (32.1)	36 (67.9)	21.951	0.000
		True	5 (15.2)	28 (84.9)		
16. Nursing interventions applied in patients who develop air embolism during blood transfusion, which option is given correctly?	Pre-test	False	4 (11.4)	31 (88.6)	19.314	0.000
		True	4 (7.8)	46 (92.2)		
17. After the blood transfusion is finished, how long should the blood bag wait before being destroyed?	Pre-test	False	4 (10.5)	34 (89.5)	24.324	0.000
		True	3 (6.3)	43 (93.8)		
18. Which of the following is among the early stage blood transfusion reactions?	Pre-test	False	0 (0.0)	22 (100.0)	-	0.000
		True	1 (1.6)	63 (98.4)		
19. Which of the following is not a late stage blood transfusion reaction	Pre-test	False	20 (41.7)	28 (58.3)	12.971	0.000
		True	6 (15.8)	32 (84.2)		
20. At least with how many people should the product and identity checks done just before starting the blood transfusion?	Pre-test	False	0 (0.0)	84 (100.0)	82.012	0.000
		True	0 (0.0)	2 (100.0)		

DISCUSSION

A blood transfusion is a tissue transplant rather than an ordinary fluid exchange. For this reason, the knowledge level of health professionals who will perform a vital practice must be high (Topal et al., 2019). In our research, the knowledge levels of healthcare professionals were investigated and it was aimed to increase their knowledge levels by providing retraining. It is seen that 67.4% of the health professionals who received training among the participants in the study received in-service training from the institution they work for, and 25.6% received school education. The total working period of the participants was found to be between 1-3 years at a rate of 55.8%. In Kadioğlu's (2020) study examining the blood transfusion knowledge and attitudes of intensive care nurses after training, the age range was found to be 21-25. It was shown that 62.7% of the participants were women, 53.6% were married, 52.4% had a bachelor's degree, and 56% had a total working period of 1-5 years (Kadioğlu, 2020). In this study, the knowledge levels of the participants were evaluated out of 100 points, while the average pre-test result was 53.31 ± 17.73 , and the average post-test score after the training was calculated as 84.59 ± 12.35 (Table 3). In a study, the average knowledge score was 60.25 ± 8.92 (Kadioğlu, 2020). In this study, the pre-test knowledge score was calculated low. It is thought that this difference between the studies is due to the in-service training provided.

In his study to determine the effect of blood transfusion training on nurses' knowledge and performance; Knowledge levels were categorized as bad (54%), medium (32%) and good (10%), respectively (Encan, 2017). When our study is categorized in this way, it parallels Vaghar's study. Hijji (2013), who investigated the blood transfusion knowledge level of nurses, and Pajamjit Kaur (2014), who investigated the effect of blood transfusion training on the knowledge level among clinicians, found the knowledge level of the participants to be low (Hijji et al., 2013; Kaur et al., 2014). The results are similar to the results of this research. In this study, the low level of knowledge can be attributed to insufficient information and lack of orientation training. In this study, the blood transfusion knowledge levels of emergency healthcare professionals increased positively after the training provided. In this study, the blood transfusion knowledge levels of the participants were 88.4% unsuccessful and 11.6% successful according to the pre-test results. After the training, it was observed that 17.4% were unsuccessful and 82.6% were successful. These data showed that there was a significant difference between before and after training ($p < 0.005$) (Table 4). Since blood transfusion monitoring and its side effects are of vital importance, healthcare professionals must have up-to-date knowledge on this subject. It is extremely important to limit the level of success to this limit. Receiving a success score below this score suggests that the training should be repeated, continued, and supported during implementation when necessary to ensure its effectiveness. Since the majority of the health professionals who participated in our study were seen to be successful, it was determined that the blood transfusion knowledge and performance level of the health professionals changed positively as a result of the training provided. However, it should not be forgotten that this success score may also be affected by the fact that the training was delivered online and the information was taken with a post-test immediately after the training. To ensure effectiveness in education and to transform behavioral change into a

permanent one, repetitions with measurable, continuous, and updated in-service guide-based training are very important and necessary. Failure in these trainings is far from acceptable. This can be better understood when considering that blood transfusion practices do not have side effects that can be tolerated by the patient. The results of this study are similar to the study conducted by Vaghar (2018) to determine the knowledge and performance of nurses in blood transfusion training (Vaghar (2018).

In the first section, which included questions about process preparation and product preservation before blood transfusion, the correct answers, which were low in the pre-test, changed significantly after the training. The difference was found to be significant in the second, third, sixth, and seventh questions ($p < 0.005$) (Table 5). 35 people who answered incorrectly before the training gave correct answers after the training (Table 5). This may be due to the difference in the frequency of use of platelet suspensions in clinics and the difference in the storage period of whole blood products. However, considering that the storage and preparation routines of different blood products differ and that some blood products are used less frequently, it is thought that providing this training continuously is important and necessary and can reduce the margin of error of healthcare professionals. They are the ones who prepare and apply these products and therefore cause fewer complications. In Encan's (2017) study, a similar question was answered correctly at a rate of 80.1% ($n=137$) (Encan, 2017). Considering the emergency room conditions, the low rate of correct intervention by emergency healthcare professionals may be because no blood products are stored in the refrigerator and are quickly returned to the blood center. In a similar study, the correct answer to the question about platelets was 12.7% before the training and 39.8% after the training (Kadioğlu, 2020). In both studies, the reasons for the low response to platelet products are interpreted as the fact that healthcare professionals who perform blood transfusions pay more attention to the transfusion process and reactions rather than the content and properties of the product. 11 people who answered another question incorrectly before the training gave the correct answer after the training (Table 5). It was found to be higher than similar studies (Encan, 2017; Barın Yıldızbaşı, 2019).

[8,13,14]. Compatibility tests are performed before transfusion to determine the ABO and Rh groups of recipient and donor erythrocytes, antibody screening, and cross-matching (Vagnar, 2018). In a study, it was determined that nurses did not have sufficient knowledge about cross-match suitability tests Saillour-Glenisson et al., 2002). In Encan's (2017) study, it was found that there were more correct answers to a similar question, in parallel with our study (Encan, 2017). Considering the studies conducted, the participants' knowledge level about the basic purpose of blood product compatibility tests was at a medium level before the training, but it reached a sufficient level after the training. This situation makes us think about the effectiveness of education. Various complications develop due to blood group verification. One of the first things we need to do to prevent these reactions is to take blood samples from the patient correctly. "7. Blood group verification before blood transfusion is given correctly in which of the following?" This question has not been found in studies conducted in our country. By adding this question, we also aimed to emphasize the appropriate order of blood sampling to prevent possible acute or late reactions in patients. This question was revised with the hemovigilance team, and it was the question that received the most incorrect answers in our study. Before the training, 63 participants (73.3%) answered this question incorrectly (Table 5). After the training, 41 people who answered incorrectly selected the correct option. The high number of errors in this question suggests that the order of applications such as blood determination and cross-match is confused or that due care is not taken in the order of the control process. It is thought that training contributes to the correct learning of the sequence regarding the application. In questions about the storage and transfusion duration of blood and blood products, the participants obtained higher scores after the training than before the training. A significant positive difference was detected in the practices regarding the procedures to be performed during blood transfusion after the training. When some studies were examined, it was found that nurses did not have sufficient knowledge about blood retention time, storage conditions, and transfusion time (Hijji et al., 2013; Barın Yıldızbaşı, 2019; Saillour-Glenisson et al., 2002). Participants answered, "11. Which of the following options correctly describes the feature of the blood set that will facilitate the flow rate of transfusion in patients undergoing blood transfusion?" While 52.3% answered the question correctly before the training, the correct answer rate increased to 73.3% after the training (Table 5). Hijji et al. (2013) are similar to the studies conducted by Kaya (2018) (Hijji et al., 2013; Kaya, 2018). In the study conducted by Kadioğlu (2020), 62.8% answered a similar question correctly before the training and 88.0% after the training. The fact that the pre-and post-training knowledge levels in Kadioğlu's (2020) study were higher than in our study can be attributed to the

sample size and training conditions (Kadioğlu, 2020). In this study, it appears that pre-training knowledge levels are similar to other studies. The increase in knowledge levels after the training suggests that the participants were at an insufficient level in this regard, and their knowledge levels increased with the training. Participants asked "14. Which of the following is the most common cause of reactions occurring during blood transfusion?" The correct answer to the question was found to be 45.3% before the training and 89.5% after the training (Table 5). Participants answered the question "15. Which of the following options is/are among the immunological blood transfusion reactions?" The question was answered correctly by 38.4% before the training and 74.4% after the training (Table 5). In the study conducted by Encan (2017), it was found that the knowledge level of the participants on a similar question was lower than in this study (Encan (2017)). It is thought that this difference is due to the sample size and the education level of emergency department health professionals. After the blood transfusion is completed, the blood bag is thrown into the blood product waste bucket for retrospective follow-up of reactions. Participants asked "17. How long should the blood bag be kept for disposal after the blood transfusion is completed?" It was determined that they answered the question correctly at a rate of 55.8% before the training and 91.9% after the training (Table 5). 34 people who answered incorrectly before the training gave the correct answer after the training. In the studies conducted, no question similar to this question was found. This distinguishes our study from other studies. Regarding blood and blood product reactions: "19. Which of the following is not one of the late blood transfusion reactions?" The participants answered the question correctly with a rate of 44.2% before the training and 69.8% after the training (Table 5). In Kaya's (2018) study, it was found that the questions regarding reactions were lower than in our study (Kaya, 2018). Additionally, when some studies similar to our study are examined; It has been observed that the level of knowledge about complications is low (Kaya, 2018; Şahin, 2006). The higher level of knowledge about blood transfusion reactions in our study compared to other studies is attributed to the higher number of blood and blood products administered in the emergency room and the higher rate of inspection compared to other units. Our low level of knowledge about late-term reactions is attributed to the fact that emergency room patients are discharged in a shorter time, unlike ward or intensive care patients, and therefore the patients cannot be followed up.

CONCLUSION

In our study on the transfusion of blood and blood products of emergency service healthcare professionals, pre-test (53.31 ± 17.73) and post-test scores (84.59 ± 12.35) indicate that the training given causes a positive increase. In similar studies, training activities have been tried to be evaluated and more work is needed in this field. With these and similar studies, minimizing the margin of error, updating the correct application steps according to the guidelines in very serious and vital applications such as blood transfusion, performing the controls at the appropriate frequency during the application, and identifying, preventing, and treating possible complications will contribute to the prevention of mortality risks.

In this regard, it is of utmost importance that the information of nurses and other health professionals is up to date, that they are supported to stay up to date with continuous training, and that the registration and control mechanisms related to the process are operated correctly.

To ensure effectiveness in education and to transform behavioral change into a permanent one, it is very important and necessary to repeat the training that can be measured, which contains continuity and is based on current guidelines in the service.

Conflict of interest

None.

Author Contributions

Plan and desing: UT, FAO; Data collection: UT; Analysis and comments: UT, FAO; Review and check: FAO; Writing: UT.

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