



NEEDLESTICK/SHARPS INJURIES AMONG NURSING PROFESSIONALS IN A UNIVERSITY HOSPITAL

ACIDENTES COM PERFUROCORCORTANTES ENTRE PROFISSIONAIS DE ENFERMAGEM DE UM HOSPITAL UNIVERSITÁRIO

ACCIDENTES CON PUNZOCORTANTES ENTRE PROFESIONALES DE ENFERMERÍA DE UN HOSPITAL UNIVERSITARIO

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ABSTRACT

Objective: to identify the occurrence of needlestick/sharps injuries among nursing professionals of a university hospital. **Method:** descriptive study with a quantitative approach carried out in a university hospital with 45 nursing professionals. Data were collected using a questionnaire and the analysis of information was performed through simple statistic processed in the Epi Info 7 software and presented in tables. The research project was approved by the Research Ethics Committee under Opinion No. 1303/12. **Results:** it was observed that 17.8% of the professionals had the habit of disposing needlestick and sharp instruments in inappropriate containers, 40% had suffered some needlestick/sharps injury at the institution, 61.1% of the needlestick and sharps instruments were contaminated by blood. Accidents caused by carelessness/inattention amounted to 77.8%. Out of these victims, 61.1% classified the accident as minor. A total of 66.7% of the accidents were reported to the Hospital Acquired Infection Control Service. Among the injured professionals, 8.3% had undergone chemoprophylaxis. **Conclusion:** it is essential to train professionals on biosafety, in addition to carry out continuing education and lectures on reporting occupational accidents. **Descriptors:** Occupational Accidents; Exposure to Biological Agents; Nursing Staff.

RESUMO

Objetivo: identificar a ocorrência de acidentes com perfurocortantes entre profissionais de enfermagem de um hospital universitário. **Método:** estudo descritivo, de abordagem quantitativa, realizado em um hospital universitário com 45 profissionais de enfermagem. A coleta de dados foi realizada com o uso de um questionário e a análise das informações realizou-se por meio da estatística simples processadas no Epi Info 7 e apresentadas em tabelas. O estudo teve o projeto de pesquisa aprovado pelo Comitê de Ética em Pesquisa sob o Protocolo nº 1303/12. **Resultados:** observou-se que 17,8% dos profissionais tinha o hábito de descarte de perfurocortantes em recipientes inapropriados, 40% tinha sofrido algum acidente com perfurocortantes na instituição e 61,1% dos perfurocortantes estavam contaminados por sangue. Acidentes causados por descuido/falta de atenção somaram 77,8%. Das vítimas, 61,1% classificaram o acidente como leve. Foram notificados ao Serviço de Controle de Infecção Hospitalar 66,7%. Dos acidentados, 8,3% tinha feito a quimioprofilaxia. **Conclusão:** faz-se oportuna a realização de treinamentos dos profissionais sobre biosegurança, além de educação permanente e palestras sobre notificação dos acidentes. **Descritores:** Riscos Ocupacionais; Exposição a Agentes Biológicos; Equipe de Enfermagem.

RESUMEN

Objetivo: identificar la ocurrencia de accidentes con objetos punzocortantes entre los profesionales de enfermería de un hospital universitario. **Método:** estudio descriptivo de enfoque cuantitativo, llevado a cabo en un hospital universitario con 45 profesionales de enfermería. Los datos fueron recopilados mediante un cuestionario y el análisis de las informaciones se llevó a cabo a través de estadística simple, procesadas en el software Epi Info 7 y presentadas en tablas. El proyecto de investigación del estudio fue aprobado por el Comité de Ética de Investigación con el Protocolo N° 1303/12. **Resultados:** se observó que el 17,8% de los profesionales tenían el hábito de la eliminación de objetos punzocortantes en recipientes inadecuados; el 40% había sufrido algún accidente con objetos punzocortantes en la institución y el 61.1% de esos objetos estaban contaminados por sangre. Los accidentes causados por descuido/falta de atención ascendieron al 77.8%. De las víctimas, el 61.1% clasificó el accidente como leve. El 66.7% de los accidentes fue notificado al Servicio de Control de Infecciones Hospitalarias. De estas víctimas, el 8.3% había hecho quimioprofilaxis. **Conclusión:** es esencial llevar a cabo la capacitación de profesionales en bioseguridad, además de proveer educación continuada y conferencias sobre la notificación de accidentes. **Descriptores:** Riesgos Laborales; Exposición a Agentes Biológicos; Personal de Enfermería.

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INTRODUCTION

This research assesses the occurrence of needlestick/sharps injuries among nursing professionals of a university hospital. The term needlestick/sharps defines an instrument that cuts and punctures at the same time, causing exposure and/or contact with biological material that can cause injuries, death, loss, or reduction of physical and mental capabilities of those who handle these instruments.¹

Needlestick/sharps injuries among nursing workers are frequent, especially due to extensive handling of needles, intravenous catheters, razors, and other materials used in technical procedures for nursing care. These accidents represent losses for workers and institutions.² Health professionals involved in the dynamics of patients care, especially nursing professionals, are those who are more susceptible to needlestick/sharps injuries.³

Surveys have shown the largest occurrence of needlestick/sharps injuries among nursing professionals. Regarding this type of accidents among these professionals, the "hands" were the most frequent anatomical location with the result of 95.7 and 45.7% cases in which the professionals were not using gloves at the time of the accidents.⁴ The occupational acquisition of hepatitis B (HBV), hepatitis C (HCV) and AIDS (HIV) infection by health care workers is a concrete fact. With respect to needlestick injuries, the risk of contamination by hepatitis B virus is from 6 to 30%, hepatitis C virus from 0.5 to 2%, and HIV virus from 0.3 to 0.4%.⁵⁻⁶ Even though the risk of contamination by hepatitis viruses is greater, the great concern of the professionals exposed to hazards with patients' blood and secretions is to acquire HIV virus infection, still stigmatized and discriminated even by health care professionals.⁷

It is known that when this type of accident occurs, it should be treated as a medical emergency, since, in order to achieve greater effectiveness, interventions need to be initiated shortly after the occurrence. Through the National Coordination of STD/AIDS and worried about the increase of these diseases, the Ministry of Health presented a service manual that regards and guides procedures against exposure to biological material. This manual was launched in the 1990s.³ This way, the importance of biosafety employed in hospitals refers to the adoption of safe and appropriate standards and procedures for maintenance of patients, professionals and visitors' health. The adoption of biosafety standards for health

care procedures is a fundamental condition for the safety of workers—whatever the practice area—because the risk of contamination is always present. However, nursing workers underestimate their vulnerability to potential infection, which is continuously present in health care provision.²

Biosafety is of undisputed importance for health care professional training and it should therefore be addressed from undergraduate programs and even in vocational programs, because when professionals are more aware about the need for accident prevention and safe behavior, they can interfere directly in the current scenario of professionals' accidents. In addition, they will protect not only their health, but also customers' health under their responsibility.⁶

OBJECTIVE

- To identify the occurrence of needlestick/sharps injuries among nursing professionals in a university hospital.

METHOD

The present study was drawn from the monograph "Needlestick/sharps injuries among nursing professionals of a university hospital of Alagoas". This is a non-experimental descriptive study with a quantitative approach carried out at the Professor Alberto Antunes University Hospital (HUPAA) performing visits to all sectors where nursing professionals were working in August 2012.

The population studied was composed of nursing professionals (nurses and nursing technicians and assistants), who were working at the hospital. The sample was composed of professionals drawn and that were active during the period of data collection, which was held with 25% of the professionals of the hospital corresponding to 45 professionals.

The professionals drawn to participate in the survey were informed about the purpose of the study at the time of data collection and they were invited to participate. The researcher highlighted the importance of participating in the study ensuring the secrecy and anonymity of the information. The participants' consent was obtained through the signature of an informed consent form, which complied with the resolution No. 196/96 of the National Health Council.

The data collection period was from 1st to 17th August 2012, after the project was approved by the Committee of Ethics in Research and Teaching of Cesmac University

Center (COEPE-CESMAC) receiving favorable opinion under Opinion No. 1303/12.

The tabulation of the results was held using the Epi Info 7 software with simple statistics and the results were presented in two tables with frequency and percentage. Subsequently, these results were compared to the data found in the literature.

RESULTS

Table 1 shows the data regarding the characterization of the population of this study, which consisted of 45 individuals, predominantly female (93%). Of these, 19 (42.2%) were aged from 30 to 39 years, nine (20%) from 20-29 years, 9(20%) from 40-49 years, and 8(17.8%) were over 50 years of age. The predominant professional category was composed of nursing technicians (51.1%), followed by nurses (33.3%) and nursing assistants (15.6%).

With respect to the time of experience as a nursing professional, 14 (31.1%) had between 11 and 20 year experience, followed by 11 (24.5%) with five years or less, 10 (22.2%) between 6-10 years, and 10(22.2%) with more than 20 years. The weekly working hours in the institution ranged from 30-40 hours and the majority (73.4%) reported that they worked 30 hours per week.

As for the number of jobs, 23(51%) professionals reported they had only one job at the institution and out of the 22(49%) professionals who reported having two jobs, 95% worked in health care. Among the professionals who had two jobs in health care, 68% worked in two hospitals, 9% at the hospital and basic health care units, 9% at the hospital and mobile emergency care services, and 14 at the hospital and other institutions such as specialized centers, clinics and laboratories. With respect to the working time in the institution, 15(33.3%) had between 6-10 years of experience, 14 (31.1%) had less or equal to 5 years of experience, and 13(28.9%) had between 11-20 years of experience.

Regarding the vaccination schedule against hepatitis B, 39 (86.6%) had completed it, 3(6.7%) had it incomplete, and 3(6.7%) were not aware about their vaccination situation. As for the vaccination schedule against tetanus, 41 (91.1%) professionals had completed it, 2(2.2%) had it incomplete, and 3(6.7%) were not aware about their vaccination schedule.

Table 1. Characterization of nursing professionals in a university hospital. Maceió, 2012.

Variables	Specifications	n°	%
Sex	Female	42	93
	Male	3	7
Age (years)	20 - 29	9	20
	30 - 39	19	42.2
	40 - 49	9	20
	>50	8	17.8
Role	Nurse	15	33.3
	Nursing technician	23	51.1
	Nursing assistant	7	15.6
Number of jobs	One	23	51
	Two	22	49
Jobs	UH	23	51.1
	UH+ hospital	15	33.3
	UH+ basic unit	2	4.4
	UH + SAMU	2	4.4
	UH+ other	3	6.8
Working hours at the institution (hours/week)	30	33	73.3
	36	2	4.4
	40	10	22.2
Nursing experience (years)	< 05	11	24.5
	06 - 10	10	22.2
	11 - 20	14	31.1
	>20	10	22.2
Experience at the institution (years)	< 05	14	31.1
	06 - 10	15	33.3
	11 - 20	13	28.9
	>20	3	6.7
Vaccination schedule: hepatitis B	Complete	39	86.6
	Incomplete	3	6.7
	Does not know	3	6.7
Vaccination schedule: tetanus	Complete	41	91.1
	Incomplete	2	2.2
	Does not know	3	6.7

Note: UH = university hospital

Table 2 presents data concerning the knowledge about biosafety and the use, disposal and injuries related to needlestick and sharps instruments. As for the level of knowledge about biosafety, 32(71.1%) professionals considered that their level was good, followed by 8(17.8%) that considered it great, and 5(11.1%) who considered it weak.

The habit of disposing needlestick and sharps instruments of 37(82.2%) professionals comprised using standard containers, and 8(17.8%) professionals reported that the

disposal was carried out in containers not suitable for this purpose. Needlestick and sharps instruments most used by the population of this study were needles, referred to by 88.9% of the professionals as the most used instrument.

Out of the 45 professionals who participated in the survey, 40% stated they had suffered needlestick/sharps injuries with occupational exposure to biological material in the course of their experience at the institution.

Table 2. Distribution of nursing professionals of a university hospital according to their knowledge about biosafety and the use and disposal of needlestick/sharps instruments. Maceió, 2012.

Variables	Specifications	n°	%
Level of knowledge about biosafety	Excellent	8	17.8
	Good	32	71.1
	Weak	5	11.1
Habit of needlestick and sharps instruments disposal	Standard container	37	82.2
	Other	8	17.8
Needlestick and sharps instruments most used iat the institution	Needle	40	88.9
	Scalpel	5	11.1
Suffered needlestick/sharps injuries at the institution	Yes	18	40
	No	27	60

Table 3 presents data regarding the characterization of nursing professionals who were victims of needlestick/sharps injuries. Out of the 18 professionals that suffered these injuries, 100 were female, eight (44.4%) were aged from 30 to 39 years, 9(50%) were nursing technicians, and 12 (66.7%) had two jobs. Regarding working hours, 12(66.7%) professionals worked 30 hours per week. With

respect to the time of experience at the institution, 8(44.4%) had worked between 11 and 20 years at the institution, 6(33.3%) had worked more than 20 years, and 4(22.2%) had worked five years or less.

Regarding the vaccination schedule, 14 (77.8%) professionals had complete hepatitis B vaccination schedule and 17 (94.4%) had complete tetanus vaccination schedule.

Table 3. Characterization of nursing professionals of a university hospital victims of needlestick/sharps injuries. Maceió, 2012.

Variables	Specifications	n°	%
Sex	Female	18	100
	Male	0	0
Age (years)	20 - 29	2	11.1
	30 - 39	8	44.4
	40 - 49	3	16.7
	>50	5	27.8
Role	Nurse	5	27.8
	Nursing technician	9	50
	Nursing assistant	4	22.2
Number of jobs	One	6	33.3
	Two	12	66.7
Working hours at the institution (hours/week)	30	12	66.7
	36	1	5.5
	40	5	27.8
Nursing experience (years)	< 05	3	16.7
	06 - 10	4	22.2
	11 - 20	5	27.8
	>20	6	33.3
Experience at the institution (years)	< 05	4	22.2
	06 - 10	6	33.3
	11 - 20	8	44.4
Vaccination schedule: hepatitis B	Complete	14	77.8
	Incomplete	2	11.1
	Does not know	2	11.1
Vaccination schedule: tetanus	Complete	17	94.4
	Incomplete	0	0
	Does not know	1	5.6

Table 4 shows data concerning the characterization of environment conditions at the time the nursing professionals suffered needlestick/sharps injuries. Of the professionals who were victims of such accidents, 8(44.4%) had suffered only one

accident, 5(27.8%) two accidents, and 5(27.8%) three or more accidents.

Needlestick and sharps instruments most involved in the accidents were needles (88.9%), followed by scalpels (11.1%). Of this material, 61.1% of needlestick and sharps instruments were contaminated by blood and

the body area most affected had been the hands (88.9%). A total of 14 (77.8%) professionals used individual protective equipment (IPE) at the time the injuries occurred.

With respect to the cause of the injuries, 14 (77.8%) had been caused by carelessness/inattention on the part of the professionals, 3(16.7%) due to needle recapping and 1(5.5%) due to tiredness. The sector with the highest occurrence of injuries was the Medical Clinic with 5(27.8%) cases, followed by the Surgical Clinic with 4(22.2%)

cases, and the Oncology Centre with 3(16.7%) cases.

Out of the 18 professionals who had suffered needlestick/sharps injuries, 11(61.1%) classified the injury as minor and seven (38.9%) considered it had been serious. A total of 66.7% of the accidents had been reported to the Hospital Acquired Infection Control Service, and 33.3% of the accidents had not been reported, because the professionals had considered they had had minor accidents.

Table 4. Characterization of environment conditions at the time the nursing professional suffered a needlestick/sharps injury. Maceió, 2012.

Variables	Specifications	n°	%
Needlestick/sharps injuries	One	8	44.4
	Two	5	27.8
	Three or more	5	27.8
Needlestick and sharps instrument	Needle	16	88.9
	Scalpel	2	11.1
Biological material	Blood	11	61.1
	Other	7	38.9
Body part affected	Hand	16	88.9
	Feet	2	11.1
Used IPE	Yes	14	77.8
	No	4	22.2
Cause of the accident	Carelessness	14	77.8
	Needle recapping	3	16.7
	Fatigue	1	5.5
Sector where the accident took place	Medical Clinic	5	27.8
	Surgical Clinic	4	22.2
	Pediatrics Clinic	2	11.1
	Oncology Center	3	16.7
	Nephrology Center	2	11.1
	Other	2	11.1
Classified the accident as	Minor	11	61.1
	Serious	7	38.9
Reported the accident	Yes	12	66.7
	No	6	33.3

Table 5 shows the data with respect to the characterization of procedures carried out after exposure to biological material. The procedure performed by 100% of the professionals was undergoing exams. Of these professionals, 12(100%) had undergone anti-HIV tests, and 10(83.3%) had undergone HBsAg and anti-HCV tests. The performance of chemoprophylaxis was not necessary for 91.7%

of the professionals who had suffered needlestick/sharps injuries. Only 8.3% had undergone chemoprophylaxis because the source patients were HIV positive. The accidents had been reviewed and there was an indication of antiretroviral chemoprophylaxis and post-exposure prophylaxis.

Table 5. Characterization of post-exposure treatment for nursing professionals victims of accidents with biological materials at a university hospital of Alagoas, Maceió, 2012.

Variables	Specifications	n°	%
Specified post-exposition treatment	Exams	12	100
	Other	0	0
Exams performed	Anti-HIV	12	100
	HBsAg	10	83.3
	Anti-HCV	10	83.3
Chemoprophylaxis	Yes	1	8.3
	No	11	91.7

DISCUSSION

The nursing staff has always consisted mostly of female professionals. This feature has been highlighted in several studies, with a variation from 85.2 to 93.4%. However, it may be noted that this fact has been changing over

the years with the increasing inclusion of men in this labor market.⁵⁻⁸

The predominant professional category was nursing technician (51.1%), followed by nurses (33.3%) and nursing assistants (15.6%). Within hospital contexts, nursing care is the object of central intervention in the nursing work, conducted mainly by nursing assistants and

technicians. Eventually, nurses take part in health care provided, because they deal with actions focused on planning of assistance and they create suitable conditions so that the work can be carried out by nursing assistants and technicians.⁵

The present study identified that 86.6% of the professionals had completed the vaccination schedule against hepatitis B. Similarly, other studies identified adherence of 74.3 and 90%.⁸⁻¹⁰

The habit of needlestick and sharps instruments disposal that most professionals (82.2) had was characterized by the use of standard containers; however, a high percentage of professionals (17.8%) reported that the disposal was performed using containers not suitable for this purpose. This is a worrisome fact, because the inadequate disposal has been considered responsible for 14.9 and 26.7% of accidents among nursing workers.⁹

A little below the data found in the literature (which recorded incidences between 41 and 80.4% of accidents involving biological material), 40% of the professionals in this survey affirmed to have suffered needlestick/sharps injuries with occupational exposure to biological material in the course of their experience at the institution.⁸⁻¹¹

In the present study, there was predominance of accidents involving women—data also pointed out in the literature—reflecting a characteristic of the nursing staff that, historically, has been exerted by women.¹²⁻³

Similarly to this study, other authors have found that accidents were more frequent among nursing professionals who had worked for 10 years or more in the profession. They stated that workers that had been performing the profession for many years can find it difficult to accept the recommendations advocated by standard precautions, since these recommendations differ from concepts learned during their training.¹²⁻⁴

Resembling with the findings in this survey, the needles are described by various authors as the needlestick and sharps instruments responsible for most injuries (61 to 88.6%), and blood is the biological material most involved in these percutaneous exposures.⁸⁻¹¹⁻¹²⁻¹⁵

Estimates of the World Health Organization (WHO) show that there are about three million needlestick/sharps injuries caused by contaminated needles in the world annually. However, this projection might be underestimated, particularly by the absence

of surveillance systems and the underreporting of accidents.¹²

Inattention was considered the main factor for occurrence of accidents, showing incidence of 77.8%. In a hospital network, inattention was also considered a main factor affecting 48.1% of nursing professionals. Additional factors have been cited by other authors, such as: stress; physical fatigue; lack of clarification on the subject; multiple jobs; lack of staff; lack of sensitivity and awareness; inadequate supervision; lack of risk perception; and lack of continuing education programs.⁸

A study conducted in a university hospital of Brasília, DF, assessed needlestick/sharps injuries and found that the unit with the highest number of accidents had been the medical clinic, which corroborates with the findings in this study.¹⁶

A total of 66.7% of the accidents had been reported to the Hospital Acquired Infection Control Service; however, 33.3% of the accident had not been reported because the professionals considered them as minor accidents. A similar fact was found in the literature with underreporting rates of 34.4% regarding needlestick/sharps injuries for this category.⁸

Other authors describe fear, stigma, legal implications, and punishments as factors influencing underreporting among nursing professionals.⁸ The importance of reporting accidents—mainly those involving needlestick/sharps injuries—does not seem to raise nursing professionals' awareness, even with the great impact of the possible contamination by hepatitis and HIV viruses. One of the ways to minimize underreporting is providing information about the importance and the compulsory character of reporting the accidents.

CONCLUSION

This study showed the occurrence of needlestick/sharps injuries among nursing professionals of a university hospital in Alagoas. The concern with this issue gained prominence after the identification of the first case of HIV seroconversion in 1984, a fact that propelled the growth of scientific literature on biological risk.

Among the 45 nursing professionals that participated in the research, 37 (82.2%) had the habit of disposing needlestick and sharps instruments in standard containers, and eight (17.8%) disposed them in containers not suitable for this purpose, which contributes to the occurrence of occupational accidents.

The incidence of needlestick/sharps injuries among nursing professionals of this hospital was 40%. Blood was the biological material involved in 61.1% of the cases and the hands were the most affected body part (88.9%). The main cause of the accidents was carelessness/inattention on the part of the professionals (77.8%).

Underreporting of accidents occurred in 33.3% of the cases, because the professionals had underestimated the risk of occupational contamination by HIV and hepatitis viruses and classified the accidents as minor, taking measures and performing tests on their own.

The procedures performed by 100% of the professionals were undergoing anti-HIV tests (since the major concern of professionals is contamination with HIV/AIDS, a disease stigmatized by the population) and 83.3% underwent HBsAg and anti-HCV tests. Chemoprophylaxis was held in 8.3% of the professionals victims of needlestick/sharps injuries, because the accidents occurred at the Day Hospital with HIV-positive source patients.

After evaluation of the results, it is recommended to carry out training programs on biosafety for the professionals, in addition to conduct continuing education and lectures on reporting accidents, thus seeking the reduction of needlestick/sharps injuries and underreporting, with the purpose of promoting discussions that encourage workers to rethink about their practices and safer performances. It is expected that the present study may have contributed to make professionals and institutions more aware about the importance of prevention and reporting of accidents.

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