

**Nursing technicians' knowledge accident with needle sharp material**

Conhecimento de técnicos em enfermagem acerca do acidente com material perfurocortante

*Los conocimientos de técnicos de enfermería sobre el accidente con material corto-punzante*Ana Letícia da Costa Cardoso¹, Jefferson Abraão Caetano Lira², José Francisco Ribeiro², Julyanne dos Santos Nolêto², Rutielle Ferreira Silva²; Francisca Aline Amaral da Silva²

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ABSTRACT

Objective: to analyze nursing technicians' knowledge about accident with needle sharp material. **Method:** descriptive study of qualitative approach, performed at a large-sized hospital in the state of Piauí, with 12 nursing technicians. Data were obtained through semi-structured interviews and analyzed through content analysis technique. **Results:** the majority showed satisfactory knowledge about accident with needle sharp material. Improper disposal of needles and blades was pointed out as the main cause of this accident. There was divergence in relation to contamination or not of the material to be considered needle sharp accident. A large part reported that this type of accident is quite distressing, disturbing and traumatic, in addition to having doubts about the notification and treatment of this accident. **Conclusion:** although the majority presented satisfactory knowledge about accidents with needle sharp material, there is a need for greater concern with Biosafety, continuing education and prevention of accidents to workers.

Descriptors: Containment of biohazards; Occupational risks; Occupational exposure; Occupational health; Occupational health nursing.

RESUMO

Objetivo: analisar o conhecimento de técnicos em enfermagem acerca do acidente com material perfurocortante. **Método:** estudo descritivo, de abordagem qualitativa, realizado em um hospital de grande porte no estado do Piauí, com 12 técnicos em enfermagem. Os dados foram obtidos com roteiro de entrevista semiestruturado e analisados mediante técnica de análise de conteúdo. **Resultados:** a maioria apresentou conhecimento satisfatório acerca do acidente com material perfurocortante. O descarte inadequado de agulhas e lâminas foi apontado como o principal causador desse acidente. Houve divergência em relação à contaminação ou não do material para ser considerado acidente perfurocortante. Grande parte relatou que esse tipo de acidente é bastante angustiante, perturbador e traumatizante e que tinha dúvidas sobre a notificação e o tratamento desse acidente. **Conclusão:** embora a maioria apresentasse conhecimento satisfatório sobre acidente com perfurocortante, é necessária maior preocupação com a Biossegurança, a educação continuada e a prevenção de acidentes ao trabalhador.

Descritores: Contenção de riscos biológicos; Riscos ocupacionais; Exposição ocupacional; Saúde do trabalhador; Enfermagem do trabalho.

RESUMÉN

Objetivo: analizar los conocimientos de técnicos de enfermería sobre el accidente con corto-punzante. **Métodos:** estudio descriptivo de enfoque cualitativo, realizado en un hospital de grande porte en el estado de Piauí, con 12 técnicos de enfermería. Se obtuvieron los datos mediante entrevistas semi-estructuradas, analizándolos mediante la técnica de análisis de contenido. **Resultados:** la mayoría mostró un conocimiento satisfactorio sobre el accidente con material corto-punzante. La eliminación inadecuada de agujas y láminas fue nombrada como la principal causa de este accidente. Hubo divergencia en relación a la contaminación o no del material para considerarse accidente corto-punzante. Una gran parte informó de que este tipo de accidente es bastante inquietante y traumático y que tenía dudas acerca de la notificación y el tratamiento de accidente. **Conclusión:** aunque la mayoría presente conocimiento satisfactorio sobre accidentes con material corto-punzante, existe la necesidad de una mayor preocupación por la bioseguridad, la educación continua y la prevención de accidentes para el trabajador.

Descriptores: Contención de riesgos biológicos; Riesgos laborales; Exposición ocupacional; Salud laboral; Enfermería del trabajo.

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INTRODUCTION

Accident with needle sharp material is one of the main occupational risks inherent to health care, and nursing professionals are the most affected due to direct contact with patients, high number of invasive procedures and constant handling of sharp objects and biological materials¹⁻⁴. In this perspective, the concern with Biosafety, use of Personal Protection Equipment (PPE) and respect to standard precautions are essential to prevent this type of occupational accident⁵.

Needle sharp materials are instruments that cause injuries during handling, once they perforate and cut at the same time, and percutaneous exposure is the most frequent in accidents involving biological material⁶⁻⁹. In this way, to guarantee workers' safety in health services and to prevent accidents with needle sharp materials, the Regulatory Norm 32 was established, through the elaboration of several guidelines for handling and proper disposal of these materials¹⁰.

In Brazil, occupational accidents with exposure to biological material are of compulsory notification. However, many professionals do not notify these types of accidents, usually because they consider communicating this accident unnecessary, disregard the risks to which they are submitted or fear repression. Therefore, notification and adoption of post-exposure prophylactic measures are crucial for preventing the acquisition of infections transmissible by blood contact¹¹.

The main causes of accidents with needle sharp materials are inadequate execution of the technique during the procedure, non-use of Rev Pre Infec e Saúde.2018;4:7285

personal protective equipment and inappropriate disposal of needle sharp materials¹²⁻¹⁴. Furthermore, a study carried out in São Paulo revealed that professionals aged 30 through 39 years and with less than five years of professional activity had a higher incidence of occupational accidents involving exposure to biological material¹⁴.

A study conducted in Paraná with health professionals identified that technicians were most exposed to accidents with biological materials (58.1%), followed by college-degree professionals (23.8%) and cleaning assistants (10.7%), and blood was the most frequent biological material (86.1%). Percutaneous perforation prevailed in 88.2% of cases, and the main causative agents were needles with lumen (66.1%), needles without lumen (8.5%) and slides or lancets (6.5%)¹⁵.

Fear, insecurity and anxiety are the main feelings found in health professionals who are victims of accidents with needle sharp materials exposed to biological material. Thus, a study conducted in Minas Gerais identified that 19.6% of these professionals, regarding the possibility of acquiring a serious disease, showed symptoms of post-traumatic stress disorder, which highlights the importance of continuing education, support to these professionals and the effectiveness of occupational health in the work environment¹⁶.

Therefore, the interest in the theme emerged from the contact with the Commission of Hospital Infection Control of that hospital, which allowed identifying a considerable number of accidents with needle sharp material involving nursing technicians. In this sense, in order to

unveil this issue related to the Biosafety of nursing professionals, the following guiding question emerged: "What is the knowledge of nursing technicians about accident with needle sharp material?"

Thus, this study aimed to analyze the knowledge of nursing technicians about accident with needle sharp material.

METHOD

This is a descriptive study, with qualitative approach, performed at a large-sized hospital in the state of Piauí.

The study participants were 12 nursing technicians who work in patient care, including effective professionals who had been fully exercising their functions for more than six months. There was exclusion of those who were on vacation or medical leave during data collection. The minimum number of participants was established from the moment that the objective of the study was reached and when the answers became repetitive. The participants were selected by convenience.

Data were obtained through semi-structured interview guide containing open and closed questions prepared by the authors of the study. The closed questions addressed demographic (age and gender) and professional aspects of the participants (training, shift and time of service) and open questions related to accidents with needle sharp materials. The interviews were recorded in MP4 player, and then fully transcribed. To ensure anonymity, participants were coded by "D" with sequential Arabic numeral. Data production occurred in

January 2017. The interviews were conducted at a reserved environment in the study site and lasted an average of five minutes.

Data analysis occurred through content analysis technique, which is divided into three stages: pre-analysis, material exploration and interpretation of the results. In pre-analysis, the interviews were organized. In the material exploration, information was classified by similarity of content. In the interpretation of the results, relations between the speeches, the reality and current literature on the subject were established¹⁷. The assessment of satisfactory knowledge about accident with needle sharp material was founded by the manuals of the Ministry of Health (MOH) and the National Sanitary Surveillance Agency (ANVISA - *Agência Nacional de Vigilância Sanitária*)¹⁸⁻¹⁹.

This study followed the ethical principles of Resolution 466/2012 of the National Health Council, being approved by the Research Ethics Committee of the State University of Piauí, with CAAE 615999316.5.0000.5209 and opinion 1.887.249.

RESULTS

In relation to sociodemographic aspects, there were 11 (91.7%) women and 1 (8.3%) man, aged 27 through 58 years. Regarding professional issues, 7 (58.3%) reported receiving no training for prevention of accidents with needle sharp material, 11 (91.7%) worked in the diurnal service and only 1 (8.3%) in the afternoon shift. The service time in the nursing area ranged from 6 months to 37 years.

After analysis, three categories emerged: Category 1 - Nursing technician's knowledge about accidents with needle sharp material; Category 2 - Causes and consequences of accidents with needle sharp material in the nursing technician's perspective; Category 3 - Nursing technicians' questions about management in accidents with needle sharp material.

Category 1 - Nursing technician's knowledge about accidents with needle sharp material

Most participants presented satisfactory knowledge about the concept of accidents with needle sharp material, highlighting needles and slides as the most common causes of occupational accidents.

"Accident with sharp objects, or with objects that can perforate the skin, such as needles, slides, ampoules" (D 1)

"Every accident with needles, slides and other objects that can damage skin layers" (D7)

"Accidents with needle sharp materials, while handling or using them after contact with the patient" (D8)

"Any accident that harms the skin, even slightly, exposing the person to health risks" (D 12)

"Injuries with materials or furniture of the occupational setting" (D 6)

However, there was a divergence in relation to the contamination or not of the material to be considered needle sharp accident, in which the majority considered contamination

the main characteristic of this type of occupational accident.

"It is na occupational accident with contaminated needle sharp material" (D 11)

"Accidental contamination by needle shap material after contact with the patient's blood" (D 3)

"Perofration with contaminated needle, cut with scalpel blade, scalp and glass" (D 4)

"Perforation or cut with needles or slides contaminated with the patient's fluids" (D 7)

"Materials that can perforate or cut when in contact with the skin, and they can be contaminated or not" (D 5)

Category 2 - Causes and consequences of accidents with needle sharp material in the nursing technician's perspective

Professionals listed that the main causes of needle sharp accidents are the disposal of such materials in inappropriate sites, lack of care and protection during handling.

"Storage in improper containers, causing risk to those handling" (D 5)

"The most frequent cause of accident is the lack of protection and care, and sometimes, no matter how careful you are, accidents happen, the patient is at the time of the procedure and you end up cutting or sticking" (D 4)

"Disposal of sharps in an inadequate location. A trained employee and using

the equipment would be much safer, it would be harder to suffer such damages. Laundry employees often get injured with needles and sharp materials” (D 2)

In this perspective, one participant stressed the importance of the concern with Biosafety, through training and use of protective devices and equipment at health services.

“Disposal of sharps in an inadequate location. A trained employee and using the equipment would be much safer, it would be harder to suffer such damages, to feel pain, distressed or get ill because of any sharp material in these accidents, you are aware that you are dealing with those risky materials” (D2)

Besides physical damage, needle sharp accidents generate, in professionals, insecurities and weaknesses that resonate in all dimensions of their lives. Nursing technicians reported that this type of accident is quite distressing, disturbing and traumatic.

“Bad experience” (D 9)

“Traumatic” (D 10)

“A psychologically traumatic lesion” (D 11)

“Disturbing, distressing moment” (D 12)

Category 3 - Nursing technicians’ questions about management in accidents with needle sharp material

Some professionals reported doubts about the Rev Pre Infec e Saúde.2018;4:7285

notification and the delay in service in cases of occupational accidents. However, a participant showed discernment regarding the steps of the protocol of needle sharp accidents.

“Does every accident with needle sharp material have to be reported?” (D 6)

“I wonder about the issue of faster service. We have our protocol but there is still failure” (D 2)

“I do not have questions, because our work setting is monitored, when this happens, you undergo examinations, take medication and follow up. You have to pray and wait” (D 4)

They emphasized that this theme is still neglected by health services and highlighted questions about which professional to seek after the accident.

“Why isn’t this subject worked at health institutions? Why, when it occurs, do managers try to get the employee not to notify and treat the issue as something banal?” (D 7)

“How to proceed and who to turn to?” (D 10)

DISCUSSION

Most of the nursing technicians have a satisfactory knowledge about the concept of accidents with needle sharp material, since the MOH definition characterizes this type of accident as that which causes lesions by percutaneous exposure caused by needle sharp

instruments, such as needles, scalpels and glassware¹⁸. In addition, the ANVISA highlights that accident with needle sharp material is caused by instruments that perforate and cut, regardless of being contaminated with organic matter or not¹⁹.

In line with the findings of this study, researches showed that needles, scalpel blades and lancets are the most common instruments that cause accidents with needle sharp materials²⁰. Moreover, the fact that nursing technicians have increased load of activities along with the patient, in addition to manipulating and handling with greater frequency needle sharp materials, making them more susceptible to the occurrence of these types of accidents, highlighting the importance of supervision and continuing education to these professionals^{14,21}.

Regarding the most recurring causes of needle sharp accidents, the statements of this study corroborate the results of a study that identified carelessness, lack of technical failure and improper disposal of material as the main factors that provide this type of accident. In addition, the occurrence of accidents with needle sharp materials showed association with the overload of work, the patient's conditions and the inadequacy of materials, equipment and infrastructure²⁰.

Furthermore, lack of knowledge about risks, lack of training and qualification, shortage of materials in quantity and quality, the insufficient number of professionals, physical and mental fatigue and little experience are factors that contribute to increased incidence of accidents with needle sharp instruments^{13,22-23}.

Thus, during procedures with needle sharp material, some recommendations are essential for preventing accidents, such as utmost attention, not using the fingers as bulkhead, not recovering, bending, breaking or withdrawing the needle of the syringe, not using needles to fix roles, discarding all needle sharp material, even if sterile, in containers resistant to perforation and with lid. In addition, these manifolds for disposal must be completed only up to 2/3 of its total capacity¹⁸.

Biosafety, despite being little cited by participants, is fundamental in health services for the safe handling and reduction of needle sharp accidents. In this context, educational institutions should raise awareness among students regarding safe practices, because, in the spaces of teaching-learning process, with the culture toward prevention, professional habits emerge²⁴.

In the exercise of labor activities, one effective way to minimize risks to which health workers are exposed consists in correctly using PPE. However, a research shows that nursing professionals do not use correctly all these personal protective equipment recommended by the Brazilian legislation during procedures, which highlights the importance of strengthening the culture of safety at work of health organizations⁵.

Therefore, a study carried out at a high-complexity hospital of the state of São Paulo showed that 25% of professionals who suffered accidents did not use gloves while executing the procedure¹⁴. In addition, another research showed that only 16.6% of the injured used PPE, even recognizing that such equipment is

essential for preventing occupational accidents²⁰. It emphasizes that Biosafety at health services and the awareness of the professionals still need to move forward.

Corroborating this study, a research developed in Minas Gerais, whose objective was to analyze the knowledge of the nursing team about occupational accidents with needle sharp materials and post-exposure behavior, highlighted that some participants knew the concept of accident, but have limited knowledge about the post-exposure therapeutic decision, underlining that the deficits of knowledge of nursing professionals on Biosafety, occupational health and percutaneous exposure is still a reality to be improved²⁵.

In line with this study, a research identified that nursing professionals, who were exposed to accidents with needle sharp materials, developed feelings of fear, concern, emotional shock, anguish, anxiety, anger, guilt, boredom, religious attachment, stress and doubt²⁰. These consequences highlight the importance of studies that address the subjectivity resulting from such accidents, aiming to facilitate the implementation of coping, prevention, control, and chemoprophylaxis strategies.

Regarding doubts about notification, MOH emphasizes that all cases of needle sharp accidents with biological material must be communicated to the National Institute of Social Insurance, through Occupational Accident Communication, and to the MOH, through the *Sistema de Informação de Agravos de Notificação* (Health Information Systems Program). In addition, the institution should

keep a record with accident data, follow the care protocol and provide full assistance to all victims of this problem^{18,26}.

Thus, the victim of such accident with biological material must report the incident immediately to the headship for completion of the first care with the exposed area, then start the flowchart for this type of accident. Therefore, the health care network must provide professionals who are able to receive and guide victims of such accidents, in order to ensure the effectiveness in care and avoiding losing these professionals²⁷.

Regarding how to proceed and who to seek after the accident with biological material, the first care consists of washing the exposed site with soap and water. Subsequently, there should be the assessment of the type of material involved and, if possible, the identification of the patient-source. After that, there will be the counseling and guidance to the injured professional, such as the importance of the victim's consent to perform serological tests, monitoring during six months, chemoprophylaxis, if necessary, checking the vaccination against hepatitis B, in addition to providing emotional support, due to post-accident stress¹⁰.

In this context, the indication or not of post-exposure chemoprophylaxis occurs by assessing the risk of exposure, taking into account the type of biological material, severity and type of exposure, the (non-)identification of the patient-source and the anti-HIV serology. Furthermore, the clinical, immunological and laboratory data of the patient-source identified as infected by the Human Immunodeficiency Virus are also criteria to be considered¹⁸.

Thus, this study highlighted that lectures, discussion group, permanent education, meetings and guidelines were interventions developed by managers to reduce the incidence of such accidents, by increasing the knowledge of professionals on the subject²⁵. From this perspective, the organization of healthcare should provide subsidies for promotion of Biosafety, but the employee also needs to be aware, to have attitude, respect and zeal to incorporate, in nursing care, safe practices²⁰.

We emphasize that our text has limitations in the generalization of the results, since this is a qualitative study, which reduces the extension of the findings to the universe of participants. The option for a cross-sectional study also hampers observing changes in knowledge along a historical cohort study²⁸.

CONCLUSION

We observed that most nursing technicians showed satisfactory knowledge about the concept of accidents with needle sharp material, highlighted the causes and consequences of this type of accident, but some reported doubts in relation to the notification and the flowchart of post-exposure care. This highlights the importance of continued education and the strengthening of the worker's health, in order to reduce this type of occupational accident and ensure the effective care to victims of occupational accidents with needle sharp material.

Furthermore, the culture of Biosafety needs to be implemented in nursing care, once the study participants little mentioned it, even

being the most effective mechanism to prevent this kind of accident. Therefore, we emphasize that strategic planning, ongoing training, guidelines, routine inspections and internal audits are necessary to improve the safety culture at work, ensure these professionals' knowledge about accidents with needle sharp material, post-accident flowchart and Biosafety measures, aiming to contribute to behavioral change in relation to adherence to safe practices and, concomitantly, to reduce this type of accident at work.

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Cardoso ALC contributed to the planning of activities, interpretation of results and writing of the manuscript; Lira JAC, Nolêto JS and Silva RF participated in the planning of activities, interpretation of results, writing and review of the successive versions of the manuscript; Ribeiro JF and Silva FAA contributed to the planning of activities, interpretation of results and review of the successive versions of the manuscript. All authors declare agreeing with the final version to be published.

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INTEREST CONFLICTS

There are no conflicts of interest to report.

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Available upon request to the authors.

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