

## Manuseio e descarte de perfurocortantes por profissionais de enfermagem de unidade de terapia intensiva

The handling and disposal of sharps among nursing staff of an intensive care unit

La manipulación y eliminación de objetos punzantes entre el personal de enfermería de la unidad de cuidados intensivos

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### ABSTRACT

**Objective:** To identify the factors that expose ICU nursing staff to accidents by sharp tools during the handling and disposal of these utensils. **Method:** Quantitative, descriptive and exploratory research, using the document analysis technique. It was analyzed 39 accidents chips with four ICU nursing workers, between 2005 and 2010, in a university hospital in the state of Rio de Janeiro. **Results:** The years of 2008 and 2009 had the highest accident records. As for sectors, the General Intensive Care Unit had the highest (46%) percentage. Among the professionals who crashed over, the nurses (49%) were highlighted and the needles were the material (69.2%) more involved in accidents. **Conclusion:** Mainly the implementation of strategies to reduce exposure for professional risks, especially measures to disposal and proper storage of sharp tools.

**Descriptors:** Occupational health nursing; Intensive care units; Accidents occupational; Nursing.

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## RESUMO

**Objetivo:** Identificar os fatores que expõem os trabalhadores de enfermagem de UTI aos acidentes por perfurocortantes durante a sua manipulação e descarte. **Método:** Estudo quantitativo, descritivo e exploratório, com emprego da técnica de análise documental. Foram analisadas 39 fichas de acidentes com os trabalhadores de enfermagem de quatro UTI entre 2005 e 2010, de um Hospital Universitário no estado do Rio de Janeiro. **Resultados:** Os anos de 2008 e 2009 apresentaram os maiores registros de acidentes. Quanto aos setores, o Centro de Tratamento Intensivo Geral obteve o maior (46%) percentual. Dentre os profissionais que mais se acidentaram, os enfermeiros obtiveram maior (49%) destaque e a agulha foi o material mais (69,2%) envolvido durante os acidentes.

**Conclusão:** A implementação de estratégias para diminuir a exposição dos profissionais aos riscos, especialmente medidas que permitam o descarte e armazenamento adequado dos materiais perfurocortantes.

**Descritores:** Enfermagem do trabalho; Unidades de terapia intensiva; Acidentes ocupacionais; Enfermagem.

## RESUMEN

**Objetivo:** Identificar los factores que exponen el personal de enfermería en UCI a accidentes por aguda durante la manipulación y eliminación.

**Método:** Cuantitativo, descriptivo y exploratorio con uso de técnica de análisis de documentos. Analizados 39 accidentes chips con cuatro trabajadores de enfermería de UCI en los años 2005 a 2010, de un hospital universitario en estado de Río de Janeiro. **Resultados:** Los años 2008 y 2009 tuvieron los registros más altos de accidentes. En cuanto a sectores, la Unidad General de Cuidados Intensivos tuvo el mayor (46%) por ciento. Entre los profesionales que se estrelló otra vez, las enfermeras tenían más alto (49%) y la aguja destacaron fue el más material (69,2%) que participan en accidentes. **Conclusión:** Implementación de estrategias para reducir la exposición a riesgos profesionales, especialmente medidas para eliminación y almacenamiento adecuado de objetos punzantes.

**Descritores:** Enfermería del trabajo, Unidades de cuidados intensivos, Accidentes de trabajo, Enfermería.

## INTRODUCTION

This study has as an object to identify the occurrence of accident caused by cutting material between nursing professionals. This is a clipping of the survey entitled "occupational risks and the occurrence of accident by sharp material between workers of nursing of an intensive care units" held in the year 2011 as a requirement for the completion of the undergraduate degree in nursing from the State University of Rio de Janeiro. During the research's development it was identified the vulnerability of the workers from the Intensive Care Units (ICU) to the risks of accidents with sharp objects due to a number of invasive procedures and work overload.

The accident is a sudden event occurred in the performance of the service, regardless of employment and social security situation of the injured worker. In this way, the worker carries health damage causing injury or functional disturbance that can cause death or temporary or permanent loss of capacity for work.<sup>1</sup>

In high-risk environments, such as ICU, where the care is complex, dynamic, and requires skill and agility of nursing professionals, the risks of exposure to accidents with sharp material are higher.<sup>2</sup> The allocation of critical and unstable patients, hemodynamic changes and risk of death, requires continuous attention and quick decisions of health professionals who work in the ICU.<sup>3</sup>

According to some authors,<sup>1-3</sup> in addition to the work environment, the hospital solid waste disposal is also an important factor when seeking a better quality of service, and for the worker. In the case of sharp material authors<sup>3</sup> identified that the needle is the material more associated with accidents (68.2%), and the re-capping of these same material consists of 38.6% of the occurrences of the accidents among workers.

In this context, selected as the research problem: what contributes to the needle is the material present in the majority of the accidents by sharp materials involving nursing professionals of ICU?

It is believed that ICU nursing professionals for work in stressful environment, with critical patients, associated with the procedures, and materials that you use in your everyday work, it becomes more vulnerable to accidents with materials with sharp objects. So, it was defined as an objective: to identify the factors that expose workers to ICU nursing accidents for handling and disposal of sharp material, highlighting the importance of systematization of nursing care for the prevention of accidents with sharp objects involving biological material.

This subject is relevant, whereas significant accidents among workers of the health area that involves sharp material, especially among nursing professionals in their activities are exposed to occupational risk.

In this way, we intend to contribute to the reduction of these accidents involving employees of nursing in the Intensive Care Unit during the process of care, since these workers have greater involvement in this process.

## METHODS

This is a quantitative, descriptive and exploratory study done with the use of the documentary analysis technique. This investigation was carried out in a University Hospital located in the city of Rio de Janeiro, in four Intensive Care Units: the Intensive Care Center General (CTIG), Neonatal Intensive Care Unit (NICU), Cardiac Intensive Treatment (CTIC) and the Intensive Care Unit of the General Duty (UTIPG).

As a data source using the notification sheet for accidents caused by sharp material to nurses, nursing assistants and ICU technicians, served in the Department of health of the institution from 2005 to 2010, totaling 39 chips. So they were all reviewed and selected for the study, as the inclusion criteria was: the period of 2005-2010, and accidents with ICU nursing workers.

The following variables were selected for the study: year of the accident, in which the accident occurred, professional category, in-service training, type of procedure (relating to direct or indirect contact with the client), length of service in the institution, affiliated with the institution, use of PPE at the time of the accident and the type of material involved in the accident.

The project was submitted to the Research Ethics Committee of the University Hospital Pedro Ernesto, according to Resolution nº 196/CNS 96 which regulates research involving human's guidelines, obtaining the registration of 2996/2011 numbering.

The data was sorted and organized, codified and tabulated with support of the program *Microsoft Office Excel 2010*.<sup>4</sup>

## RESULTS

**Table 1** - Occurrences of accidents in the period of 2005-2010 between workers of CTI/ICU nursing, according to seniority in the institution. Rio de Janeiro, 2011

Time of service in the institution	Year						N	%
	2005	2006	2007	2008	2009	2010		
	N	N	N	N	N	N		
0-5 years	2	5	3	7	6	5	28	72
6-11 years	1	0	0	0	1	0	2	5
12-17 years	0	0	1	1	1	1	4	10
18 or more	0	0	1	0	0	1	2	5
Not filled	2	0	1	0	0	0	3	8
Total							39	100

The study recorded 39 instances of accidents by sharp material between workers of CTI/ICU from 2005 to 2010. The years of 2008 and 2009 presented the biggest records of accidents, followed by 2010.

Regarding the sectors where the accidents have occurred, the Intensive Care Center General (CTIG) had 18 (46%) of cases, followed by the Neonatal Intensive Care Unit (NICU) with 14 (36%), the Intensive Care Cardiac Center (CTIC) with 05 (13%) and the Intensive Care Unit of the General Duty (UTIPG) with 02 (5%) records.

According to the results, nurses were the professionals who suffered the majority of the accidents, representing 19 (49%) of the total accidents, followed by nursing assistants with 11 (28%) and nursing technicians with 09 (23%) records.

Regarding professional training, most of the 35 workers (90%) reported having participated of it, 03 (08%) did not respond, and 01 (02%) reported that it has not received in-service training.

Regarding the type of procedure, most of workers (79%) 31 had direct contact with the client at the time of the crash, and 07 (18%) had indirect contact with the client.

The work links of these workers with the institution were diversified, since they could be hired or authorized resident. The highest rate of accidents was verified among nursing workers hired 18 (46%).

From the data we identified that regarding the professional service exercised in institution, 28 (72%) of professional casualties reported service time from zero to five years. The use of EPI at the time of the accident was reported by most (79%) of the professionals, with a

significant increase of this percentage over the period 2005 to 2010, evidenced by the data.

Finally, the materials involved in the accident were the needle with 27 (69.2%) records, jelco 05 (13%), the scalpel blade 04 (10.3%), the Lancet 01 (2.5%), the forceps catheter guide 01 (2.5%) and unfilled 01 (2.5%).

## DISCUSSION

The increasing occurrence of accidents among workers of the ICU nursing staff during 2008 and 2009 can be associated with some factors. The quantitative growth of professionals in this period through public tender or even increased hiring with other employment links, could contribute to the increasing number of occurrences. However, to clarify this finding, other variables and factors involved should be analyzed, but it was not possible at the time of data collection.

The Intensive Care Center and the Neonatal Intensive Care Unit showed the highest rates of accidents at the period studied.

However, it is worth pointing out that in 2011, these sectors were structured as follows, the CTIG with 07 beds and a staff of 53 nursing professionals, being 23 nurses and 31 nurse technicians. The NICU had 22 beds and 82 nursing professionals, being 46 and 36 nurses nursing technicians. Workers in these units perform high-level complex procedures, which can configure a greater vulnerability of this population. These results, therefore, can be associated with the kind of clients assisted in these units, the dynamics of the sectors, in addition to the number of professionals,

and the procedures performed in both sectors compared with other units investigated.

The ICU are sectors for concentrated material and human resources for critical patients and recoverable care, and it requires a steady flow of attention and nursing care.<sup>5</sup> Some aspects have a different significance in other sectors, these demanding requirements and differentiated assignments, requiring continuously specific human and material resources, as well as other technologies aimed at diagnosis and intensive therapy.<sup>6</sup>

Nurses are the professionals with the biggest record of accidents (49%). This result can be associated with professional qualification, regarding that in Intensive Care Units, nurses have all the responsibility and performance for most of the procedures, especially the invasive ones.<sup>6</sup>

Most professionals reported having participated in the training institution. These trainings take place through lecture/class where are passed and discussed the theoretical contents, and to join in the industry, they are supervised by the nurse leader until they are considered good enough.

It is essential to point out that training should seek ownership of new theoretical and practical knowledge to improve the quality of their work, expanding your professional and personal skills, by actually instrumenting in your working environment.<sup>7</sup>

The educational process should contribute to the emergence of new potential new projects and individual professionals. The work organization in nursing ratifies the need for continuing education, while strengthening strategy, allowing the worker to value his/her work, and feel satisfaction in it.<sup>8</sup>

To meet these expectations the admission training has been developed with the purpose to prepare the nursing staff for the provision of assistance. This training is a systematic process, which aims to adapt the new professionals to the institution, in order to minimize the versatility in the care service.<sup>7</sup>

The ability of nurses to unite scientific knowledge with practice allows appropriating themselves of an important and relevant content, putting in a cycle of continuous learning, applied in the assistance provision to critical patients and its multidisciplinary team, especially about the techniques and procedures performed in the ICU.<sup>7</sup>

Regarding the type of procedure most of the workers had direct contact with the client at the time of the crash. However, it is noteworthy that the nursing care is linked directly to the care actions and attention to the patient involving actions that also require caution in relation to own caregiver.<sup>9</sup>

The risk to which a health care professional is exposed is inherent in their activity and complexity of care. Note that the risk of exposure related to the tasks performed by the employee, as well as the type and complexity of the care provided.<sup>10</sup>

Nursing workers investigated presented different links, but the highest rate of accidents was verified among

hired nurses. This high percentage is the result of the transformations in the work sphere that have occurred in the recent decades, reflected upon individuals' health and upon the group of workers.

This labor characteristics' intensification at the current phase of capitalism, brought the insecurity caused by the fear of unemployment, subjecting the practitioners and schemes of work precarious contracts, receiving low wages and with health risks in unhealthy environments with high risk of accidents and work-related diseases.<sup>11</sup>

Long hours of service, work in night shifts and at weekends, dramatically increases the risk of accidents with needles. There are higher chances of considering all the accidents with needles in nurses who work many days in a row and short space of time between the shifts.<sup>10</sup>

In this context, the classification systems are a starting point in time to distribute the workload in the field of nursing, and seem to be the best mechanism to quantify the nursing care and the resources that the same group of patients need; the allocation of nursing professionals in accordance with the real needs and specific to each ICU is a useful tool for the management of resources and the scientific and technological expertise that is required for a group of highly complex patients, resulting in fewer complications, sequels, better quality of life and lower mortality.<sup>12</sup>

Most of the investigated professionals had been working at the institution from zero to five years old, and they were the ones who have suffered the majority quantity of accidents with sharp material. This result indicates the importance of the guidelines for the prevention of accidents, especially among workers with less experience.

However, it is known that a professional just-admitted, even if he/she has professional experience, is concerned with several aspects in the performance of their functions. Thus, these fears and anxiety regarding individual performance can contribute to the occurrence of workplace accidents, especially those involving sharps and biological material.<sup>7</sup>

Although most professionals inform the use of EPI at the time of the accident, we know that it gives greater safety for professionals and patients and assists in the prevention of accidents with exposure to biological materials. However, they must be adopted routinely by employees, in addition to its correct usage, checking if they're clean and conserved, regarding that their use is intended to reduce the risks but not eliminate them.<sup>2</sup>

The institution is required to provide to the employees, free of charge, the PPE appropriate to the risk, in perfect state of preservation and operation and quantity above the need for their use where necessary by the team.<sup>13</sup>

Ignorance, indifference and adequate supply of these necessary PPE for the development of the work, increase the risk of accidents at work and contribute mostly to the absenteeism of employees of nursing to cause an accident or acquire an occupational disease during the service.<sup>13</sup>

As for the material more involved in accidents, the needle has obtained the highest percentage (69.2%). Some studies had the same result with nursing professionals in different health units<sup>14</sup>, highlighting the practice of peripheral venous puncture (27.3%) as one of the main procedures that cause accidents among nursing professionals. There are several hypotheses to explain this finding, however, the more likely are the recap of needles (38.6%), patient movement (29.5%), accidents caused by third parties (22.7%), inadequate disposal (4.7%) and absence or misuse of EPI (4.5%).<sup>15</sup>

The work of direct and continuous assistance to the patient who is played by nursing professionals makes them susceptible to contamination by biological material, mostly in accidents by percutaneous inoculation, mediated by needles or sharp instruments, which are the biggest responsible for the occupational transmission of blood infections.<sup>16</sup>

Although the improper disposal presents a low percentage among the other materials involved in accidents, most assistance establishments of health presents disability regarding internal and external storage of waste, mainly in relation to the physical conditions of the sites used for this purpose, whereas 10% to 25% of products are considered dangerous.<sup>17</sup>

The other factors can interfere with the provision of assistance as the Systematization of Nursing Care (SNC), which promotes the organization of professional work in relation to the method, personnel and instruments, and enables the operationalization of the working process.<sup>18</sup>

This activity is the private nurse professional law n° 7,498/86 and the resolution of the Federal Council of Nursing No. 358, and its implementation should be carried out throughout the public and private health institution<sup>17</sup>. The LEAVES promotes the performance of nursing professionals and should be adopted to prevent or minimize the occurrence of accidents for sharp material, in addition to establishing how it should be proper handling and disposal of this material in the process of nursing work.

## CONCLUSION

The results of the study showed that the ICU nursing professionals, arising from the activities that take place in your daily work, work in a constant risk to their health. These actions are likely to control through the implementation of guidelines established by the NR 32 and creating a risk prevention program.

In this perspective, it is believed that the institution should invest in professional safety and ensure the training of workers, before the beginning of its activities, and also continuously analyzing the effectiveness and application at the working environment, while minimizing exposure and vulnerability of professional accidents by sharp material involving biological material.

The training of workers for carrying out the procedures, handling of sharps and the proper use of personal protective

equipment contribute to the reduction in the occurrence of accidents, and assist in the protection of professionals whereas the risk of accident is directly related to the working environment.

The implementation of strategies to reduce the exposure of risk professionals is relevant, especially measures to the disposal and proper storage of materials with sharp objects, in accordance with the standards recommended by the Ministry of Labor and Employment, aspects that must be valued by managers for the preservation of the health of workers.

The study presents as limitations the accomplishment in a single field of research and the timeframe used depending on the availability of information used at the research.

## REFERENCES

1. Ministério do Trabalho e Emprego (Brasil). Lei de Acidentes do Trabalho - lei nº 6.367, de 19 de outubro de 1976. Brasília: Ministério do Trabalho e Emprego, 1976.
2. Bonini AM, Zeviani CP, Facchin LT, Gir E, Canini SRMS. Exposição ocupacional dos profissionais de enfermagem de uma unidade de terapia intensiva a material biológico. *Rev. eletrônica enferm.* 2009; set. 11(3):658-64.
3. Inoue KC, Matsuda LM. Dimensionamento da equipe de enfermagem da uti-adulto de um hospital ensino. *Rev. eletrônica enferm.* 2009; Mar 11(1):55-63.
4. Lakatos EM, Marconi MA. Fundamentos da metodologia científica. 4ª ed. São Paulo (SP): Atlas; 2010.
5. Ministério da Saúde (Brasil), Agência Nacional de Vigilância Sanitária (ANVISA). Na Portaria nº 352, de 17 de abril 2014. [Ministério da saúde Online] 2014 [citado em 1 de agosto de 2014]. Available from: <http://www.jusbrasil.com.br/diarios/69644873/dou-secao-1-30-04-2014-pg-75>.
6. Lapa AT, Silva JM, Spindola T. Os riscos ocupacionais e a ocorrência de acidente por material perfurocortante entre trabalhadores de enfermagem de unidades de terapia intensiva [monografia] Rio de Janeiro (RJ): Faculdade de enfermagem, UERJ; 2011.
7. Bucchi SM, Mira VL. Redesigning the nurse admission training process at the Intensive Care Unit. *Rev. Esc. Enferm USP [Online]*. 2010; Mar 44(4):1003-10.
8. Silva TR, Rocha SA, Ayres JA, Juliani CMCM. Acidente com material perfurocortante entre profissionais de enfermagem de um hospital universitário. *Rev. Gaúcha Enferm.* 2010; Nov 31(4):615-22.
9. Silva JLL, Lopes MR, Moreno RF, Almeida JHA, Soares RS, Souza VR. Acidentes com perfuro-cortantes na equipe de enfermagem. *R. Pesq. Cuid. Fundam. Online.* 2012; Jan/Mar Ed. Supl.:1-4.
10. Beleza CMF, Gouveia MTO, Robazzi MLCC, Torres CRD, Azevedo GAV. Riscos ocupacionais e problemas de saúde percebidos por trabalhadores de enfermagem em unidade hospitalar. *Ciência y Enfermería.* 2013; Aug 19(3):73-82.
11. Mauro MYC, Paz AF, Mauro CCC, Pinheiro, MAS, Silva VG. Condições de trabalho da enfermagem nas enfermarias de um hospital universitário. *Esc. Anna Nery Rev. Enferm.* 2010; abr./jun. 14(2):244-52.
12. Massa ER, Bolívar JPL, Melgar CP, Duque CAP. Relación entre la carga laboral de enfermería y la gravedad del paciente en unidades de cuidado intensivo de adultos. *Aquichan [online]*. 2011; Aug 11(2):173-86.
13. Guimarães EAA, Araújo GD, Bezerra R, Silveira RC, Oliveira VC. Percepção de técnicos de enfermagem sobre o uso de equipamentos de proteção individual em um serviço de urgência. *Ciencia y Enfermería.* 2011; Oct 17(3):113-23.
14. Silva JA, Paula VS, Almeida AJ, Villar LM. Investigação de acidentes biológicos entre profissionais de saúde. *Esc Anna Nery Rev Enferm.* 2009; July/Sept 13(3):508-16.
15. Simão SAF, Soares CRG, Souza V, Borges RAA, Cortez EA. Acidentes de trabalho com material perfurocortante envolvendo profissionais de enfermagem de unidade de emergência hospitalar. *Rev Enferm UERJ.* 2010; July/Sept 18(3):400-4.
16. Martins JT, Bobroff MCC, Andrade AN, Menezes GDO. Equipe de enfermagem de emergência: riscos ocupacionais e medidas de autoproteção. *Rev. enferm UERJ.* 2014; May/June 22(3):334-40.
17. Viriato A, Moura A. Ecoeficiência e economia com a redução dos resíduos infectantes do Hospital Auxiliar de Suzano. *O Mundo da Saúde.* 2011; May 35(5):305-10.
18. Conselho Federal de Enfermagem. Resolução COFEN nº 358 [Portal COFEN Online] 2009 [citado em 01 agosto 2014]. Available from: [http://novo.portalcofen.gov.br/resoluo-cofen-3582009\\_4384.html](http://novo.portalcofen.gov.br/resoluo-cofen-3582009_4384.html).

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