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Evaluation of Quality of Life of Patients Receiving Erythrocyte Transfusion and Investigation of Interdisciplinary Blood Transfusion Practice Differences

Eritrosit Transfüzyonu Alan Hastaların Yaşam Kalitesinin Değerlendirilmesi ve Disiplinlerarası Kan Transfüzyon Pratiği Farklılıklarının Araştırılması

Dilek URTEKİN[1], Burhan TURGUT[2]

1. Tekirdağ Namık Kemal University Hospital, Therapeutic Apheresis Center, Tekirdağ, Turkey
2. Medical Park Bahçelievler Hospital, Hematology Department, İstanbul, Turkey

ÖZ

Amaç: Eritrosit Süspansiyon Transfüzyonu (EST), cerrahi veya travmaya bağlı akut kan kaybı, hematolojik problemler veya onkolojik hastalıkların tedavisi amacıyla hastalara uygulanmaktadır. Bu çalışma, disiplinler arası EST planlanan hastaların transfüzyon öncesi yaşam kalitesini değerlendirmeyi, transfüzyon öncesi ve sonrası yorgunluk düzeylerini karşılaştırmayı ve disiplinler arası kan transfüzyonu uygulamalarındaki farklılıkları incelemeyi amaçlamıştır.

Gereç ve Yöntem: Araştırma, bir üniversite hastanesinin farklı kliniklerinde tedavi gören 60 hasta ile Mayıs 2018–Mart 2019 tarihleri arasında yürütülmüştür. Veriler; Genel Bilgi Formu, SF-36 Yaşam Kalitesi Ölçeği, Yorgunluk Şiddeti Ölçeği (FSS) ve hastaların laboratuvar bulgularından elde edilmiştir.

Bulgular: Transfüzyon öncesi yaşam kalitesinin, tüm hastalarda tüm alt boyutlarda düşük olduğu belirlenmiştir. EST sonrası tüm hastaların yorgunluk düzeylerinde istatistiksel olarak anlamlı bir azalma saptanmıştır ($p<0.001$). Hematoloji ve onkoloji kliniklerinde tedavi gören hastaların en yorgun grup olduğu görülmüştür. Kan transfüzyonu izlem formunda, hastaların %48.3'ünde ilk 15 dakikadaki hayati bulguların takip edilmediği, %43.3'ünde ise form bilgilerinin eksik doldurulduğu tespit edilmiştir.

Sonuç: Disiplinler arası farklılıklara rağmen EST öncesi hastaların yaşam kalitesinin düşük olduğu ve transfüzyonun yorgunluk düzeylerini azalttığı görülmüştür. Transfüzyon güvenliğinin artırılması için hemovijilans hemşirelerinin etkin şekilde istihdam edilmesi, sağlık personelinin düzenli olarak eğitilmesi, kan transfüzyonu ile ilgili işlem basamaklarının kurumlarda hizmetlerin koordinasyonu ve standardizasyonu amacıyla oluşturulması, yönetmelik, rehber ve protokollerin geliştirilmesi önerilmektedir.

Anahtar kelimeler: Anemi; Eritrosit süspansiyonu transfüzyonu; Yaşam kalitesi; Yorgunluk

ABSTRACT

Aim: Erythrocyte Suspension Transfusion (EST) is administered to patients for the treatment of acute blood loss due to surgery or trauma, hematologic problems or oncological diseases. This study aimed to evaluate the pre-transfusion quality of life (QoL) of patients with interdisciplinary EST plans, compare fatigue levels before and after transfusion, and examine differences in interdisciplinary blood transfusion practice.

Materials and methods: The study was conducted between May 2018 and March 2019 with 60 patients treated in different departments at a university hospital. Data were obtained from the General Information Form, the SF-36 QoL Scale, the Fatigue Severity Scale (FSS), and laboratory findings of the patients.

Results: Pre-transfusion quality of life was found to be low in all subscales in all patients. There was a statistically significant decrease in the fatigue level of all patients after EST ($p<0.001$). Patients treated in hematology and oncology departments were the most fatigued cohort. It was determined that vital signs in the first 15 minutes in the blood transfusion monitoring form were not followed up in 48.3% of the patients, and the information in the form was incompletely filled in 43.3% of the patients.

Conclusion: Despite interdisciplinary differences, the QoL of patients before EST was observed to be low, and that transfusion reduced fatigue levels. In order to increase transfusion safety, it is recommended that hemovigilance nurses should be employed effectively, health personnel should be trained regularly, procedures related to blood transfusion should be established in institutions for the coordination and standardization of services, regulations, guidelines and protocols should be established.

Keywords: Anemia, Erythrocyte suspension transfusion, Quality of life, Fatigue

Corresponding Author: Dilek Urtekin, Tekirdağ Namık Kemal University Hospital, Therapeutic Apheresis Center, Tekirdağ, Turkey
E-posta: dilekurtekin@gmail.com
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INTRODUCTION

Erythrocyte suspension transfusion (EST) is the administration of blood or blood products into the circulatory system of an individual. It has become a standard practice for patients with anemia (1). Erythrocyte suspension transfusion is used to replace lost blood, supplement missing components, ensure oxygen transport to tissues, exchange transfusion, treat immunologic deficiencies, and treat bleeding and coagulation disorders (2).

Quality of life (QoL) is a qualitative concept that the individual feels subjectively and is related to the individual's self-improvement, enrichment of his/her life, and achievement of his/her goals as a result. Patients with anemia may have decreased cognitive function, performance status, overall survival, and quality of life. The decision to transfuse erythrocyte suspension should be based not only on the hemoglobin (Hgb) value but also on the level of impact on patients' quality of life (3).

Some patients in need of EST may experience side effects that negatively affect QoL, such as weakness and fatigue, because they have low Hgb levels. In contrast, others continue their daily lives without realizing it (2). Fatigue is a physiological response due to decreased tissue oxygenation that may be caused by anemia. Clinical experiences and the literature show that increasing Hgb values will increase oxygen delivery to tissues. Nevertheless, data on EST in the correction of anemia-related fatigue are limited (3,4).

Differences in interdisciplinary transfusion practice in EST draw attention. Healthcare professionals performing blood transfusions must have comprehensive knowledge of transfusion indications, administration, and potential complications, ensuring a thorough process. Giving the right blood component to the right patient, keeping and heating the blood appropriately, monitoring the patient for signs of reaction during transfusion, and knowing what to do in case of complications are the responsibilities of healthcare professionals in transfusion (5).

This study aimed to evaluate the QoL of patients planned for interdisciplinary EST, compare the levels of fatigue before and after transfusion, and reveal the differences in interdisciplinary blood transfusion practice.

MATERIALS AND METHODS

Type of research

This study has a prospective observational pre-post design.

Research Questions

1. Does erythrocyte suspension transfusion lead to a change in fatigue severity in patients within 24–72 hours after transfusion?

2. What are the pre-transfusion quality of life levels of patients scheduled to receive erythrocyte suspension transfusion?

3. Are there differences in fatigue severity and quality of life outcomes according to clinical groups receiving erythrocyte suspension transfusion?

Place and time of the research

This study included patients followed up in hematology, oncology, general surgery, neurosurgery, orthopedics, and gynecology departments of a tertiary university hospital. The data of the study were obtained by a face-to-face survey method between 01.05.2018 and 01.03.2019.

Population and sample of the study

In this study, the sample size was determined by analyzing the study of Nilsson-Ehle et al. (2011), and a total of 60 patients, 10 patients from each clinical group, were included (6). Post hoc power analysis was performed to ensure adequate statistical power in intergroup comparisons. In the comparisons made over six groups (Kruskal-Wallis test), assuming a moderate effect size ($f = 0.25$), the power of the study was calculated as approximately 0.70 in the analysis performed with a 95% confidence level and a 5% margin of error. Accordingly, the sample size was considered reasonable for statistical analysis.

Inclusion criteria were determined as being between 18 and 85 years of age, voluntarily accepting to participate in the study, not having taken EST for the last 1 week, and patients who were planned to take EST. Patients who did not volunteer to participate in the study, who had psychosis or severe depression, and who received multiple consecutive ESTs were excluded from the study.

Data Collection Tools

The patients included in the study were administered a questionnaire by face-to-face interview method based on the principle of complete voluntariness. General Information Form, SF-36 Quality of Life Scale, and

Fatigue Severity Scale (FSS) were obtained. It was sufficient for patients to spend 20-30 minutes filling out the questionnaire.

General Information Form

The researchers prepared a questionnaire form consisting of 15 questions to obtain information about the qualifications, personal characteristics, and transfusion process of the study group. It aims to collect data on gender discrimination, age, monthly income level, educational status, comorbidities, and transfusion process.

SF-36 Quality of Life Scale

Developed in 1992 by Ware and Sherbourne, the Turkish validity and reliability study of the SF-36 scale was conducted by Koçyiğit and colleagues (7,8). Its advantage is that it is not disease-specific and makes wide-angle measurements. It is used to measure the quality of life of both patients and healthy individuals. The scale consists of 36 items and eight sub-dimensions. Each dimension is scored within itself. The higher the score, the higher the quality of life. 0 indicates poor health, while 100 indicates good health (8).

In the validity and reliability study of the scale, Cronbach's alpha coefficient was 0.948. When calculated separately for the subscales, the majority were above 0.90, indicating that it was a highly reliable scale.

Fatigue Severity Scale (FSS)

Developed in 1989 by Krupp and colleagues, this scale is used to assess fatigue (9). The Turkish validity and reliability of the instrument were evaluated by Armutlu et al. in 2007, and the Cronbach's alpha coefficient was found to be 0.94 (10). The scale evaluates the fatigue felt by individuals within last 1 week. They are asked to mark numbers from 1 to 7. The cut-off point is accepted as 1 (strongly disagree) and 7 (strongly agree). As the score increases, fatigue increases (10). In this study, Cronbach's alpha was found to be highly reliable, with 0.969.

Data Collection Process

General Information Form, SF-36 Quality of Life Scale, and FSS were completed 1-48 hours before EST. The FSS was administered within 24-72 hours after EST. The process of the blood after leaving the blood center was followed and recorded by the researchers. Before and during transfusion, vital signs, completion of transfusion monitoring form, time of blood transfusion, physician's order, and consent for blood transfusion were checked and recorded by the investigators.

Statistical Methods

The data obtained were transferred to the SPSS 25 program by the researchers. Frequency, ratio, percentage, mean, standard deviation, graphs, and tables were used to express the data. In cases where parametric test assumptions were compared, the independent sample t-test was used for two independent groups, the Mann-Whitney U test was used for intergroup comparisons, and the Wilcoxon paired two-sample test was used for intragroup comparisons for those not showing normal distribution. Kruskal-Wallis was used to test the significance of the difference between the means of three or more groups that did not show normal distribution. Cronbach's Alpha coefficient was calculated for overall reliability and reliability of the subscales. The results were accepted at a 95% confidence interval and a significance level of $p \leq 0.05$.

Ethical Aspects of the Study

This study was approved by the Non-Interventional Clinical Research Ethics Committee of Tekirdağ Namık Kemal University on 26 April 2018 with decision number 2018/61/04/09. A written informed consent was obtained from participants to participate in the study. All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

RESULTS

Demographics of patients

The mean age of the patients included in the study was 56.46 ± 16.00 years, 63.3% were female, and 81.7% were married. Of the group, 53.3% were primary school graduates, and 71.7% lived in nuclear families. 28.3% of the patients were smokers and 11.7% were alcohol consumers (Table 1).

Table 1: Socio-demographic characteristics of the patients (n=60)

Variables	
Age, (mean + SD)	56.46 ± 16.0
Gender (n, %)	
Female	33, (63.3%)
Male	27, (36.7%)
Marital status (n, %)	
Married	49, (81.7%)
Single	4, (6.7%)
Widow	7, (11.7%)
Occupation (n, %)	
Employee	7, (11.7%)
Unemployed	7, (11,7%)
Retired	21, (35.0%)
Housewife	25, (41.7%)
Education level (n, %)	
Literate	12, (20.0%)
Primary education	32, (53.3%)
High School	5, (8.3%)
License	10, (16.7%)
Master's degree	1, (1.7%)
Family type (n, %)	
Nuclear	43 (71.7%)
Wide	12, (20.0%)
Alone	5, (8.3%)
Place of longest residence (n, %)	
Village	6, (10.0%)
District	28, (46.7%)
City	26, (43.3%)
Smoking (n, %)	
Yes	17, (28.3%)
No	43, (71.7%)
Alcohol use (n, %)	
Yes	7, (11.7%)
No	53, (88.3%)

Findings related to SF-36 Quality of Life Scale

Quality of life was found to be relatively low in all eight sub-dimensions of the SF-36 Quality of Life Scale. The lowest mean score was found in the physical role difficulty subscale (17.91 ± 35.32), and the highest mean score was found in the mental health subscale (64.40 ± 20.32) (Table 2).

Female patients had higher scores on the physical functionality sub-dimension than males ($p < 0.05$). In the effect of gender on QoL before EST, females were found to have a higher QoL scores than males in all sub-dimension except the physical functionality sub-dimension ($p > 0.05$).

In the pain sub-dimension, the QoL of individuals treated in gynecology departments before EST was found to be statistically significantly higher than that of patients treated in other departments ($p<0.05$) (Table 3). Patients treated in the gynecology department had higher QoL scores in the subgroups of physical function, physical role difficulty, general health perception, energy/vitality/vitality, and social function ($p>0.05$).

Table 2: Distribution of SF-36 Quality of Life Scale scores according to 8 subscales in all patients (n=60)

Sub-dimension	n	Mean ± SD	Median (IQR)
Physical function	60	38.44 ± 30.25	40.00 (10.00–62.50)
Physical role difficulty	60	17.91 ± 35.32	0.00 (0.00–6.25)
Pain	60	62.91 ± 34.12	67.50 (32.50–90.00)
General health perception	60	42.48 ± 19.30	40.00 (30.00–51.15)
Energy/vitality/ vitality	60	33.52 ± 21.50	27.50 (20.00–46.25)
Social function	60	44.82 ± 39.67	37.50 (0.00–87.50)
Emotional role difficulties	60	60.63 ± 47.65	100.00 (0.00–100.00)
Mental health	60	64.40 ± 20.32	68.00 (52.00–80.00)

Table 3: SF-36 Quality of Life Scale subscale scores by discipline before EST (n=60)

Subscale	Median (min-max)	P value
Physical function		
Hematology	40 (0-80)	
Oncology	22.5 (0-75)	
Gynecological diseases	60 (0-90)	0.314
Orthopedics	23 (0-15)	
Neurosurgery	55 (0-90)	
General Surgery	30 (0-90.3)	
Physical role difficulty		
Hematology	0 (0-100)	
Oncology	0 (0-100)	
Gynecological diseases	12.5 (0-100)	0.402
Orthopedics	0 (0-100)	
Neurosurgery	0 (0-100)	
General Surgery	0 (0-100)	
Pain		
Hematology	78.75 (32.5-100)	
Oncology	83.75 (0-100)	
Gynecological diseases	90 (65-00)	**0.009***
Orthopedics	43.7 (0-100)	
Neurosurgery	32.5 (0-100)	
General Surgery	61.25 (0-100)	

General health perception		
Hematology	45 (15-75)	0.205
Oncology	32.5 (6.2-45)	
Gynecological diseases	60.2 (30-80)	
Orthopedics	32.5 (25-75)	
Neurosurgery	42.5 (15-100)	
General Surgery	40 (5-60)	
Energy/vitality/vitality		
Hematology	27.5 (15-65)	0.396
Oncology	25 (5-60)	
Gynecological diseases	42.5 (0-85)	
Orthopedics	25 (0-50)	
Neurosurgery	35 (5-80)	
General Surgery	22.5 (5-75)	
Social function		
Hematology	37.5 (0-100)	0.447
Oncology	12.5 (0-100)	
Gynecological diseases	87.5 (0-100)	
Orthopedics	18.7 (0-100)	
Neurosurgery	37.5 (0-100)	
General Surgery	62.5 (0-100)	
Emotional role difficulties		
Hematology	100 (0-100)	0.958
Oncology	100 (0-100)	
Gynecological diseases	66.6 (0-100)	
Orthopedics	50 (0-100)	
Neurosurgery	100 (0-100)	
General Surgery	100 (0-100)	
Mental health		
Hematology	72 (28-96)	0.431
Oncology	60 (12-80)	
Gynecological diseases	70 (20-100)	
Orthopedics	60 (44-84)	
Neurosurgery	76 (48-100)	
General Surgery	64 (28-88)	

Significance at *0.05 level (Kruskal Wallis Test).

Findings related to FSS

When all patients were considered, a statistically significant decrease in fatigue level was found with EST **(p<0.001)**. In subgroup analyses, hematology and oncology patients benefited the most from EST transfusion, and their fatigue decreased (Table 4).

Table 4: Fatigue Severity Scale scores before and after transfusion according to disciplines (n=60)

Section	n	Mean ± SD	p
Before transfusion			
Hematology	10	5.86 ± 0.61	0.004*
Oncology	10	6.31 ± 0.80	
Gynecological diseases	10	3.63 ± 2.52	
Orthopedics	10	4.52 ± 2.23	
Neurosurgery	10	2.65 ± 2.12	
General Surgery	10	4.75 ± 2.20	
Total	60	4.61 ± 2.20	
After transfusion			
Hematology	10	1.85 ± 0.52	0.121*
Oncology	10	2.13 ± 0.78	
Gynecological diseases	10	2.27 ± 1.53	
Orthopedics	10	3.10 ± 1.81	
Neurosurgery	10	2.36 ± 2.13	
General Surgery	10	4.13 ± 2.21	
Total	60	2.64 ± 1.74	
			<0.001**

*Comparison of FSS between disciplines (Wilcoxon test).

**Comparison of FSS before and after EST

Orthopedic patients reported feeling less fatigue before transfusion (4.52 ± 2.23) compared to hematology and oncology patients. After transfusion, their fatigue decreased and they felt better (3.10 ± 1.81).

Neurosurgery patients did not feel fatigue before EST despite low Hgb levels (2.65 ± 2.12). There was a slight decrease in FSS scores after transfusion (2.36 ± 2.13). It was observed that transfusion did not affect the level of fatigue.

Findings Related to the Blood Transfusion Process

There were missing parts on the blood transfusion monitoring form for 43.3% of the erythrocyte suspensions transfused. In 21.7% of the blood transfusion monitoring forms, there was no physician's approval, and in 13.3% of the blood transfusion forms, the blood group of the transfused product was not recorded. In 11.7% and 48.3% of the forms, vital signs were not noted before EST and in the first 15 minutes after the transfusion started. When the information on the transfusion forms was taken into consideration, the differences between the time of blood bank withdrawal and the time of administration of blood in the clinics were striking; some erythrocyte suspensions were transfused before the time of withdrawal from the blood bank, while others were transfused 16 hours after the time of withdrawal.

DISCUSSION

Anemia is an important finding in many clinical conditions. In anemic patients, not enough oxygen can reach the tissues, tissue hypoxia develops, and symptoms occur (12). Patients with anemia have difficulty performing daily activities due to complaints such as fatigue, weakness, loss of appetite, bone pain, and a significant decrease in their QoL (4). In a study of 232.440 adult patients who required

inpatient treatment, approximately 20% of patients were diagnosed with anemia at the time of admission, while more than 50% developed anemia while being treated in the hospital. Patients with anemia during hospitalization were found to have higher mortality rates, and the risk of mortality increased significantly if anemia deepened during hospitalization (11).

EST is a method used when anemia cannot be treated with other methods or when treatment requires urgency. It is a frequently used method in the treatment of anemia related to hematology and solid organ cancers, as well as to treat anemia resulting from surgical intervention (12,13).

In this study, the QoL of patients scheduled for EST was found to be relatively low in all sub-dimensions. The patients with the lowest QoL were being treated in the hematology department. A study conducted in Japan with cancer patients with anemia revealed a significant increase in QoL as the Hgb level increased. Patients with anemia had a lower QoL than those without anemia (14). In addition, Vijenthira et al. reported that 447 patients with myelodysplastic syndrome experienced fatigue and dyspnea, and their QoL was low before transfusion (15). The fact that patients treated in the hematology department have lower Hgb values compared to other departments and have diseases that negatively affect QoL, such as acute leukemia, suggests that QoL is lower.

Pain is one of the main symptoms that reduces the QoL by directly affecting the physical and psychological health of individuals (16). The fact that patients treated in gynecology and oncology departments have no pain may be associated with the fact that the diseases they have do not cause pain and that pain control is performed well by physicians. Patients treated in neurosurgery and orthopedics departments may be thought to feel pain due to the characteristics of existing diseases (such as discal hernia, fracture).

When the QoL before EST was evaluated according to gender, it was observed that female patients had statistically significantly higher daily physical activities than males in the physical function sub-dimension. This result is thought to be because females try to be more active due to their responsibilities in housework and daily activities.

Individuals with anemia may experience severe fatigue even in low-energy requiring activities or at rest. This may negatively affect their activities of daily life and QoL (17). In this study, EST was found to reduce the level of fatigue. Patients treated in oncology and hematology departments felt the most fatigued before EST, while those who felt the least fatigued after EST were also patients of these departments. Similar to the findings of this study, another study showed a decrease in fatigue levels after EST in patients with hematologic cancers (12). This is interpreted as an expected result since deeply anemic and cancer patients receive treatment in these departments and are the group that feels the effects of anemia the most.

Gynecology and neurosurgery patients stated that they did not feel fatigue due to anemia. This result may be attributed to the fact that although patients treated in these departments did not have severe anemia in the preoperative period, EST was performed to keep Hgb levels high before the invasive procedure.

The National Guideline for the Preparation, Use and Quality Assurance of Blood and Blood Components for transfusion safety recommends decreasing the infusion rate and close monitoring of vital signs during the transfusion (19). In this study, it was observed that transfusion was started without vital signs monitoring in 11.7% of the patients, no monitoring was performed in the first 15 minutes in approximately half of the patients, and no monitoring was performed throughout the transfusion in 3.3% of the patients. In another study, while the rate of taking vital signs before transfusion was 97.2%, the rate of monitoring vital signs every 30 minutes until the end of transfusion was 80.1%, and in a study conducted in our country, the rate of vital signs monitoring before blood transfusion was 92% and the rate of monitoring for the first 15 minutes was 70% (5,18). These results are similar to our study and suggest that these deficiencies in transfusion practice are due to careless behavior, lack of knowledge, inadequate communication between staff, inadequate nursing interventions, high workload, inadequate clinical experience, forgetting to keep records despite follow-up, or late recording.

Frequent repetition of in-service training about transfusion being a special procedure and close monitoring, changing habits from the past, establishing procedures with the transfusion process, and preventing newly recruited healthcare personnel from making any attempt alone until the orientation process is completed may contribute to early detection of transfusion reactions and keeping patient safety at the highest level.

For safe EST, the information on the blood bag and the information written on the patient file and patient wristband should be carefully checked by the physician and nurse and recorded on the transfusion

form (20). In this study, upon examining all transfusion monitoring forms, it was observed that 43.3% were incompletely filled out. Additionally, 21.7% of physicians and 10% of nurses failed to check the appearance of the blood for signs of hemolysis, clots, holes, and leakage. It was observed that the blood group of the product to be transfused was not recorded in 13.3% of the forms, and the blood serial number was miswritten in 6.7% of the forms. In another study, it was found that 35.9% of healthcare professionals did not check the blood group, and all of them checked for hemolysis, clots, and sediment particles (5). Hemolyzed, clotted, discolored, and perforated products are not suitable for use because they may contain bacterial growth causing infection. These results may be associated with the fact that physicians and nurses forget to record the transfusion on the transfusion monitoring form due to excessive workload, even if it is checked, and that habits from the past are not changed.

It is thought that making the forms readable and easy to fill in will facilitate the compliance of physicians, nurses, and blood transfusion personnel with the transfusion process. Electronic recording of blood transfusion monitoring forms and the entire blood transfusion process seems to be a good practice for blood safety, data analysis, and statistics in hospitals with frequent transfusions. Close monitoring of the transfusion process by hemovigilance nurses can help to eliminate and prevent deficiencies.

When erythrocyte suspensions are kept at room temperature, they reach the temperature level of +10°C within 30 minutes. It should be transfused to the patient without any delay, and the transfusion should be completed within 4 hours (19). In our study, it was observed that the transfusion started within an average of 53 ± 126.92 minutes after the blood left the blood transfusion center. However, there were significant differences with a wide range at this time. According to Güleryüz and Dal (2015), 56.35% of nurses administer blood within 30 minutes without waiting in the clinic (21). It is thought that the longer times may be related to a shortage of blood transport personnel in clinics, the simultaneous withdrawal of two units of ES from the clinic, the second product being kept in the refrigerator in the wards while the first product is being transfused, and a lack of information. Therefore, it is recommended that the blood transport process be optimized, an adequate number of personnel be provided, and in-clinic administration protocols be clarified to ensure safe transfusion conditions.

The physician decides on the type, quantity, and duration of the blood and blood products to be transfused to the patient and gives the order. The National Guide for the Preparation, Use and Quality Assurance of Blood and Blood Components (2016) states that one unit of ES can be administered within 15 minutes to 4 hours (19). In our study, after examining the patient orders, it was found that the transfusion time was not noted in 68.3% of them, and the transfusion was generally completed within the time determined by the nurse. While transfusion consent was obtained from 35.0% of patients before transfusion, only 13.5% were aware of the consent they signed. In another study, the rate of checking the transfusion consent form by nurses was found to be 63.1% (5). Patients should be informed by their physician before EST, and their participation in the treatment should be ensured by obtaining their consent.

We believe that these results are caused by a lack of knowledge, resulting from the failure to change old habits and fully engage with the provided training, despite the hemovigilance unit offering regular training sessions. Establishing procedures for the transfusion process in hospitals, providing frequent training for physicians, nurses, and blood transfusion staff, conducting clinical audits by the hemovigilance unit, organising blood requests, and using online transfusion monitoring forms may contribute to preventing incomplete and incorrect practices in the EST process.

The fact that this study was conducted at a single center and with a limited number of patients limits the generalizability of the results. Patients' reports were accepted in assessing fatigue levels, which may be subject to subjective influence. In addition, only short-term effects were evaluated after transfusion, and long-term results could not be examined. This study only reflects the data in the region where the study was conducted, and a larger sample group should be reached in order to obtain more precise results.

CONCLUSION AND RECOMMENDATIONS

This study examined the change in pre-EST QoL and post-transfusion fatigue levels in patients treated in different disciplines. It revealed the differences in blood transfusion practice between disciplines. The study's findings revealed that the QoL before EST was low across all sub-dimensions of FSS, yet it had a positive effect on the level of fatigue after EST. Patient-centered decision-making is needed to develop the best transfusion strategy.

To reduce blood transfusion risks and prevent malpractices, a national blood policy should be established. This policy would facilitate the development of blood transfusion monitoring systems (hemovigilance), quality programs, and the coordination of services. Additionally, regulations, guidelines, and protocols should be put in place. At the centers, health professionals should undergo regular trainings on blood transfusion. Additionally, procedures, including transfusion steps, should be prepared and easily accessible to nurses and physicians.

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