



TRAINING OF NURSES FOR BLOOD COLLECTION OF UMBILICAL AND PLACENTARY CORD: RESEARCH-ACTION

CAPACITAÇÃO DE ENFERMEIROS PARA A COLETA DE SANGUE DE CORDÃO UMBILICAL E PLACENTÁRIO: PESQUISA-AÇÃO

CAPACITACIÓN DE ENFERMEROS PARA RECOLECCIÓN DE SANGRE Y CORDÓN UMBILICAL Y PLACENTARIO: INVESTIGACIÓN-ACCIÓN

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ABSTRACT

Objectives: to train nurses to collect placental and umbilical cord blood (PUCB); to evaluate nurses' knowledge about the collection process before and after training and performance during training; And evaluate the training according to the nurses. **Method:** a descriptive-exploratory study, research-action type, developed in a public maternity of Rio de Janeiro (RJ), Brazil, with 23 nurses. The data production was carried out through interviews and participant observation of the training workshops. **Results:** after the training, the degree of knowledge of the nurses about the PUCB collection process was superior. The evaluation of the training workshops showed nurses satisfaction with content, instructors and ancillary resources. **Conclusion:** the training provided the confrontation of theory and practice in order to expose the correct answers and difficulties encountered by the nurses during the process. **Descriptors:** Health Human Resource Training; Nurses; Fetal blood; Stem Cells.

RESUMO

Objetivos: capacitar enfermeiros para a coleta de sangue de cordão umbilical e placentário (SCUP); avaliar o conhecimento dos enfermeiros sobre o processo de coleta antes e após a capacitação e o desempenho durante a capacitação; e avaliar a capacitação segundo os enfermeiros. **Método:** estudo descritivo-exploratório, tipo pesquisa-ação, desenvolvido numa maternidade pública do Rio de Janeiro (RJ), Brasil com 23 enfermeiros. A produção de dados foi realizada por entrevistas e observação participante das oficinas de capacitação. **Resultados:** após a capacitação, o grau de conhecimento dos enfermeiros sobre o processo de coleta SCUP se mostrou superior. A avaliação das oficinas de capacitação mostrou a satisfação dos enfermeiros com relação ao conteúdo, instrutores e recursos auxiliares. **Conclusão:** a capacitação propiciou o confronto da teoria e da prática de forma a expor os acertos e dificuldades encontradas pelos enfermeiros durante o processo. **Descritores:** Capacitação de Recursos Humanos em Saúde; Enfermeiros; Sangue Fetal; Células-Tronco.

RESUMEN

Objetivos: capacitar enfermeros para recolectar sangre del cordón umbilical y placentario (SCUP); evaluación de conocimientos de enfermería sobre el proceso de recolección antes y después de la capacitación y el desempeño durante el entrenamiento; y evaluar la capacitación según el personal de enfermería. **Método:** estudio descriptivo exploratorio, de tipo investigación-acción, desarrollado en una maternidad pública de Río de Janeiro (RJ), Brasil, con 23 enfermeros. La producción de datos ocurrió a través de entrevistas y observación de los participantes de los talleres de capacitación. **Resultados:** después de la capacitación, el grado de conocimiento de los enfermeros sobre el proceso de recolección SCUP demostró ser superior. La evaluación de talleres de capacitación mostró satisfacción de enfermeros con respecto al contenido, instructores y recursos auxiliares. **Conclusión:** la capacitación propició el confronto de la teoría con la práctica con el fin de exponer los éxitos y dificultades encontrados por los enfermeros durante el proceso. **Descriptores:** Capacitación de Recursos Humanos en Salud; Enfermeros; Sangre fetal; Células Madre.

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INTRODUCTION

In the early 1980s, some researchers found that umbilical cord blood and placental blood (PUCB) contained large numbers of hematopoietic progenitor cells (HPC), such as bone marrow, which could be cryo-preserved and subsequently thawed without loss of capacity of in vitro colonization.¹

The first allogenic HPC transplant of PUCB was carried out in 1988, followed by its wide use in treatments of diseases, especially hematological and oncological diseases, associated to satisfactory results. Thus, PUCB was established as an excellent source of MHC and the option of using cells from the bone marrow, which generated interest in the storage of the cells contained therein.²

In this context, transplantation of HSC, which has developed mainly in the last twenty years, is seen as an important method in the treatment of hematological, oncological, hereditary and immunological diseases. In this sense, the Ministry of Science and Technology, the Ministry of Health and funding agencies have invested substantial resources in research with cellular therapy, thus meeting one of the requirements for the country to continue developing in this area.³

The first Public Umbilical and Placental Cord Blood Bank was founded in New York in 1992, encouraging the establishment of other services around the world. This is a strong ally in the search for compatible donors for patients in need of an MCH transplant, particularly in the pediatric context.⁴ In 2004, a national network of PUCB - Brazil Cord banks was created, with the objective of increasing the chances of localization of donors and expand the number of PUCB banks in the country.⁵

In this context, in 2010, the Maternity-School of the Federal University of Rio de Janeiro (UFRJ) tried to insert itself with the National Cancer Institute (INCA) to be a collection point for PUCB. At the time, some nurses began training to perform this procedure, but for technical-administrative reasons, there was no possibility of them following up. This experiment led the researchers of this study to reflect on the several factors that interfere in the operationalization of the collection and storage of PUCB.

In view of the above, and considering the lack of insertion of public maternity units as a collection point for PUCB and the shortage of nurses qualified to work in this activity, the desire to rescue the process of training nurses at the UFRJ Maternity School appeared.

OBJECTIVES

- Train nurses to collect placental and umbilical cord blood (PUCB).
- Evaluate the knowledge of nurses about the collection of PUCBs before and after the training.
- Evaluate the performance of nurses during practical training.
- Evaluate the training workshops according to the participating nurses.

METHOD

Exploratory and descriptive study, research-action, developed from the Maternity-School of UFRJ, city of Rio de Janeiro, RJ, from April to November 2015.

The participants of the research were divided into three groups: direct participants, experts and indirect participants. The direct ones were 25 nurses included in the study because they worked at the Obstetric Center in the study scenario, regardless of the contraction link, and had at least six months of work in the sector. Exclusion criteria were defined as: professionals who did not attend the first theoretical training workshop or who left the institution during the period of data collection. The sample consisted, therefore, of 23 nurses. The group of experts was made up of five professionals who accepted to participate in the study and met the following inclusion criteria: being a nurse, with experience and acting in the collection of PUCB in allogeneic PUCB database. Excluding those working in the private sector. Seven experts were invited, two did not respond to the invitation, so the group was made up of five professionals.

The indirect participants were the 87 parturients donors of the PUCB samples collected in the maternity ward during the period of nurse training, which met the donation criteria established by national legislation⁶ and whose profile was previously published.⁷

The action research took place in three stages, (exploratory, theoretical training workshop and practical training workshops), each with its respective phases. The exploratory phase consisted in the diagnosis of the reality of the field of study, as mentioned in the introduction of this manuscript, identification of the research subjects, and, in order to identify the knowledge gaps of the nurses about the PUCB collection, a pre-training. For the description of the subjects' profile, a structured script was applied, and, for the pre-test, a semi-structured instrument

was elaborated with a set of questions about the subject under study.

The training workshops for the collection of PUCB consisted of the action planned for this study and were divided into two phases: theoretical and practical. The theoretical workshops were conducted by a specialist nurse in collection PUCB of INCA / RJ and consisted of lectures with multimedia resources, use of texts with participatory intervention and discussion thread for clarification of doubts. The workshops totaled 14 hours.

Then, the post-test was applied with the same instrument applied in the pre-test, in order to compare the answers and find out if the theoretical content was successful in increasing the participants' knowledge.

Then, the theoretical qualification was evaluated, using a Likert scale instrument, whose possible answers were: I totally agree; neither agree nor disagree; disagree and totally disagree. The evaluation variables were: the workshop and its content; instructors who carried out the training, support services and self-assessment.

The practical training workshops, totaling 18, were carried out at the Maternity Obstetric Center and conducted by an expert nurse in the PUCB collection who works at the unit, and the main author of this manuscript. The workshops were held with two nurses at a time, who, together with the instructor, discussed the aspects covered in the theoretical workshop and developed the skills for the execution of the PUCB collection process, which included the phases of recruitment and selection of pregnant women with potential for donation and the collection technique. Twenty nurses participated in this phase, considering that two were excluded from the study due to cancellation of employment contract with the study institution and one of them gave up for personal motivation.

Concomitant with the practical workshops, a participant observation of each nurse was performed while performing each phase of the PUCB collection technique, using an observation script, elaborated and validated,

through the Delphi technique, by the five selected experts.⁸

Finally, the practical workshops were evaluated through a structured instrument with five Likert-scale questions, with the possibility of five answers, as in the evaluation of the theoretical workshop. The data produced during the study were analyzed by descriptive statistics, for which Microsoft Excel® was used.

The study was submitted to the Ethics Committee in Research of the Maternity School, fulfilling all the requirements requested by the institution and established in Resolution nº 466/2012. It was approved with Opinion No. 722,172, on July 18, 2014. All the subjects of the research signed the Term of Free and Informed Consent.

RESULTS

◆ Socioprofessional characterization of nurses

Of the 23 nurses participating in the workshops, 21 (91.3%) were women; 19 (82.6%) graduated in the last five years; 19 (82.6%) work in the scenario institution of the study between one and five years; 15 (65.2%) only have the employment relationship in the institution, which is, for the majority 21 (91.3%), temporary contract. As for the workload, the majority 12 (52.2%) work 60 hours a week in the institution because they are residents.

When asked about participation in perinatal health events in the last five years, 16 (69.7%) said they had participated in at least one, while the others said they did not participate.

◆ Pre and post-test evaluation of the theoretical training workshop

The results of the pre-test point to a low knowledge of the nurses related to the process and the legislation related to the collection of PUCB. After the training, it was noticed, through the results of the post-test, that the degree of knowledge was superior. Nevertheless, 26.1% of the nurses did not know how to detail the entire collection process adequately, as shown in table 1.

Table 1. Variables evaluated in the pre- and post-test to the theoretical workshop on the training of nurses for umbilical and placental cord blood collection. Rio de Janeiro (RJ), Brazil, 2014 (n = 23)

Variable	Pre-test (%)		Post-test (%)	
	Yes	No	Yes	No
Knowledge about the collection of umbilical cord blood to obtain stem cells	17,4	82,6	100	0
Knowledge of COFEN Resolution 304/2005 *	0	100	100	0
Knowledge about the allogenic use of stem cells	47,8	52,2	82,6	17,4
Knowledge of the criteria for the donation of cord blood and placental blood provided for in national legislation	73,9	26,1	91,3	8,7
Knowledge about disqualification criteria for non-related allogeneic use	47,8	52,2	95,6	4,4
Detailed knowledge of the umbilical and placental cord blood collection process **	0	100	73,9	26,1

* Provides on the performance of the Nurse in the collection of umbilical and placental cord blood.** For this question, the nurses were asked to describe the whole process of collecting PUCB. Answers labeled "no" indicate to those who did not describe or who partially described; Those given as "yes" correspond to the appropriate detail of the process.

♦ Evaluation of the theoretical training workshop

The evaluation of the theoretical workshop pointed to the nurses' satisfaction with all the

evaluated items, for which only the "agree" and "totally agree" answers were given, as shown in table 2.

Table 2. Results of nurses' evaluation of the theoretical training workshop. Rio de Janeiro (RJ), Brazil, 2014 (n = 23).

EVALUATED VARIABLE	Degree of Evaluation	
	Agree	Totally Agree
DOMAIN: CONCEPTUAL		
The workshop content is current, informative, useful and application	1	22
The workshop was important for acquiring new knowledge in its area of activity		23
The workshop contributed to the improvement of its work performance	2	21
The teaching material used is of good quality	3	20
The workload was adequate	2	21
DOMAIN: EVALUATION OF INSTRUCTORS		
They were punctual	4	19
They had clarity and organization in the classroom	3	20
Interacted with the group	4	19
Demonstrated conceptual and practical mastery of the theme addressed		23
They used good strategies to approach the subjects and resources used	1	22
DOMAIN: EVALUATION OF SUPPORT SERVICES		
The workshop was well publicized	5	18
The conditions of use of the facilities and audiovisual resources provided were satisfactory		23
The support (technical, pedagogical and administrative) given to the workshops was	1	22
DOMAIN: AUTOAPROVEITAMENTO		
Their participation in the classroom focused on the development of the group	5	18
Their performance and use in the workshop were adequate	1	22

♦ Nurses' performance during the practical training workshops

The observation instrument was structured in two modules: the screening and collection of the donors, with six evaluation items, and the extra-uterus collection, with twelve evaluation items. For each item, it was observed if the nurse (i) performed the technique correctly, (ii) did not perform the technique correctly, (iii) and, in case of error, the technique was corrected.

In all items of the first module there was an error made, by at least, one nurse. The item with the highest number of nurses who performed the incorrect technique (n=12) was the "completion of the donor clinical history". In the second module, in nine of the twelve items, there was at least one nurse who performed the technique incorrectly, and the item "needle punch cord" was the one that

obtained the highest number of nurses who performed the technique (n=14). It should be noted that all errors were carried out by the correct execution of the technique.

• Evaluation of practical training workshops

The items of the practical workshops evaluated in a Likert scale were: (1) fitness for the screening of pregnant women; (2) safety to collect PUCB; (3) meeting expectations; (4) adequate workload and (5) teaching strategies used. The answers point to nurses' satisfaction with all items. It should be noted, however, that a nurse disagreed with item 4 and two said they did not agree or disagree with him. These responses indicate the need to evaluate the possibility of greater workload, promoting greater time for the development of practical activities.

As the main motivation to participate in the workshops, most nurses (n=12; 60%) indicated the possibility of a new field of action, and with regard to the expectations during the PUCB collection, anxiety was predominant in not executing the technique adequately (n=14; 70%).

DISCUSSION

Regarding the profile of the institution's nurses, it was verified that the time of professional training is compatible with the duration of the institution, which can be explained, in part, by the long period when there were no competitions with admission to the institution or nurses with a temporary contract. It may also be related to the fact that the majority is a resident and, therefore, this is their first job. This justification can also be applied to the small number of professionals with more than one employment relationship, contrary to results from other studies that point to multiple links as a characteristic of this professional category.⁹⁻¹⁰

Still on the profile, the majority (n = 21; 91.3%) of the participants were female, confirming that the history of the feminine condition involves feminization and the feminization of some professions to the detriment of others.¹¹

Regarding the aspects related to the training, it was observed, in the pre-test, a low knowledge of the nurses regarding the legislation and the process of collection of PUCB. The theoretical workshop, however, had a positive and significant effect on the learning of the participants of the research, evidenced by the greater number of successes in the test after the training. This result was also observed in another study, confirming the understanding that in-service education can contribute greatly to the qualification of professionals and, consequently, to health care.¹²

The lowest percentage of correctness in the pre- and post-test occurred in the question that asked the nurse to describe the entire process of PUCB collection, possibly, because it is a more difficult and discursive issue and because it was applied before the practical workshops. This is because it recognizes the importance of the articulation between theory and practice in the learning process.

The data of the evaluation of the performance in the practical workshops corroborates with this affirmation, since the repetitive execution of the collection process, culminated in the diminution of inadequacies

of the technique. From this perspective, the evaluation of the practical workshops carried out by the nurses was very positive, especially with regard to the affirmation that, after the practical training, they feel more secure to develop the collection of PUCBs.

On this aspect, it is important to evaluate the educational actions undertaken within the scope of the service. Once systematized, this type of evaluation provides feedback on the effectiveness of educational processes, thus subsidizing strategies for improvement that can produce, as an effect, training that, actually, educates and promotes benefits to the health organization.¹³

It is in this sense that the standardization of nurses' performance in the collection of PUCB is supported,¹⁴ which states that it must be properly trained to participate effectively in this process, given the specificity of this activity, which involves not only the screening of possible donors, but the management of a set of instruments in a careful and aseptic way, under penalty of losing an important source of HTM.

The quality assurance of the HTC's obtained depends directly on the professional conduct of the obstetric team responsible for the collection. For this reason, it is also important to know the operative factors pertinent to inadequate placental management.¹⁵

The adoption of good practices in PUCB collections banks is therefore essential for the execution of all phases involving collection¹⁵ and, for this purpose, instruments such as the one made by this research to evaluate the professional performance during the collection can be used as an operational checklist. This is because it was developed and validated by experts in the subject, covering all the items, of all stages, provided for good professional conduct.

CONCLUSION

This study, considering the steps performed, allowed us to confront theory and practice in order to expose the correct answers and the difficulties by the nurses before, during and after the training process. In addition, the evaluations of the workshops employed served to ratify the importance of in-service training and, more than that: signaled the need for corrections in the training model adopted, understood here not only as a process of acquisition of applicable knowledge, But also as an instrument for replication in other institutions.

If, on the one hand, difficulties experienced by nurses in their daily life at the

UFRJ Maternity School were perceptible, which may be common to other health institutions, on the other hand, the private involvement of the professionals created favorable conditions for the training of the PUCB collection.

The study of an institution and a small number of nurses could be considered limitations of the research, however, due to the lack of studies on the subject, especially with a group of nurses who can play a strategic operational role in the collection process, the results may serve as a basis for the development of new studies. It can also be a model to be replicated and/or improved by other institutions with a collection point profile in the development of a training program for this purpose, considering that the process developed here was approved by INCA, collected.

The training of nurses for the PUCB collection process structured in this research, as well as their methods of evaluation, appear as management tools of important utility for nurses' performance in the collection banks. And, consequently, they contribute to the improvement of the technique, to the development of new procedures with CTH and to plant life expectancies in several users of the health system.

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