

Brief Report

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Assessment of awareness about blood transfusion among the red cell recipients.

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Abstract

Background: Red cell transfusion is indicated to increase the oxygen delivering capacity and it cannot be replaced by any pharmacological agent. Although blood transfusion is generally safe, adverse effects can occur; hence, benefits must always outweigh risks of transfusion before decision to transfuse is made. Information about the aims of transfusion, benefits and risks of transfusion, must be explained to the patient and written consent must be obtained.

Objective: To assess the awareness about blood transfusion among red cell recipients.

Materials and Methods: This prospective descriptive study was carried out at a tertiary care hospital in Sri Lanka. Red cell recipients were questioned about the transfusion episode after been transfused.

Results: There were 252 patients in the study, 82 from surgical units and 170 from medical units. 37 (45.12%) patients from surgical units and 79 (46.47%) patients from medical units were explained about the transfusion, before they were being transfused. 66% of patients from surgical units and 55% from medical wards knew their blood group. 77% and 57% of patients were aware about the reason for transfusion in surgical and medical wards, respectively. Moreover, 39% of patients from surgical units and 35% of patients from medical units knew about transfusion transmitted infections.

Conclusions: Awareness about the own blood group, reason for transfusion, benefits and risks of transfusion was significantly low in the study group. Therefore, patient education should be improved to understand the benefits and risks to the patient.

Keywords: *Blood Transfusion, Patient Awareness, Knowledge, Red Cells, Transfusion Reactions*

INTRODUCTION

Blood is an essential element for human life which has no substitute and blood transfusion is a safe medical procedure in which blood or blood

components is given to patients intravenously. It is crucial in the modern medicine, as it is essential in saving lives of patients with trauma, bleeding disorders, major surgeries, chemotherapy,



inherited or acquired coagulation disorders and malignancies [1]. Millions of lives are saved every year through blood transfusion. Although blood transfusion is generally safe there are many adverse events related to transfusion including fatal reactions. Transfusion transmissible infections such as HIV, hepatitis B virus, hepatitis C virus, syphilis and malaria have posed a major threat in the safety of blood with implications for the complexity and cost of provision of effective blood transfusion services [2].

Blood transfusion practices vary from one facility to another depending on the available blood and blood components, the number of patients, and the support of efficient and effective laboratory services. Various studies have shown the awareness and attitude of patients towards blood transfusion to be different among countries and traditions [3]. Lack of awareness and attitude of patients towards blood transfusion continues to be a real threat to the procedure [4].

The importance of blood transfusion cannot be over-emphasized; the present study was therefore conducted to determine the attitude, beliefs and knowledge about red blood cell transfusion practice among patients attending a tertiary health institution in Sri Lanka. Red cell transfusions were selected for auditing as it is the commonest blood component transfused. The result of the present study would enable stakeholders in blood transfusion practice to intensify their efforts in developing promotional and educational approaches to enhance the willingness of patients to accept blood transfusion when the need arises.

METHODOLOGY

This prospective descriptive study was carried out at a tertiary care hospital in Sri Lanka. Sample size was calculated and the final sample size required was found as 216.

Consenting patients transfused with packed red cells issued from blood bank during the study period were included. Patients receiving more than one transfusion episodes were considered as one sample.

Informed written consent was obtained from the patients for interviewing. For children under 16 years of age consent was obtained from the guardian who gives the consent for blood transfusion.

Participants were questioned on the reason for transfusion, knowledge on adverse effects of transfusion and knowledge on signs and symptoms of a transfusion reaction.

Furthermore, they were asked about the type of donors they prefer. Before data collection, the drafted questionere was validated with a group of 30 transfusion dependent patients, who had been transfused for more than 10 times.

Data were analyzed using Microsoft Excel 2013 and Statistical Package for the Social Sciences (SPSS) statistical software, Version 22. Presence of any significant difference between the knowledge of the patients versus the actual situation, which was considered as fifty percent, was assessed by calculating *P* values. *P*<0.05 was regarded as statistically significant, and *P*>0.05 was regarded as not significant.

RESULTS

A total number of 252 patients were studied. General Medicine, Pediatrics, Hematology and Oncology wards were considered as medical wards, whereas General Surgery, Obstetrics and Gynaecology and Orthopedic Surgery wards were considered as surgical wards. There were 82 patients from surgical units and 170 patients from medical units. There were 188 patients who had blood transfusions previously. Approximately 77.6% of patients in medical units and 68.2% of patients in surgical units have undergone red cell transfusions more than once. The range in age among patients who received red cell transfusions was from 2 years to 86 years in surgical units and from 3 years to 88 years in medical units. The mean age of patients who received red cell transfusions was 52.58 years in surgical unit whereas the mean age in medical unit patients was 53.06 years.

Patients were questioned whether they were explained about transfusion prior to blood transfusion. 37 patients from surgical units and 79

patients from medical units were explained about the transfusion, before they were being transfused. 45 patients from surgical units and 91 patients from medical units were not given any information about blood transfusion prior to the transfusion. The difference is not statistically significant. (p=0.2) Higher percentage of patients from surgical units knew their blood group correctly after the current transfusion. (66% Vs 55%). This difference is statistically significant (p = 0.02).

Higher percentage of patients from surgical units is aware about the reason for transfusion. (77%Vs

57%). Most of the medical unit patients are not aware about the reason for their transfusion. (23% Vs 43%). The difference is statistically significant (p =0.003). Most of the medical unit patients were explained about the transfusion by medical officers (82% Vs 56%). Higher percentages of surgical unit patients were explained about their transfusions by nursing officers. (43% Vs 15%).

The medical unit patients are more aware about the risk of blood transfusions than surgical unit patients. The difference is statistically significant (p =0.006).

Table 01: Distribution of patients according to their knowledge about transfusion reactions.

Sign and symptom	Number of patients (%)		Total
	Surgical	Medical	
Fever	23 (28.05%)	81 (47.65%)	104 (41.27%)
Chest pain	11 (13.41%)	25 (14.71%)	36 (14.29%)
Urticaria	48 (58.54%)	124 (92.94%)	172 (68.25%)
Abdominal pain	06 (7.32%)	06 (3.53%)	12 (4.76%)
Dyspnoea	27 (32.93%)	49 (28.82%)	76 (30.16%)

Higher percentages of patients from medical units were aware about transfusion reactions than patients from surgical units. The difference is not statistically significant (p=0.13).

39% of patients from surgical units and 35% of patients from medical units stated HIV, Hepatitis B, Syphilis and Malaria as transfusion transmitted infections. 47.56% of patients from surgical units and 30% of patients from medical units stated that donated blood is screened for HIV, Hepatitis B, Hepatitis C, Syphilis and Malaria in Sri Lanka.

73% of patients are aware that blood has to be crossmatched prior to the transfusion. The difference of awareness about cross match between surgical unit patients and medical unit patients are not statistically significant.

In the study group 37 patients from surgical wards and 77 patients from medical wards prefer to get blood from voluntary blood donors. 19 patients from surgical wards and 43 patients from medical wards prefer to get blood from family members. 03 patients from surgical wards and 09 patients from medical wards prefer to get blood from

friends. No one in the study group prefer to get blood from paid donors or autologous blood. 23 patients from surgical wards and 41 patients from medical wards did not have any preference about the donor.

DISCUSSION

Allogeneic red cell transfusion is a treatment modality to improve patient outcome by increasing the haemoglobin content to deliver the adequate amount of oxygen to the tissues [1]. Transfusion is generally safe: however, adverse events including life threatening events can occur from blood transfusion. Among the serious hazards commoner reactions are transfusion-related acute lung injury (TRALI), hemolytic transfusion reactions (HTRs), and transfusion-associated sepsis [5]. Mild reactions are commoner than more serious adverse events. They can be Febrile Non-Haemolytic Transfusion reactions, Mild Allergic reactions, Acute pain reactions and Transfusion Associated dyspnoea. After introduction of infection screening methods noninfectious complication became common. [6].

Avoidance of unnecessary transfusions can reduce the occurrence of undesirable effects [5].

In clinical practice the patient's knowledge about the disease and its management is important. Obtaining consent and autonomy of the patient is becoming an important challenge in clinical practice [7]. Patient should know about the disease, available treatment options, their adverse effects and complications and also about the outcome. Valid consent should be obtained from the patient and it should be documented [3]. When obtaining informed consent for blood transfusion patients should be informed about risks and benefits of transfusion [8]. A standard method for obtaining consent must be adopted with providing the information to the patient [3]. Explaining the benefits and risks together with the alternatives available are important elements of consent [9]. And the patients should be provided adequate time to ask questions and patient's decision should be acknowledged. Patient should understand the strategies taken to reduce the risk of infection and the residual risk of infection should be explained [10].

In 2017 Moosavi et al have published a study on Patients' attitude toward receiving information and blood transfusion safety [11]. This is a study by systemic reviewing the articles, books, magazines and WHO reports. In this study they have concluded that there is lack of evidence patient participation has been contributed for transfusion practice.

Clinical staff should be trained for obtaining informed consent and for that they also should have a thorough knowledge about benefits and adverse effects of blood transfusion [12]. Patient education can be achieved with informative leaflets and it can save the clinician's time [8]. Video clips are also available to provide the information to the patients and there is evidence that patients' knowledge have been improved after watching the video [13]. In the United States, where 5 million patients receive blood transfusion annually, a study had been carried out to improve the consent process to be valid for one year in regularly transfused paediatric population [14]. That has decreased the turnaround time of chronically transfused patients. In another study, after proper patient education and patient involvement was included in decision making for

blood transfusion, overall transfusion rate has been reduced [15]. Health care providers should explain the treatment options, benefits and risks of those options and consequences of accepting or refusing the treatment options and the alternatives. These should be included in a valid consent process [7].

In this study group patients were asked whether they were explained about the transfusion. 116 patients (46%) were explained about the transfusion with varying information, and 136 (54%) were not given any information regarding the transfusion prior to the transfusion. This was performed by medical officers and nurses in the wards at the bedside prior to the transfusion. Most of the information for the patients in medical units was given by medical officers. For surgical units this information was mostly given by the nurses. Although studies are not published to compare these findings, Grimstvedt M.E. et al revealed that both nursing practitioners and physician assistants are satisfactorily knowledgeable and confident to provide information to the patients [16]. In another study published by Chris Salisbury et al concluded that increasing nursing practitioners improves patient satisfaction [17].

ABO incompatibility is a fatal transfusion reaction [5]. Acute Hemolytic Transfusion Reactions due to ABO blood group incompatibility occurs due to transfusion of wrong blood to a wrong patient [18]. Therefore, awareness about the patient's own blood group will help to reduce Acute Hemolytic Transfusion Reactions. More patients from surgical units knew their blood group than patients from medical units. As far as pregnant mothers included in the surgical group are concerned, it is recommended to perform blood grouping and antibody screening of all pregnant women at the booking visit and at 28 weeks of pregnancy [19]. In addition to that in other surgical units also blood group is checked prior to the elective surgeries. This could be the reason for higher awareness about blood group in surgical units.

In this study group 160 (63%) patients knew the reason for current transfusion, and 92 (37%) patients did not know the reason for their own blood transfusion. Among the patients who knew

why they have been transfused were surgical patients. (77% Vs 57%). The difference was statistically significant. Accepting a treatment without knowing the reason is not in current clinical practice [10]. To accept the blood transfusion patients should understand the benefits and the risks of blood transfusion. To continue with any treatment modality benefits should outweigh the risks. Red cell transfusion improves oxygen transport and correct blood loss in bleeding patients. Finally, it helps to improve the tissue oxygenation. Therefore, it improves the clinical outcome of the patients with low haemoglobin levels [1]. In the study group 24 patients (9.5%) know that oxygen transport is improved by red cell transfusion, and 4 patients (1.6%) knew it can correct blood loss.

There are fatal adverse events as well [5]. Red cell recipient must be educated about these hazards prior to obtain the consent for transfusion. In the study sample 4 (1.5%) patients were aware that haemolytic transfusions can occur, 20 (7.9%) patients knew that infections can be transmitted and 28 (11.1%) patients were aware about allergic transfusion reactions. Regarding the symptoms of transfusion reactions, 104 (41.2%) patients knew that fever is a symptom, 36 (14.2%) patients knew about chest pain, 172 (68.2%) patients were aware about urticarial, 12 (4.7%) patients knew about abdominal pain and 76 (30.1%) patients were aware of dyspnoea as a symptom of a transfusion reaction. Awareness about symptoms of transfusion reactions can help to early detection of adverse events and prompt management of the patient. Therefore, poor knowledge can increase the morbidity and mortality from adverse events of transfusion.

Microorganisms that are present in the donor's blood stream can be transmitted to the recipient [18]. Although the donated blood is screened for transfusion transmissible infections, there is a residual risk of transmission. For instance, if the donation had been made during the window period, the test would show negative result. Furthermore, technical errors and human errors could occur. In this study recipients were asked about the transmission of HIV, Hepatitis B, Syphilis and Malaria. Awareness about all of those transfusion transmitted diseases as well as the tests performed for screening is significantly low

in the group. Hence, awareness about transfusion transmitted infections and the risk of transmission such diseases are critical in making the decision on transfusion.

Before red cell transfusion a pre-transfusion sample is sent to the blood bank for compatibility testing. In this study the recipients were asked about the awareness about sample collection. Out of 252 patients 184 (73%) patients were aware that a pre-transfusion sample is taken for cross matching the selected blood. 68 (27%) patients were not aware about it. As the sole blood supplier National Blood Transfusion Service, Sri Lanka, provides blood only from voluntary non remunerated blood donors. Blood from voluntary non remunerated donors is considered to be the safest [20]. In this study group also, more patients prefer to get blood from the voluntary donors. However, this could be due to the burden of finding blood donor rather than the concern on the safety of the transfused blood.

CONCLUSION

Discussions on benefits and risks of blood transfusion must be carried out with the patient before obtaining the consent. Patients should be given an adequate time to discuss about transfusion. Awareness and knowledge regarding blood transfusion was poor within our study population. Therefore, medical professionals should be encouraged to divulge more information regarding the transfusion to the needy patients.

Author declaration

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Author contributions:

Senavirathna E.M.S.K. conceptualized the study and involved in data collection. All authors were involved data analysis and interpretation. Senavirathna E.M.S.K. drafted the manuscript and Samarakoon S.M.D.K. revised it. All authors read and approved the final manuscript.

Ethical approval:

Ethical clearance was obtained from the ERC of Teaching Hospital, Kandy, Sri Lanka.

Consent:

Informed written consent was obtained from the participants.

Conflicts of interest:

None

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Availability of data and materials:

The datasets of the study are available with the corresponding author.

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