PERMANENT EDUCATION OF THE NURSING TEAM IN TRANSFUSIONAL REACTION

EDUCAÇÃO PERMANENTE DE EQUIPE DE ENFERMAGEM EM REAÇÃO TRANSFUSIONAL EDUCACIÓN PERMANENTE DE EQUIPO DE ENFERMERÍA EN REACCIÓN TRANSFUSIONAL

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ABSTRACT

Objective: to identify the knowledge of nursing professionals about the transfusion reaction, before and after the activity of permanent education. **Method:** it is a qualitative and explanatory study, developed in a small hospital. The paired T-test statistic was used to test the difference between the means of the groups and the software R to generate the summary measures. **Results:** the sample consisted of 37 professionals, of whom 22 were nursing technicians, eight were nurses and seven were Nursing trainees, the majority being female, young, single and working less than five years in the institution and in Nursing. Regarding the evaluations, the percentage of correctness was 56% in the pre-test, while in the post-test, this percentage rose to 87%, a 31% improvement in the percentage of correctness. **Conclusion:** it was shown by the professionals' performance, between the pre-and post-test evaluations, that training in transfusion reaction occurred satisfactorily, since, according to the statistical test used, the averages of the groups were significantly different was accepted, and the test reached 82% of the hospital's nursing team. **Descriptors:** Continuing Education; Transfusional Reaction; Nursing care; Nursing professionals; Knowledge; Risks.

RESUMO

Objetivo: identificar o conhecimento dos profissionais de Enfermagem sobre a reação transfusional, antes e após atividade de educação permanente. **Método:** trata-se de um estudo qualitativo e explicativo, desenvolvido em um hospital de pequeno porte. Usou-se a estatística do *Teste T* pareado para testar a diferença entre as médias dos grupos e o *software R* para gerar as medidas-resumo. **Resultados:** compôs-se a amostra por 37 profissionais, sendo 22 técnicos de Enfermagem, oito enfermeiros e sete estagiários de Enfermagem, sendo a maioria do sexo feminino, jovem, solteira e trabalhando há menos de cinco anos na instituição e na Enfermagem. Quanto às avaliações, o percentual de acerto foi de 56% no pré-teste, enquanto, no pós-teste, esse percentual subiu para 87%, uma melhora de 31% no percentual de acerto. **Conclusão:** mostrou-se, pelo desempenho dos profissionais entre as avaliações do pré e do pós-teste, que o treinamento em reação transfusional se deu de maneira satisfatória, pois, de acordo com o teste estatístico utilizado, a HA das médias dos grupos serem significativamente diferentes foi aceita, sendo que o teste atingiu 82% da equipe de Enfermagem do hospital. **Descritores:** Educação Continuada; Reação Transfusional; Cuidados de Enfermagem; Profissionais de Enfermagem; Conhecimento; Riscos.

RESUMEN

Objetivo: identificar el conocimiento de los profesionales de enfermería sobre la reacción transfusional, antes y después de la actividad de educación permanente. **Método:** se trata de un estudio cuali-cuantitativo y explicativo, desarrollado en un hospital de pequeño porte. Se utilizó la estadística del Test T pareado para probar la diferencia entre los promedios de los grupos y el *software R* para generar las medidas-resumen. **Resultados:** se compuso la muestra por 37 profesionales, siendo 22 técnicos de enfermería, ocho enfermeros y siete pasantes de enfermería, siendo la mayoría del sexo femenino, joven, soltera y trabajando desde hace menos de cinco años en la institución y en la enfermería. En cuanto a las evaluaciones, el porcentaje de acierto fue del 56% en el pre-test, mientras que en el post-test, ese porcentaje subió al 87%, una mejora del 31% en el porcentaje de acierto. **Conclusión:** se mostró, por el desempeño de los profesionales entre las evaluaciones del pre y del post-test, que el entrenamiento en reacción transfusional se dio de manera satisfactoria, pues, de acuerdo con el test estadístico utilizado, la HA de las media de los grupos haber sido significativamente diferentes fue aceptada, siendo que la prueba alcanzó el 82% del equipo de Enfermería del hospital. **Descriptor:** Educación Continuada; Reacción a la Transfusión; Atención de Enfermería; Enfermeras Practicantes; Conocimiento; Riesgo.

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INTRODUCTION

It is known that blood transfusion, defined as the transfusion of parts of the blood for the purpose of treatment of some pathology,¹ is a necessary and very effective therapeutic procedure when used properly, however, presents risks to the recipient of the blood component.² Among the risks, transfusion reactions are divided into immunological and non-immunological, immediate or late, and these reactions are any clinical complications that occur through transfusion.¹

It is believed that many authors have been discouraging the practice of blood transfusion, but it is still necessary in many cases as in severe anemia or in other conditions where the use of alternative methods for blood transfusion are not effective.⁴ Efforts are concentrated, knowing that most of the reactions are due to human errors, to minimize them with the use of protocols and permanent education in health services. Thus, professionals are trained and up-to-date, enabling the recognition of the signs and symptoms of a transfusion reaction and the more appropriate conduct to be adopted.¹

Permanent health education is an important tool to qualify health care, enabling professionals to act as barriers to prevent the emergence of serious adverse events and thus promoting greater patient safety.⁵⁻⁶

It is noted that research shows that professionals have difficulties in recognizing the types of transfusion reaction and argue that these professionals need to have adequate and specific knowledge so that they can promote better patient safety in all stages of transfusion.¹ In other studies, it has been shown that even professionals who work with hemotherapy who are trained to function feel insecure when making decisions regarding a transfusion reaction. It is also added that many of them are not familiar with the ABO system, sufficient information to know their respective donors and recipients.⁷ This is a worrying scenario, since the greatest cause of deaths due to transfusion reaction is due to the acute hemolytic reaction as a consequence of the incompatibility of the ABO system.⁸

It is evidenced that transfusion-associated circulatory overload (TACO) and transfusion-related acute lung injury, called transfusion related acute lung injury (TRALI), are also transfusion reactions that deserve to be highlighted, as they have a higher prevalence

in surgical centers, these being one of the main sectors where blood transfusions occur, and its aggravating factor is similar symptomatology, however, with differentiated conduct.^{3,9}

It is revealed that studies involving nursing assistance to hemotherapy patients are scarce, since hemotherapy is a recent practice in Nursing. It is necessary to study the knowledge of the professionals about it, considering the importance of the nurse in patient safety and the quality of the blood component.⁸

In view of the relevance of the topic related to the recognition of a transfusion reaction, the knowledge of proper conduction, the need for notification and all the context that involves the work of the worker, which the study brings as a guiding question of research: "What is the knowledge of nursing professionals about the transfusion reaction in a small hospital in the municipality of Palmas/PR?".

It addresses the issue raised by its relevance in the health haemovigilance aspect, as well as in the safety and quality in the transfusion practices in a hospital institution.

OBJECTIVE

- To identify the knowledge of nursing professionals about the transfusion reaction, before and after the activity of permanent education.

METHOD

This is a qualitative and explanatory study, developed in a small hospital in the city of Palmas/PR, during the months of June and July 2017. It is reported that this study is part of the action research entitled Permanent Education of Nursing Workers in a Hospital Institution.

Nursing professionals who act directly in the care of the patient in hemotherapy and, as exclusion criteria, professionals from other areas or of the Nursing who do not act in the assistance of the patient in hemotherapy are defined as inclusion criteria for the study.

It is noteworthy that, of the 45 Nursing professionals qualified to receive training, eight refused to participate in the study and 37 were trained; therefore, 37 nurses participated in the sample, being eight nurses, 22 Nursing technicians and seven Nursing interns.

The study was divided into three moments after the acceptance of the worker to

participate in the study by signing the Free and Informed Consent Term (FICT).

The questionnaire was initially applied with five closed-ended multiple choice questions to identify the professionals' prior knowledge of transfusion reactions and seven closed multiple choice questions in order to identify the profile of the trained workers.

At the second moment, the activity of permanent education containing the definition, classification, symptomatology, pathophysiology and conduct of professionals in relation to the transfusion reaction was established, establishing, at this stage, all the answers to the questionnaire applied. The closed questionnaire on the transfusion reaction was finally applied in order to determine the knowledge acquired with the activity of permanent education.

The performances obtained in the pre- and post-test results were then compared. The same individuals are evaluated in both groups (pre and post), which characterizes the dependence in the data. The paired t test statistic was used to test the difference between the averages of the groups considering two hypotheses being NH - if the averages of the groups are equal and AH - if there is a significant difference between the averages of the groups. Descriptive statistics with absolute and relative frequency distributions were also used.

It is explained that the software used to generate the data-summary measures and to perform the hypothesis test was R software, which is free and widely distributed software in the statistical medium.

It was sought to meet the ethical prerogatives of resolution 466/12 and the study was approved by the Research Ethics Committee of the Federal Technological University of Paraná, through opinion 1,542,434, CAAE 47039015.8.0000.5547, on May 18, 2016.

RESULTS

The sample consisted of 37 professionals, of whom 22 were Nursing technicians, eight were nurses and seven were Nursing trainees, the majority of whom were female (92%).

The majority of the participants are young, between 21 and 30 years old (59%), single (57%) and have worked for less than five years in the institution (76%) and less than five years in Nursing (68%).

It was observed that the evaluations consisted of five objective questions on the presented theme, and the percentage of success was 56% in the pre-test, while in the post-test this percentage rose to 87%, an improvement of 31% in the hit percentage. The boxplot shows in Figure 1, a summary of the group data.

Figure 1 - Boxplot of the groups. Source: Prepared by the authors (2017).

The scores obtained in the pre-test evaluations indicate that the range of scores ranged from one to four hits, with half of the scores varied from two to three, a median of three, and two results that were very different from the amplitude of the scores, represented by the symbol called outlier, which were two evaluations with zero

correctness. In the post-test, the amplitude of the grades was varied from three to five, with half of the grades varying from four to five, with a median of five scores.

The following table shows the simple frequency of accuracy in each of the questions between the pre- and post-test.

Questions	Pre-test	Post-test
What are immediate reactions?	6	23
What are the most common signs and symptoms of transfusion reaction?	31	37
What is the nursing team's first behavior regarding the transfusion reaction?	32	37
What to do with the blood transfusion after transfusion?	31	37
What is the main characteristic that distinguishes volume overload from acute pulmonary injury related to transfusion?	4	28

Figure 2. Comparison of the average of hits between pre- and post-test.

In order to determine if there was a significant change in performance in the context of the training action carried out between the pre-test and the post-test, the paired t-test was used as the statistical test¹¹ for which it was necessary to determine the average accuracy of the pre-test (2,784) and the post-test (4.595). The t-value of $t_c = 13.0426$ was obtained by carrying out the t-test, with a significance of 5% and 36 degrees of freedom, in the software, having the value of t tabulated $t_t = 1.6883$, with p-value = 3.309×10^{-15} , with an estimated mean difference of 1.81 and a confidence interval of 1.529234 to 2.092388.

DISCUSSION

It is observed that a research with the objective of tracing the profile of the Nursing worker indicates that the work in Nursing is composed of 20% of nurses and 80% of technicians and nursing auxiliaries and that 84.6% of the professionals are of the sex female, corroborating the findings of the survey, with the predominance of female and nursing professionals in the professional category.¹²

It is demonstrated, as regards the age group and the working time in Nursing and in the institution, that the literature has shown very divergent data regarding these questions. Publications that corroborate¹³ and others contrary to the findings presented.¹⁴ It is noticed that the majority of the trained professionals are new in the labor market having little experience in the function and having the permanent education as a way to contribute with the performance of these professionals.

It turns out that in the first question, the objective was for the professionals to identify the alternative that would define an immediate reaction, which is conceptualized as the one that occurs within 24 hours after the start of the transfusion.¹ It is important the professionals' knowledge to an immediate reaction, since such reactions are the most frequent, representing more than 98% of the cases.¹⁵

It was found that most of the subjects studied did not know how to conceptualize an immediate transfusion reaction, with only six professionals who were successful, while in the post-test 23 professionals were able to correct the problem. As for signs and symptoms related to the transfusion reaction, 31 professionals already knew the symptoms of the transfusion reaction, and in the post-test all the professionals were able to recognize the transfusion reaction through their symptoms.

It is recommended that the recognition of signs and symptoms is fundamental for the Nursing team, since only then will it be possible to identify the reaction and adopt procedures capable of reversing clinical complications, since the main symptoms associated with a transfusion reaction are fever, chills, infusion site pain, and respiratory changes.¹ It is related, among the procedures to be adopted in response to a transfusion reaction, that the first should be to stop the transfusion and, consequently, to maintain a physiological solution at 0.9%, to check data, to check vital signs, to communicate the on-call doctor and complete the transfusion reaction notification form.⁸

It is explained that, taking into account the importance of the worker's conduct and, more importantly, how to determine the priority in the care, the third question had as objective to identify the worker's first behavior towards the transfusion reaction. It was found that among the 37 professionals participating in the research, 32 professionals acknowledged that they were interrupting the transfusion in the pre-test, whereas in the post-test, all of them were correct.

However, in another research, less than half of the professionals (44%) adopt interruption of transfusion as an immediate response to the transfusion reaction, following as a priority other practices, such as communication with the medical staff and drug infusion.¹⁵

It is understood that the actions of permanent education in the transfusional committee of the institution under study demonstrated that there was a differentiation in the aspect related to the conduct towards the transfusion reaction when compared to data of other authors. This is due to recent training in transfusion routine in which this item is addressed. It can be seen, therefore, that permanent education contributes constantly to the performance of the worker.

It is noteworthy that, during the training, there was a change in the routine of blood transfusion, recommending the protection of the equipment and the blood-bag after the use for the referral to the laboratory. This behavior is essential in the notification of transfusion reaction, especially since it allows the analysis of the pouch in cases of delayed reaction.⁹ Therefore, the fourth question was to identify what to do with the equipment and the blood-bag after use, and 31 professionals answered the question in the pre-test and all the professionals were able to answer the same question in the post-test.

The last question was described as asking the professionals to identify the difference between TACO and TRALI and had as a result only four professionals who were able to answer correctly in the pre-test, while in the post-test this number rose to 28.

It is known that the literature has shown divergences regarding the incidence of TACO and TRALI, but it is observed that they are more common in the patients transfused in the surgical center, being this one of the main sectors where transfusions are performed.^{3,9,16}

Note that studies talk about the difficulty of differentiating TRALI from TACO by the very similar symptomatology, being important

its differentiation, since the adopted behavior varies from one reaction to the other where, in TRALI, that has inflammatory origin, the adopted conduct generally it will only be to maintain oxygen support for the patient, whereas in TACO, which has a hydrostatic origin, in addition to the oxygen support, it is also necessary to administer diuretics to reduce volume overload.^{1,5,17}

It is inferred that there are researches that seek to solve the problem of differential diagnosis through biochemical markers to differentiate TACO from TRALI, however, they are still in the test phase and can only predict if the patient will develop TRALI and there is nothing specific about TACO.¹⁷ It was raised in another research that a software presents the exact diagnosis and also predicts the possibility of the patient developing some type of reaction, having more than 90% sensitivity and specificity. This software runs into economic problems since the costs of radiological and professional exams to transcribe and interpret the results are much greater than the costs of treating the reactions.³

It is elucidated that, having the value of t plotted $t_t = 1.6883$ lower than the value obtained at t calculated $t_c = 13.0426$ and with p value extremely lower than 0.05, there is evidence to reject the hypothesis of equality of means, that is, the result indicates that there is a significant difference between the means of the group in the pre- and post-test and it is concluded, therefore, that the increase in the correct answers for the post-test is significant.

Education, therefore, is an effective means of improving care in transfusion reactions¹⁸ and, as the result of the research pointed out, even though it was not possible to achieve 100% accuracy in all the questions, there was a significant improvement between the pre- and post-test, making the results of the educational activity satisfactory.

It is analyzed that, since the post-test correction occurred soon after the application of the same to the worker, this study allowed, at the same time, to have feedback, to verify what was wrong and, with the applicator of the available training, to questions and receive explanations about the correct alternative.

They found, among the difficulties observed by the applicator of the qualification that: the demand of work of the team, that resulted in pauses during the qualification and some refusals; the lack of motivation to participate in the action and the application of training in the work

environment, where the applicator visualized moments of inattention of the workers given their concern with care.

It is recalled that studies also point out the lack of interest of the workers in the activities of permanent education, besides the lack of physical, material and human resources for the accomplishment of the permanent education, as well as to supply the work demands of the institution, which entails denials of workers, inefficiency of training, outdated professionals, little participation in the processes of change of the institution and more vulnerable to oppression by those who have greater knowledge.⁵⁻¹⁹⁻²⁰

It is important for nurses to adopt this tool, considering permanent health education as a process to innovate the knowledge of care practices, since its only objective is to improve health care and, in the case of transfusion reactions, to promote greater safety transfusion practices.⁶⁻²¹

CONCLUSION

It can be seen that permanent health education can provide improvement in health care and, in the case of transfusion reactions, its use is necessary to prevent adverse events during care and to prepare professionals to attend and identify any problems that may occur.

It is understood that the professionals' performance between pre- and post-test evaluations showed that training in transfusion reaction occurred satisfactorily, since, according to the statistical test used, the AH of the means of the groups were significantly different was accepted. It is added that, since the training involved 82% of the nursing team of the hospital and, among this percentage, all the professionals reached the objectives of recognizing the signs and symptoms of the transfusion reaction, the conduct to be adopted in the face of the intercurrent and what to do with the blood component after the use was reached, since most of the professionals managed to conceptualize an immediate transfusion reaction and to identify the differences between TACO and TRALI.

It was concluded that the full success of the training was not possible due to the difficulties encountered, a specific environment was necessary for educational activities, professionals in sufficient quantity for the job demand and greater awareness of the professionals on the relevance of the theme and the importance of the permanent education for the quality of care.

Finally, the importance of further studies on knowledge and nursing care in hemotherapy is highlighted, and this research is given an innovative character due to the scarcity of publications on the subject matter.

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Submission: 2018/04/06

Accepted: 2018/12/12

Publishing: 2019/02/01

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