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ORIGINAL ARTICLE

BLOOD TRANSFUSIONS - KNOWLEDGE OF NURSING PROFESSIONALS TRANSFUSÕES DE SANGUE - O CONHECIMENTO DOS PROFISSIONAIS DE ENFERMAGEM TRANSFUSIONES DE SANGRE - CONOCIMIENTO DE LOS PROFESIONALES DE ENFERMERÍA

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ABSTRACT

Objective: to analyze the knowledge of nursing professionals regarding hemotherapeutic procedures. **Method:** analytical quantitative study conducted with 16 nursing professionals in the areas of intensive care in a public hospital of the south of Brazil, who worked with critical patients and performed blood transfusions. A questionnaire was prepared in an online platform and sent via e-mail addresses. The research project was approved by the Research Ethics Committee, Protocol No. 12011. The analysis was carried out using the platform. **Results:** there was female predominance, with an age group ranging from 31 to 40 years (44%) with more than six-year experience and performance (62%); 56% performed transfusion procedures weekly; 94% reported they had never undergone specific training for such a procedure; and about 19% reported they felt little confident to perform the procedures. **Conclusion:** the nursing professionals surveyed were not always adequately prepared and confident to carry out hematology procedures. **Descriptors:** Nursing; Intensive Care Unit; Blood Transfusion; Hemotherapy.

RESUMO

Objetivo: analisar o conhecimento referente a procedimentos hemoterápicos dos profissionais de enfermagem. **Método:** estudo quantitativo analítico, com 16 profissionais de enfermagem das áreas de tratamento intensivo de um hospital público do sul do Brasil que atuavam com pacientes críticos e administravam transfusões de sangue. Um questionário foi elaborado em plataforma *on-line* e enviado via endereço eletrônico. O projeto de pesquisa foi aprovado pelo Comitê de Ética em Pesquisa, Protocolo n. 12011. A análise foi desenvolvida na plataforma. **Resultados:** predominou o sexo feminino; faixa etária entre 31 e 40 anos (44%) com mais de seis anos de experiência e atuação (62%); 56% realizavam procedimentos transfusionais semanalmente; 94% referiram nunca ter recebido treinamento específico para tal procedimento; e cerca de 19% referiram sentir-se pouco seguros para realizar os procedimentos. **Conclusão:** os profissionais de enfermagem pesquisados nem sempre estavam adequadamente preparados e seguros para a realização dos procedimentos em hemoterapia. **Descritores:** Enfermagem; Unidade de Terapia Intensiva; Transfusão de Sangue; Hemoterapia.

RESUMEN

Objetivo: analizar el conocimiento de profesionales de enfermería acerca de los procedimientos hemoterápicos. **Método:** estudio analítico cuantitativo realizado con 16 profesionales de enfermería en las áreas de tratamiento intensivo en un hospital público en el sur de Brasil que trabajaban con pacientes críticos y realizaban transfusiones de sangre. Un cuestionario fue elaborado en la plataforma en línea y enviado vía correo electrónico. El proyecto de investigación fue aprobado por el Comité de Ética de la Investigación, Protocolo N° 12011. El análisis fue desarrollado en la plataforma. **Resultados:** predominó el sexo femenino con edad entre 31 y 40 años (44%), con más de seis años de experiencia y desempeño (62%); 56% realizaba procedimientos de transfusión semanalmente; 94% reportó nunca haber recibido entrenamiento específico para tal procedimiento; y cerca del 19% reportaron sentirse inseguros para realizar los procedimientos. **Conclusión:** los profesionales de enfermería encuestados no siempre estaban adecuadamente preparados y seguros para llevar a cabo los procedimientos de hemoterapia. **Descriptores:** Enfermería; Unidad de Cuidados Intensivos; Transfusión de Sangre; Hemoterapia.

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INTRODUCTION

Blood has been used in clinical care practices since the early 19th century, a period in which the first human blood transfusion was carried out. However, adverse reactions, the difficulty in recruiting blood donors, the difficulties of storage and other aspects have maintained this therapy as a continuous discussion object.

The low number of units of blood in available stocks and the lack of donors are worrisome. The aging population is one of the factors that lead to increased demand for blood transfusion. However, while the number of transfusions grows from 2 to 3% per year in the United States, the number of eligible donors decreases. Many countries face difficulties in meeting the demand for blood and hemocomponents, mainly those subjected to a prohibitive policy regarding the commercialization of blood, as is the case in Brazil.¹

The hematology centers have difficulties in maintaining the supply of blood to meet the specific and emergency needs, thus endangering the health and the life of the population.² The increasingly rigid and numerous criteria for donation—which must be stipulated and followed to protect blood supply—are part of the set of factors that diminish the stock of units of blood. A recent study estimates that about 66 million people are erroneously included as eligible to donate blood. This fact reveals that there is not enough blood and that the process of selecting donors and the growing costs of tests and techniques of blood treatment have been the reason for doubling the price of blood in recent years, with a tendency of keeping the increase from 6 to 10% per year from now on.³

There are several reasons to take blood transfusions into consideration, even due to religious reasons or personal beliefs. In these cases, the search for alternative methods expands in order to reduce and optimize the use of autologous blood and avoid possible complications from blood transfusions. Society in general only knows the blood transfusion as a solution to the loss of blood and although the transfusion is an effective form of therapy, there is a risk of adverse effects and the transmission of diseases.

On the other hand, there are also economic reasons, linked to the high cost involved with the management and conservation of blood. This has led scholars to point out alternatives, justified by the decrease in the number of donors and the consequent decrease in the stocks of units of blood available.⁴ Overall costs of blood transfusions in Brazil are also

high, corresponding to R\$ 61,537,261.00 or about 0.4% of the total expenditure with hospitalizations.⁵

It is also necessary to consider the risks of transmission of diseases such as hepatitis B and C, HIV I and II/AIDS, syphilis, Chagas disease and malaria, among others. All treatments and therapeutic options have associated risks and benefits. It is no different with blood transfusions. The procedures involving transfusions—though often regarded as necessary in clinical practice—are subject to inadequate actions, errors and omissions on the part of professionals who are responsible for transfusions.⁶

Transfusion reactions are many and from different sources. They may be classified into: acute or delayed; immunological and non-immunological, among which are the acute hemolytic reaction; anaphylactic reactions; febrile non-hemolytic reaction; urticariform reaction; transfusion-related acute lung injury (TRALI); volume overload; bacterial contamination; delayed hemolytic reaction; post-transfusion purpura; graft-versus-host disease; iron overload; and infectious complications.⁷ Despite the many complications due to blood transfusions, sometimes the health team responsible for error notification does not perform this activity. There may be a fear on the part of the hemotherapy services and hospitals in Brazil.⁸

There are alternatives available for blood transfusion. They can reduce the risks to patients considerably when used carefully. Hematology procedures are complex and expensive. They require controlled and validated processes, calibrated and monitored equipment, and quality inputs, validated and inspected before and during use. In addition to the direct costs, these requirements entail indirect costs, specifically related to quality assurance and transfusion safety, in addition to expenditure with quality storage.⁹

The loss of erythrocytes begins at the time of collection. For this reason, there is a need of a proper storage with cooling, addition of medicines, filtering, and specialized professionals to carry out these procedures, in addition to the control of the blood regarding validity and appropriate storage, among others. Even though it is impossible to eliminate human error, it is possible to reduce the opportunities for errors to happen. Safe blood administration depends on individuals performing a complete and competent work.

Nursing professionals, largely from health services, are responsible for performing blood transfusions and they do it very frequently.

Nevertheless, more than three-quarters of professionals who perform this activity with great frequency feel little or misinformed on the subject. This obstacle is worsened for nursing assistants and technicians with the absence of training and when transfusions are less frequent in the place where they work.⁶

OBJECTIVE

- To assess the knowledge of nursing professionals regarding hemotherapic procedures.

METHOD

This study is descriptive analytical conducted with the application of a questionnaire drawn up in an online platform and distributed via electronic addresses to the subjects of the research in order to know their profiles and knowledge on hemotherapic procedures. The respondents were employees (nursing technicians, nursing assistants, and nurses) of a municipal hospital in the south Brazil, working in the general and neurological ICUs. The variables analyzed were: sex; age; education; time in the service; and frequency with which they followed transfusions, relating the level of theoretical knowledge with practical activities in blood transfusion.

There were several nursing professionals at the location of the study and they followed the aspects related to blood transfusions directly. Addressing the risks, alternatives, and procedures will contribute to clarification, obtaining information, and exchanging experiences among the professionals.

The only criterion for participating in the research was being an employee of the nursing team of the ICU of the hospital. The collection of participants' contact information was carried out in three steps: (a) the employees of the afternoon shift were addressed on the first day; (b) the employees of the morning and evening shifts were

addressed on the second day; and (c) the employees of the day and night shifts were addressed on the third day.

At the hospital, the 37 employees distributed in the shifts of the target sectors that agreed to participate in the research were addressed. These employees signed an informed consent form and informed their email addresses in order to receive the online questionnaire. They were requested to access and send the answers within seven days.

Of the total number of subjects contacted, 16 professionals replied to the questionnaire, constituting the sample of the survey. Data were analyzed using google.docs platform in which the questionnaire had been drawn up, since this software offers simple statistical tools and preparation of charts and figures. The research project was approved by the Ethics Committee of the São José Municipal Hospital (HMSJ) of the city of Joinville, under Protocol No. 12011.

RESULTS

Based on the data obtained, the findings regarding the profile of these professionals showed that most of them were aged from 31 to 40 years, corresponding to 44% of the interviewees. Most of the participants were women, totaling 75% of the professionals. With respect to training and professional performance, 69% of respondents were nursing technicians, 25% were nurses, and 6% were nursing assistants.

Most of these professionals reported they had over six-year experience, being 38% from 6 to 10 years, and 38% with more than 10-year experience, showing that the vast majority had worked in the area for a considerable amount of time (Figure 1).

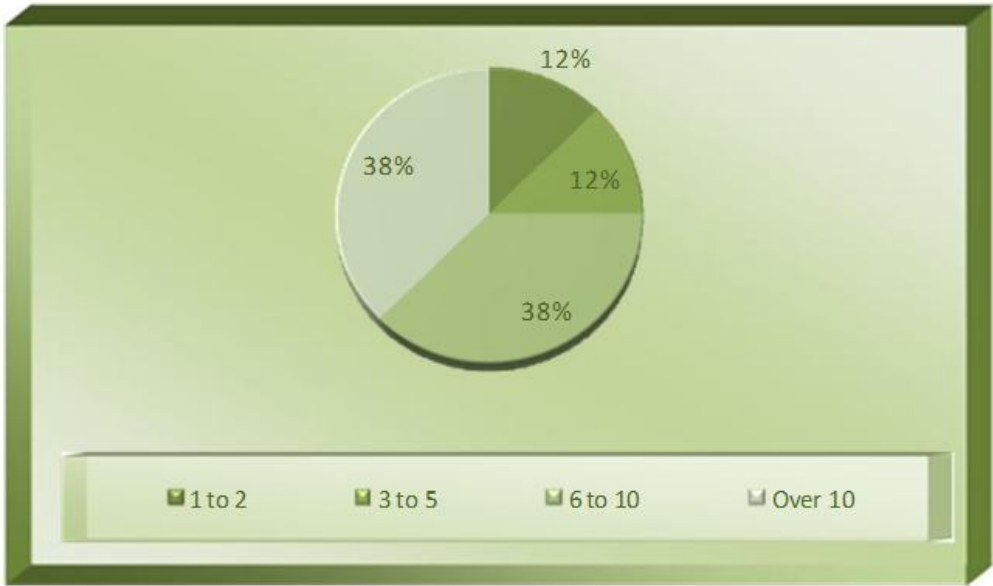


Figure 1. Time of experience as ICU nursing professionals (HMSJ), 2012.

When analyzed according to the contact and skills relating to blood transfusions, the professionals performed or followed blood transfusions with great frequency, mostly every week, totaling 56% of respondents (Figure 2).

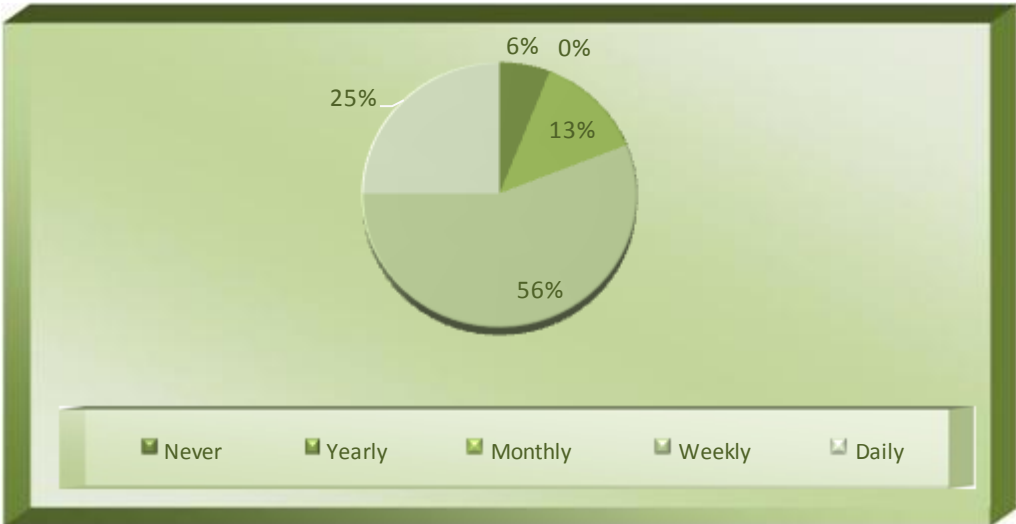


Figure 2. Frequency with which the ICU nursing professionals surveyed performed blood transfusions, 2012.

It is worth noting that the majority of employees stated they had not undergone specific training to perform blood transfusions, totaling 94% of respondents (Figure 3).

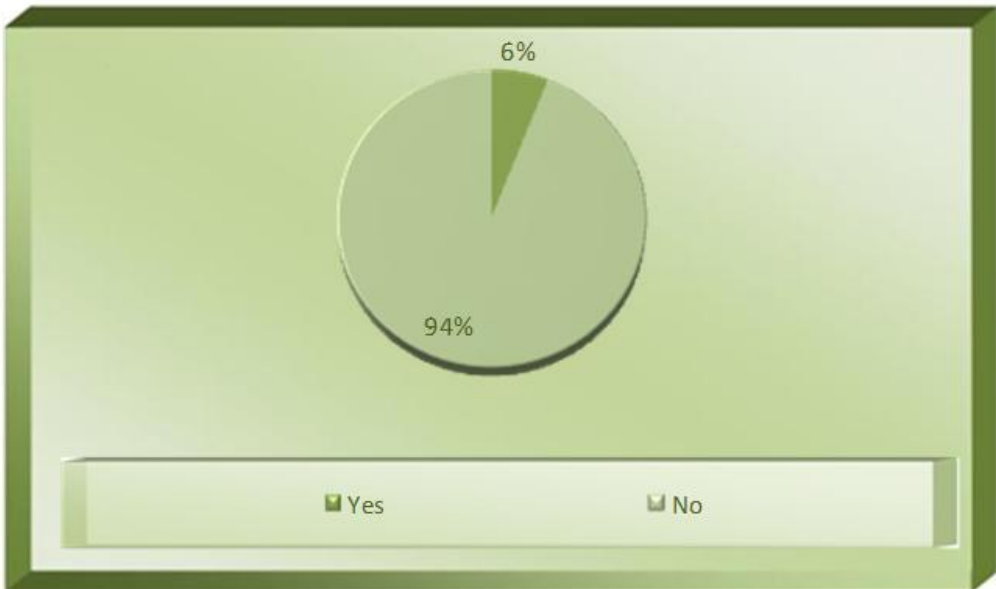


Figure 3. Training on blood transfusion undergone by nursing professionals of the ICU of the hospital under study, 2012.

Considering that these professionals did not undergo training to perform this procedure, only 13% reported they felt completely confident. On the other hand, 19% of employees felt little confident, and 69% reported they felt confident to perform transfusions.

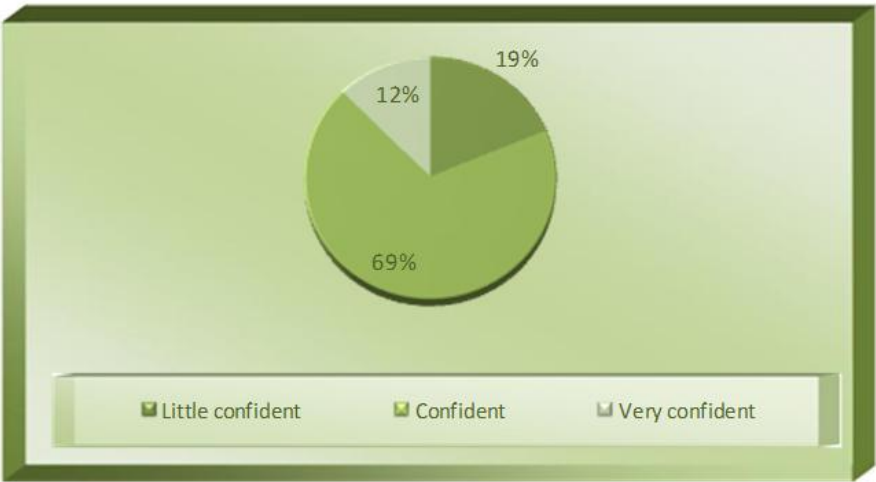


Figure 4. Confidence level referred by nursing professionals with respect to carrying out blood transfusion in the ICU of the hospital under study, 2012.

The questionnaire addressed other aspects relating to blood transfusions, including costs and reactions. When the participants were asked about the cost of transfusions, most of them did not respond properly; only one of

the respondents mentioned the correct cost. All respondents (100%) claimed to know the risks associated with blood transfusions, and 81% admitted they had already observed adverse reactions (Figure 5).

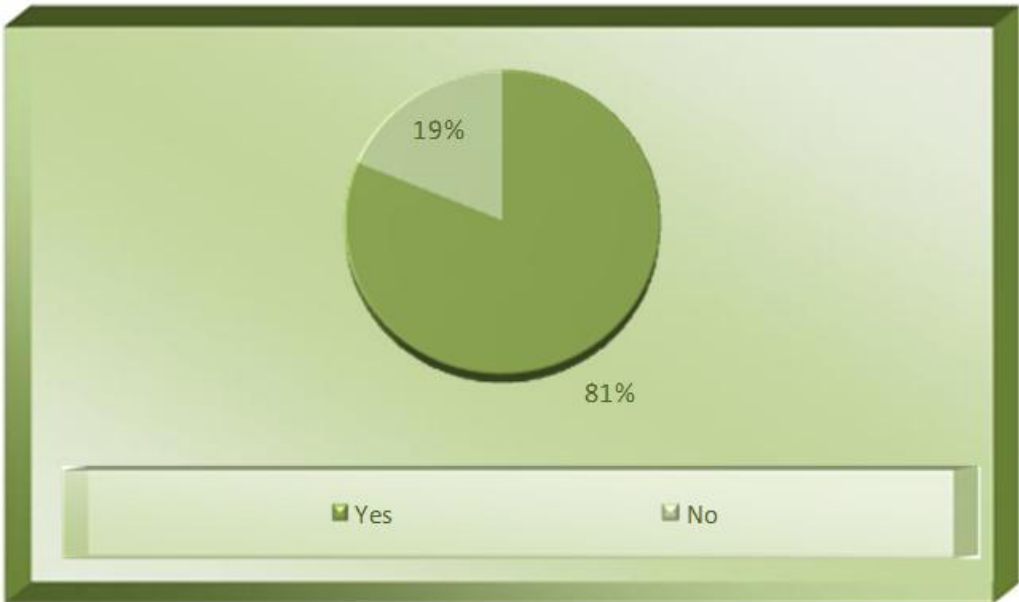


Figure 5. Previous experience of nursing professionals with adverse reactions to blood transfusion in the ICU of the hospital under study, 2012.

Nursing professionals are instructed to notify the blood bank; however, they do not undergo any specific training to perform this procedure. Out of the 81% interviewees who followed adverse reactions, only 25% had performed the notification process. All professionals stated that they were aware of the procedures that should be performed in case a patient showed signs of adverse reactions.

With respect to a new therapeutic approach related to the use of alternative treatments to blood transfusions, 31% of the professionals interviewed did not know any alternative to blood transfusion, and 69% reported they knew one or more alternatives.

DISCUSSION

According to the information provided by the Regional Nursing Council (COREN), the profile of nursing professionals is being studied through a research conducted in

partnership with the Brazilian Nursing Association (ABEn), the Federal Nursing Council (COFEN), the National Nurses Federation (FNE), and the Ministry of Health. This research is being coordinated by the Sergio Arouca National School of Public Health (ENSP). Therefore, there is still very little comparative information regarding age groups and other relevant aspects of the profile of this professional in Brazil. With regard to the information concerning the ICU team studied, the predominant age group was characterized as a mature team, which corroborates the time of experience in the function.

Regarding the female predominance in the nursing team, it is worth noting that in spite of a historic women's affinity with health care, it is recognized that gender biases have limited the participation of men in the profession. Although nursing is constructed culturally as a female practice, men are an increasingly common reality in the profession,

representing ruptures related to gender stereotypes in health care practice.¹⁰ This distribution is consistent with the shifts and staff allocation. According to recommendations, the number of nursing technicians for each nurse is 2.75, what matches the number of employees in the hospital under study.¹¹

The COFEN considered the importance and complexity of hemotherapy activities and drew the COFEN Resolution No. 200/1997, revoked by Resolution 306/2006 that regulates the performance of nursing professionals in hematology and bone marrow transplantation.¹²

Although the team performed this activity with great frequency, misinformation was significant. In the case studied, there was a significant lack of training, even though this fact does not always represent unsafe routine procedures. Nevertheless, it should be noted that the fact of feeling confident does not imply being properly clarified and prepared, because the lack of information can lead to less awareness of risks and health care complexity.⁶

A study conducted in the northeastern region of Brazil pointed out the worrying inadequacy of nursing professionals observed during all stages of the transfusion process. The study—which was also carried out in an ICU—points out that since it is a complex unit dedicated to serious and high-risk patients, whose clinical conditions oscillate between narrow limits of normality/abnormality, minor changes due to inadequacies in the health care process can cause important risks to patients. This inadequacy constitutes an issue to be better investigated and adjusted. Prevention measures are suggested by carrying out permanent training of the nursing staff, which will allow the targeting of actions that extend and enhance safety in blood transfusions, consequently promoting continuous improvement of quality throughout the process.¹³

The aspects that can influence the quality of transfusion practice involving the nursing team as a whole relate to the correct identification of patients and samples, monitoring of reactions during the procedure, and subsequent clinical follow-up. In this study, the majority of respondents reported they followed transfusion procedures weekly, despite having undergone little or no training for that purpose. The complexity of treatments and the behaviors involving patients undergoing transfusion requires preparation and competence on the part of the multidisciplinary team, highlighting the

role of the nursing team, since these professionals remain close to the patients at all stages of blood transfusions.¹⁴

Associated with adverse events resulting from transfusions, the occurrence of transfusion reactions varies according to the product used and the type of receiver. The practical guidance states that all patients should be monitored carefully during transfusions and that any sign or symptom should be promptly investigated and reported.¹⁴

A total of 2,613 reactions were notified in the Sanitary Surveillance Notification System (Notivisa) in 2008, and 11 of them led to patients' death.¹⁵ The Brazilian law made the notification of seroconversion in plasma donors mandatory in 2003. It also made the notification of the occurrence of errors during the procedures for classifying patients and donors obligatory, as well as errors in the compatibility testing and transfusions themselves (for example, blood exchanges). To date, notifications are very few, with little national knowledge on the subject. There seems to be a fear on the part of the services and professionals that the notification can denigrate the good image of the hemotherapy services and hospitals in Brazil.⁸

General behaviors recommended for the nursing team in face of a transfusion reaction include: stopping immediately the procedure; checking the vital signs and clinical condition of the patient; maintaining venous access with saline solution; rechecking the label identification data of the hemocomponent; communicating it immediately to the physician; and notifying the blood bank.¹⁴

Worthy of note is the fact that of the 81% professionals surveyed who witnessed adverse reactions to transfusion, only 25% performed the notification process. Professionals' confidence when performing procedures and making decisions in the health care process is an essential element to carry out a good work; however, confidence must be ensured by means of personal and professional development, accumulation of knowledge, and specific training for the various steps of health care.

Regarding the cost of units of blood and procedures, recent surveys indicate that the blood donated costs around R\$ 1,500.00 per unit, which is charged to the Unified Health System. These values include tests, conservation and manipulation, and employees, among others.⁸ In addition to the high cost of the units of blood, there is another value that has not yet been quantified, i.e., expenditures when there are

adverse reactions with treatments, which are called indirect costs. It is necessary that the professionals engaged in this process know the related costs, and the present study showed that only one of the subjects was aware of the approximate cost of a unit of blood.

Facing so many aspects discussed on transfusions, currently physicians perform medical procedures without blood transfusions, because they believe that other strategies instead of transfusions are simple, safe and effective, and also because many of them share religious beliefs which are contrary to transfusions, or defend the rights of users. Some of the participants surveyed stated they were aware of alternatives. This aspect should be disseminated and worked out among health teams in order to provide patients with the various types of treatments available.

By seeking multidisciplinary integration, the nursing team must search knowledge about these alternative proposals and integrate clinical decisions aiming at the well-being of patients. One of the alternatives proposed is the pre-operative planning in order to reduce bleeding. This can be accomplished by increasing the mass of the patient's red blood cells with low-cost substances such as hemolytics, iron, folic acid, vitamin B12, and erythropoietin. Furthermore, simple techniques can be mentioned, such as the positioning of the patient, use of local anesthesia instead of general anesthesia, and the preservation of normothermia and hypotension, which are techniques that reduce blood loss. The use of tranexamic acid and other pharmaceutical technology innovations contribute to the correct management of the blood and decreased need for transfusions, which often exceed the actual demand.¹⁷⁻²⁰

The diverse existing alternatives are also defended because they reduce mortality, morbidity, and costs. They are safe and effective strategies besides being measures that can be adopted as a standard treatment.²¹ Accordingly, the knowledge of nursing professionals with respect to alternative treatments becomes necessary. All nursing professionals must treat patients with equity, taking into account that they have the right to choose.

The articles 4 and 5 of the ministerial Ordinance No. 1,820/09 of the Ministry of Health include the right of patients to refuse treatment at any time during the hospitalization, in addition to the requirement to adapt the therapy to the patient's personal values and limits.²² Aspects such as costs and

alternative therapeutic options, as well as the risks associated with transfusion procedures, should be part of the knowledge and practice of professionals in various health areas.²³⁻⁴

CONCLUSION

Blood transfusions—as well as all clinical practices—are procedures that entail risks and benefits to patients. The nursing team that performs in critical areas of health services is directly responsible for detecting, managing, and notifying adverse reactions to this procedure when necessary.

The present study found that nursing professionals who work in the administration of blood transfusions and blood products are not always adequately prepared to complete this procedure. It was observed that there is a high percentage of professionals who witnessed adverse reactions to blood transfusion, although a minority of these professionals had been involved in the process of notifying adverse transfusion reactions.

It is necessary that such nursing professionals understand the topic concerning alternatives to blood transfusion and the comprehensiveness of their related aspects. Health care including hemotherapeutic procedures provided to critical patients is complex and delicate. The team under study showed experience as means of developing personal confidence when performing procedures. However, most had not undergone formal training on that practice.

The sub-notifications of adverse reactions will be less when the entire nursing team gets engaged in the notification process. Integral health care provided to patients will be achieved with multidisciplinary and integration of the whole health team seeking the best for patients.

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