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Transfusion game, a playful resource for teaching nursing students Hemotherapy

Jogo de transfusão, um recurso lúdico para o ensino de Hematologia a estudantes de enfermagem

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ABSTRACT

Hemotherapy is a multidisciplinary practice in which the nursing staff has a central role in patient safety. Numerous risks are associated with this therapy, and these can be potentiated when the professional who performs this procedure does not have specific knowledge and skills for immediate interventions. Thus, it is believed that the nurse must receive in their training information on procedures that will be part of their daily professional practice. Increasingly, leisure activities strategies have been employed in the teaching of health sciences, with the goal of developing the learner professional skills and competencies necessary for their appropriation of knowledge. To this end, games are very valuable elements, since they allow the development of skills in communication, interpersonal relations, leadership and teamwork, using the relationship between cooperation and competition in an educational context. This paper proposes the use of a board game called “Transfusion Game” developed on the role of the nurse in hemotherapy, based upon current legislation in Brazil and aimed for the teaching and learning of hemotherapy to undergraduate nursing students of more advanced stages. This game includes, broadly, the actions of the nurse in transfusion procedures as well as their attitude toward possible adverse events, and current legislation. It is expected that the Transfusion Game can be a useful tool for the nurse’s meaningful learning of hemotherapy procedures, since it focus on questions of their practice. It is also expected that the proposed game can foster the development of critical thinking for the student / professional nurse, resulting in greater safety in their working processes.

Keywords: hemotherapy; leisure activity approach; transfusion game.

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ABSTRACT

A hemoterapia é uma prática multidisciplinar em que a equipe de enfermagem tem papel central na segurança do paciente. Os riscos associados a essa terapia são numerosos e podem ser potencializados quando o profissional que realiza este procedimento não tem conhecimentos e habilidades específicas para intervenções imediatas. Assim, acredita-se que o enfermeiro deve receber em sua formação treinamento sobre procedimentos que farão parte de sua prática profissional diária. Cada vez mais, atividades lúdicas têm sido empregadas como estratégias no ensino de ciências da saúde, com o objetivo de desenvolver no aluno habilidades e competências profissionais necessárias para a sua apropriação do conhecimento. Para este fim, os jogos são elementos muito valiosos, uma vez que permitem o desenvolvimento de habilidades em comunicação, relações interpessoais, liderança e trabalho em equipe, usando a relação entre cooperação e competição em um contexto educacional. Este trabalho propõe a utilização de um jogo de tabuleiro chamado "Jogo da Transfusão", desenvolvido pensando o papel do enfermeiro em hemoterapia com base na legislação em vigor no Brasil e destinado ao ensino e aprendizagem de hemoterapia para estudantes de graduação em Enfermagem de estágios mais avançados. O jogo enfoca diferentes ações do enfermeiro em procedimentos de transfusão, bem como a sua atitude em relação a possíveis eventos adversos, além de conhecimento da legislação em vigor. Espera-se que o Jogo da Transfusão possa ser uma ferramenta útil para a aprendizagem significativa de enfermeiros quanto a procedimentos de hemoterapia, uma vez que traz o foco sobre questões de sua prática. Espera-se também que o jogo proposto possa promover o desenvolvimento do pensamento crítico do aluno / profissional de enfermagem, resultando em maior segurança em seus processos de trabalho.

Palavras-chave: *hemoterapia; atividade lúdica; jogo transfusão.*

1 INTRODUCTION

Since the dawn of mankind, blood has had its representativeness observed in countless ways, from being considered a vital fluid that gave life, youth and strength, to its religious role, according to which blood would be able to save, both in physical and spiritual form (Hemominas, 2011).

Hemotherapy is understood as the infusion of blood, blood components or blood products in an individual bloodstream for therapeutic purposes (BRAZIL, 2004). It is a multidisciplinary practice, surrounded by risks, even when all precautions are observed. Every patient who receives a blood transfusion can develop complications derived from this therapy (BRUNNER; SUDDARTH 2011); therefore, it is essential that the nurse possesses a broad knowledge of hemotherapic practices.

The training of the nurse should be competency-based, so that the formation of a critical and reflective professional happens, optimizing its performance in several areas, according to the needs of society. It is recognized that the challenge of the social context requires professional skills that involve the nurse and their team in new ways of knowing, doing and being, in health services at all levels of care (SANTANNA *et al.*, 2005) .

During graduation studies, the nurse receives knowledge in the areas of Biological and Health Sciences, Humanities and Social Sciences and Nursing Sciences, which according to the National Curriculum Guidelines include technical, methodological contents and the means and instruments relating to the work of the nurse at the individual and collective level, in addition to the mandatory supervised internships, which take place in various hospital departments, outpatient clinics and primary health care network, as minimum prerequisite training (BRAZIL, 2001).

Nursing is a profession with a broad acting field, consisting of actions performed in conjunction with other health professionals in preventive, curative and rehabilitation activities, the nurse being an indispensable member of the multidisciplinary team for various areas of knowledge, including hemotherapy (FLORIZANO; FRAGA, 2007).

The role of the nurse in Hemotherapy can be seen in clinical screening, blood collection and donor recruitment, transfusion of blood products and administration of blood products and management services that develop these activities. The COFEN (Nursing Federal Board) offers a resolution that regulates the role of the nurse in transfusion therapy, the COFEN 306/2006 Resolution, which describes in its Article 1 the nurse's duties in this process, which comprise performing, running and monitoring the infusion of blood components and blood products, acting in case of adverse reations. The continuous training of this professional is also an integral part of the nursing work in hemotherapy (BRAZIL, 2004).

From the standpoint of education, learning can happen using numerous strategies, and leisure activity strategies, such as using games, can be an alternative, as it is an approach related to the process of teaching and learning which contributes to the increase of knowledge in general, but also to creativity and critical thinking (BRAZ DA SILVA, METTRAU, 2009).

The lack of interest and disrespect of content can be seen as a consequence of ineffective teaching-learning (COSTA, 2008). With regard to nursing education, it may have even more disastrous consequences. In their training, the graduate must receive knowledge in order to develop critical and reflective thinking and skills for their professional practice (ESPIRIDIÃO, 2002). If not, the result will be an unprepared professional who lacks excellence in their care, exposing the patients to various risks.

It is believed that the professional nursing egress of Higher Education Institutions, ie the Generalist Nurse, should be prepared to act in all health services, including those that provide nursing care in Hematology. Therefore, the physician must have knowledge and basic skills to work in hemotherapy, ensuring quality of care (FRANTZ, 2012).

For D'Ambrosio (2001), the replacement of teaching processes that prioritize exposure, leading to a passive receiving of content transmitted through processes that do not encourage students to participation, is required. For this, the development of new pedagogical practices for teaching, bringing playfulness to different stages of the teaching-learning process, is necessary.

Thus, the games arise the interest of Education scholars, always in search of approaches that enable new pedagogical practices, allowing the student to see learning as an interesting process (MACEDO *et al.*, 2000). However, games are rarely used as a teaching strategy in Higher Education Institutions (TOPANOTI, 2011).

With what has been stated above, the use of games in the classroom is no longer seen as entertainment, distraction or prank, but as educational games whose objectives set limits and rules, develop self-confidence, increase concentration and reasoning, stimulate creativity and affectivity, thus leading to the construction of knowledge and to meaningful learning (SILVA *et al.*, 2008).

Moreover, games are used as teaching aids and tools that are important teaching strategies, since they have great ability to stimulate students interest in the content taught in the classroom, improving the learning process (PEDROSO, 2009). During a game match students can develop skills that can lead them to more effective learning of a particular content, namely initiative, imagination, reasoning, memory, attention, curiosity and interest, facilitating their concentration in an activity for a longer period of time (FORTUNA, 2003).

Games are, therefore, valuable elements in the knowledge process appropriation. They foster the development of communication skills, interpersonal relations, leadership and teamwork, using the relationship between

cooperation and competition in a learning context (BRAZIL, 2006), in which loosing is not so painful. In addition to awakening interest, satisfaction and motivation, games can generate a fun, spontaneous and efficient learning.

Kishimoto (2011) describes games at three different levels of significance. At first, the game can be seen as the result of a linguistic system that works within a social context, where the key is not to obey the logic of a phenomena scientific designation, but respect the everyday and social use of language, assuming interpretations and social projections. The second is described as a system of rules that identifies a sequential structure that specifies its modality, rules being the elements which allow differentiation between each game, enabling their connection to the play situation, because when someone plays, they are obeying the game rules at the same time as they are participating in a playful activity. The third level relates to the game as the object itself, which allows the understanding of the differentiation of each game according to its category.

The game is in a position that does not give real punishment or consequence, because it is a simulation, so it is beyond the "realm of good and evil"; however, the tension element gives it a certain ethical value, inasmuch as the qualities of the players are put to the test, since despite their urge to win, they must always obey the game rules. (HUIZINGA, 2008).

Group games allow individuals to work with regularity, limit, respect and discipline, since their actions are necessarily subordinated to the rules. All these aspects are clearly important to the life of an individual in society (SCHAEFFER, 2006).

From the above it is understood that the rules of a game can be seen as a "code of ethics" that must be followed by all players, so that their violation constitutes a grave offense, generating consequences. Rules imply on mutual consent, with mandatory compliance, and any change must also be agreed between all participants, stimulating critical thinking in a given context (JOUCOSKI *et al*., 2011).

Another important aspect of games is learning to make choices and accept the consequences of those choices. One must also accept and learn to deal with victory and defeat, knowing that one can try to win, but at the risk of losing (PEREIRA, FUSINATO; NEVES, 2011).

However, for the game to take the didactic feature that is intended, it must be associated with other key pedagogical elements that contextualize the activity. Therefore, the use of prior knowledge is necessary for the game to be useful as a means of learning and teaching (PEDROSO, 2009).

The meaningful learning theory of David Ausubel describes the use and exploitation of the learner's prior knowledge and the association of new knowledge to that already existing, called subsumer, that constitutes of a particular cognitive structure, specific and previous, to which the new information is coupled (LEMOS, 2005). Thus, for meaningful learning to occur, the learners must be exposed to personally relevant subsumers, ie, information that they can organize as a basis for new knowledge.

It constitutes of a dynamic process, since it aims to modify old, or build new subsumers by an integrative process. The interaction between the new and previous knowledge is the key characteristic of meaningful learning, because new knowledge should relate in non-arbitrary and substantive manner with what the learner already knows, and he or she should be ready to learn, ie, meaningful learning involves the acquisition of new meanings that are the product of this learning (MOREIRA, 2009).

The playful activity can facilitate the acquisition of knowledge and meaningful learning, because one can assume that everyone has some knowledge about games in general, which can be an important subsumer. In addition, a new proposal to learn in an interactive and fun way can generate excitement in students, resulting in meaningful learning, thus the game becomes an ideal learning tool in that it proposes stimulating students

interest, develops different personal and social experience levels and helps them to build their new discoveries. Therefore it can be used as learning promoter, leading students to have a virtual experience of solving problems that can be very close to reality (CAMPOS; BERTOLO; FELICIO, 2009).

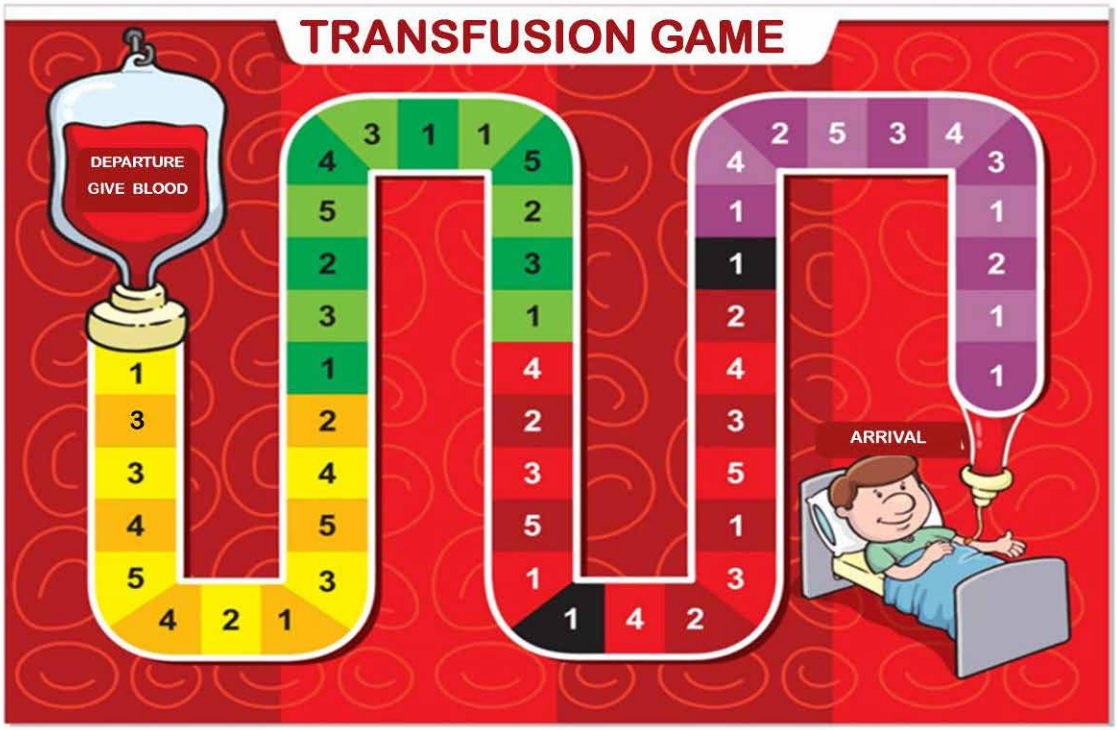
Problem solving is fostered in the game because it has its own rules, which also favors learning in general, as it is not focused only on content acquisition, but comprises also the understanding of processes, methods and means that lead to desired ends during the journey. Through experience, we learn to use them better and better in different contexts (OLIVEIRA, 2004).

This study describes the development and use of the board game called “Transfusion Game”, developed on the role of nurses in hemotherapy, based upon current legislation in Brazil and meant to be used for teaching and learning hemotherapy to nursing students of the 8th graduation period, seeking to provide and/or test knowledge on the subject to that audience in a meaningful way, with a broad view of the nurses actions in transfusion procedures, as well as their attitude toward possible adverse events during the procedure.

2 METHODOLOGY

The “Transfusion Game” is a board game (Figure 1) that can be played by 5 participants. The board is composed of randomly numbered places from 1 to 5, where the pawns are moved. It is divided by colors, determining the stage being played; therefore, each color represents a different stage in the transfusion process.

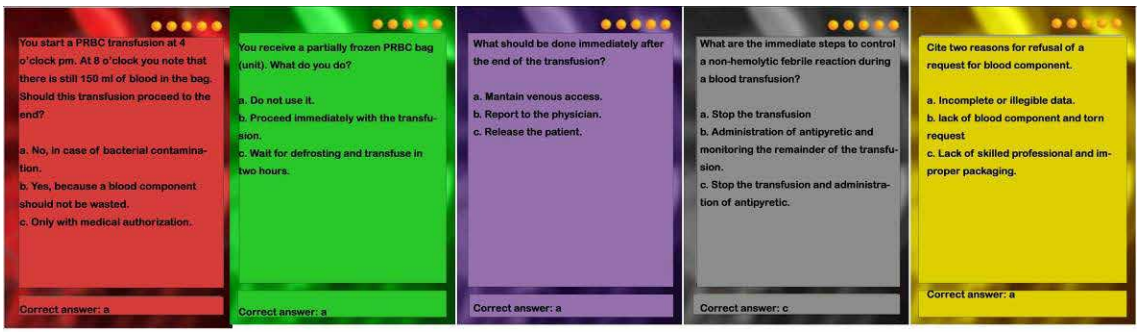
Figure 1 - Board Game Transfusion



Reference: authors.

The question cards (Figure 2) also receive the stage colors represented on the board and have questions according to the complexity of that stage.

Figure 2 - Question Cards



Reference: authors.

One of the participants is the mediator, who will read the question on the card aloud to a player, who will have 26 seconds to answer the question. Time is controlled by the mediator in an hourglass. The game ends when a participant is the first to reach the patient, who is at the end of the path (see Figure 1).

To test participants' knowledge, it was designed a test to be done before the beginning of the game, with questions focused on nurses actions in blood transfusion. At this stage, the participants are not given responses to the questions, for the same test is applied at the end of the game for review of the participants' knowledge.

The test questions have been formulated aiming to gather basic information which the nurse must have to perform a blood transfusion with the minimal knowledge and security required in this procedure. The questions contained in the letters, as well as the questions of pre and post-test, have been prepared based on hemotherapy manuals and Brazilian laws regarding hemotherapy. The questions on the letters should allow players to respond to the post-test questionnaire, since they relate to the content to be learned. Thus playing the game should make it possible to expand knowledge in nursing practice in hemotherapy.

The questions of testing, pre-and post-test are:

a. What patient information a request for blood component should contain?
b. What tube is used for collection of pre-transfusion tests and how should this tube be identified?
c. In situations of extreme urgency, which blood group and Rh factor should be used?
d. What is the procedure if you receive a bag of red blood cells that was torn?
e. You have started a transfusion of red blood cells and, after 15 minutes, the patient shows an increase in axillary temperature, rapid breathing, and chest pain. What is your conduct in this situation?
f. Describe how should be the preservation and storage of the following blood components: 1. PRBC (Packed Red Blood Cells); 2. FFP (Fresh Frozen Plasma) and 3. Platelet concentrates, respectively.
g. Describe how FFP (Fresh Frozen Plasma) should be thawed and how long it can be used after thawing.
h. Describe the material that makes up the transfusion circuit.
i. Describe the nursing care prior to blood transfusion.
j. Describe what should be evaluated when you get a blood component for transfusion.

We opted for the questionnaire as a tool for data collection because it enables direct assessment of what is intended, constituting an effective tool in scientific research (KAUARK, 2010).

3 DISCUSSION

Nurses play a key role in transfusion safety. Not only do they administer transfusions, but must also know their indications, provide data checking important in error prevention, instruct patients on transfusion, detect, communicate and act in the event of transfusion reactions and document the entire process (FERREIRA *et al*., 2007). Aiming to meet these needs, the questionnaire above was prepared as a basis for this discussion and for evaluating the participants' knowledge.

The contribution of the game goes beyond the teaching of contents through leisure activities, without the students even realizing they are learning. It actually provides the development of imagination and reasoning, through the exercise of the representative function of cognition (FORTUNA, 2003). Thus, stimulation of these functions through the game should promote learning.

The players assumes the role of decision makers, in which they are exposed to challenges and may hit or miss in an environment where there will be no serious consequences, because it is a game environment (SAVI, 2008), thus facilitating learning and skills development since it happens in a more relaxed atmosphere.

Other authors, such as Prensky, also noted that, being a playful activity, the game should be enjoyable and fun, and the combination of these elements in the learning process should leave the student more relaxed and open to learning (2001).

The first questions of the pre and post-test questionnaire are respectively: "What patient information a request for blood component should contain?" and "What tube is used for collection of pre-transfusion tests and how should this tube be identified?"

It is important that the nurse knows which data has to be checked and recorded to increase transfusion safety. The data that must be in a request for blood components are: full patient's name, date of birth, weight, ward, bed number, medical record number, diagnosis and clinical indications and laboratory data, such as hematocrit, hemoglobin, platelets. In the second question, the standard procedure is to collect the sample in a tube containing EDTA and the identification must contain the patient's name, ward and bed, medical record number, date of birth, date of collection and collector name (BRASIL, 2010 a).

Still in the assessment of knowledge on hemocomponents checking, it is asked: "Describe what should be evaluated when you get a hemocomponent for transfusion", and "What is the procedure if you receive a bag of red blood cells that was torn?". Banton (2005) instructs that in receiving a hemocomponent unit, the nurse must check the identification tags with regards to customer data and validity. It should also be evaluated color, appearance, presence of air bubbles and integrity of the bag. If any of these present alteration, it may indicate hemolysis and bacterial growth. In case the bag is not perfect, it must be returned to the hemotherapy service for proper disposal.

On the pre-transfusion stage it is asked: "Describe the nursing care prior to blood transfusion." Already at the bedside, the nursing care to be observed consists on the correct identification of the patient and the hemocomponent, examination of vital signs and patient general condition, as well as obtaining venous access for transfusion (NETTINA, 2011).

Still on nursing care, it is necessary that the nurse orients the patient on transfusion, infusion time, risks and benefits. This attitude helps in both process and patient safety, as the latter participates in his or her treatment, being able to provide early information of changes happening during the transfusion, making it possible intervention at the onset of an adverse event (PHILLIPS, 2001).

Vital signs should be registered in the medical records and transfusion record sheet, for the purpose of observation of the patient during the transfusion. This procedure should be repeated during the process, even without the patient's complaint; immediately, if there is any complaint from the patient, and at the end of the transfusion. The variation of vital signs normal values, as well as patient complaints, should be registered and reported to the attending physician (NETTINA, 2011).

On the material used for hemotransfusion, it was asked: "Describe the material that makes up the circuit transfusion." For the procedure are used: peripheral venous catheter, extensor sets, parenteral administration sets, physiological saline, blood administration sets and indicated hemocomponent (HEMORIO, 2011). Knowing this list, the nurse is able to plan his or her action providing and giving necessary material. Access to blood transfusion should be unique without infusion of any substance in the same access, due to incompatibility of some drugs with hemocomponents, which would increase the risk of adverse reactions (CINTRA; NISHIDE; NUNES, 2001).

The storage and shelf life of hemocomponents is also an important item to note, as this enables their correct handling, and it is paramount to understand that each of them has its specific packing manner as well as varied validities. Thus, the test asks: "Describe how should be the preservation and storage of the following blood components: 1. PRBC; 2. FFP and 3. platelet concentrates, respectively".

According to BRAZIL (2010 b), conservation of PRBC should be between 2° C and 8° C, and their packaging should be in a specific cooler. Its duration varies between 35 and 42 days, depending on the preservative solution. Fresh frozen plasma and cryoprecipitate, if kept between 25° Celsius and 18° Celsius, are valid for 12 months. If frozen at temperatures below 25° Celsius, their validity is 24 months. The platelet concentrate reaches validity time of 5 days at temperatures from 2° to 22° C, under constant agitation in equipment specific for this purpose. It is important to know that the equipment for refrigeration and storage of blood products must follow specifically this purpose and temperature must be checked and registered every 4 hours.

Another important aspect to the knowledge of nurses regarding the management of blood products are the forms for handling and thawing of components such as cryoprecipitate and fresh frozen plasma. The test poses the qestion: "Describe how FFP (fresh frozen plasma) should be thawed and how long it can be used after thawing". Freezing allows the preservation of coagulation factors, fibrinolysis and complement, albumin, immunoglobulins, proteins and minerals, but in order to make that happen, the plasma must be completely frozen within 8 hours of collection. Knowing the correct handling prevents plasma proteins contained in blood components from being denatured or lost.

Defrosting of the units to be used should preferably occur in appropriate equipments to defrost plasma or in a water bath at 37° C, with the unit wrapped in a plastic bag to prevent its direct contact with water, avoiding the risk of contaminating the component. The bath designed for this purpose must be exclusively for thawing plasma, be cleaned daily and filled with laboratory or distilled water. Once thawed, plasma should not be refrozen and should be used in a maximum of 6 hours after thawing, if kept at room temperature, or 24 hours, if kept refrigerated from 2° to 8° C (BRAZIL, 2010 b). This knowledge also allows nurses to plan their action and scheduling when using this component, avoiding unnecessary losses, unit contamination or its misuse.

The nurse must also know the ABO and Rh system compatibility chart, in order to increase safety in cases of extreme urgency of blood transfusions. Thus the test asks: "In situations of extreme urgency, which blood group and Rh factor should be used?

It is read in BRAZIL (2011) that the blood type "O Negative" must be used or, in cases of its absence, the type "Positive" can be used in male patients or in patients older than 45 years.

On the nurse's role in case of adverse reactions, the test asks: "You have started a transfusion of red blood cells and, after 15 minutes, the patient shows an increase in axillary temperature, rapid breathing, and chest pain. What is your conduct in this situation?"

Potter; Perry (2002) instructs that the nursing action in this case should be the immediate interruption of the blood transfusion flow and the installation of physiological saline to maintain venous access, assessment of vital signs, as well as communication with medical staff for evaluation and action course.

4 CLOSING REMARKS

The importance of the presented theme for nursing practice is vital, since hemotherapy is part of everyday life in many sectors where these professionals act.

Hemotherapy is a specific and complex process by the amount of detail that must be met for providing proper care. The observation of these concepts and information will only be possible if the professional acquires the knowledge and understanding, in a meaningful way, that they are part of their professional world.

Nevertheless, there are several difficulties in providing information and knowledge during graduation, as well as in leading students to understand that such knowledge will be important for their professional practice, considering the nurse´s broad performance spectrum in the care of a hospitalized patient.

The teacher must be alert to the need to search for new strategies for teaching and learning, thus seeking to transmit knowledge, but never forgetting that this knowledge is being grasped and absorbed by the student, who will, thereby construct it.

Nursing professionals should be aware that obtaining certain knowledge is fundamental in their professional lives, so that the assistance they provide can be of high quality and fewer errors associated with lack of knowledge occur in transfusion therapies.

It is assumed that, when well planned and executed, a game can contribute to the formation and development of the undergraduate student skills, and this contribution increases even more when it happens significantly.

With all the challenges presented by teaching, it is understood as a teacher's task to develop innovative strategies to stimulate interest in contents of vital importance in students' professional formation.

Creating a playful environment for learning specific content can help in the knowledge acquisition process, developing critical reflective thinking, by simulating a possible reality.

Therefore, the application of the Transfusion Game game can be a useful tool for the nurse to learn about hemotherapy practice, since it makes use of practical questions regarding that procedure. The game also has the potential to foster the development of critical thinking of nursing students, thereby securing greater safety in work processes in which they are involved.

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