Occupational accident with sharpe edge material among workers of an operating center

ACIDENTE OCUPACIONAL POR MATERIAL PERFUROCORTANTE ENTRE PROFISSIONAIS DE SAÚDE DE UM CENTRO CIRÚRGICO

ACCIDENTE LABORAL POR EXPOSICIÓN A MATERIAL CORTO-PUNZANTE ENTRE LOS PROFESIONALES DE UN CENTRO QUIRÚRGICO

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ABSTRACT

Occupational accidents involving piercing-cutting material are a concern for institutions and health workers due to the high frequency of invasive procedures and the dynamics involved in their practice. The objective of the present study was to identify the incidence of accidents, devices involved, contributing factors and post-accident behaviors. A cross-sectional study was conducted among 127 healthcare workers from the operating center. Of the total number of accidents reported, 23.6% (30/127) involved piercing-cutting materials, including needles (73.3%), scalpels (6.7%) and electrocautery (6.7%). The factors contributing to the accident were: lack of attention (36.7%), poor working conditions (20.0%), neglect (13.3%), rushing (10%) and accident/chance (6.7%). Only 15.4% of the accidents were recorded. Underreporting was due to: irrelevance of the accident, unaware of the protocol of routine, negligence and work overload. Results show the importance of implementing strategies for adopting/reviewing post-accident protocols aiming at reducing accidents and their underreporting.

KEY WORDS

Accidents, occupational.
Occupational health.
Surgery Department, Hospital.
Health personnel.

RESUMO

O acidente ocupacional por material perfurocortante constitui uma preocupação para instituições e trabalhadores de saúde, devido à elevada frequência de procedimentos invasivos, e a dinâmica do trabalho. Objetivou-se identificar a incidência dos acidentes, dos materiais envolvidos, dos fatores contribuintes e das condutas tomadas pós-acidente. Participaram de um estudo transversal 127 funcionários do centro cirúrgico. Registraram-se 23,6% (30/127) acidentes com envolvimento de agulha (73,3%), lâmina de bisturi (6,7%) e eletrocautério (6,7%). Os fatores contribuintes para o acidente foram: falta de atenção (36,7%), más condições de trabalho (20,0%), descuido (13,3%), pressa (10%) e acaso/azar (6,7%). Somente 15,4% dos acidentes foram registrados. A subnotificação deveu-se à irrelevância do acidente, desconhecimento do protocolo de rotina, displicência e sobrecarga de trabalho. Os resultados alertam para a importância de se implementar estratégias para adoção/revisão de protocolos pós-acidentes, visando a redução dos acidentes e de sua subnotificação.

DESCRITORES

Acidentes de trabalho.
Saúde do trabalhador.
Centro Cirúrgico Hospitalar.
Pessoal de saúde.

RESUMEN

El accidente laboral por elementos corto-punzantes constituye una preocupación para instituciones y trabajadores de la salud, debido a la elevada frecuencia con la que se realizan procedimientos invasivos y por la dinámica del trabajo. Se objetivó identificar la incidencia de los accidentes, los materiales involucrados, los factores contribuyentes y las conductas tomadas con posterioridad al accidente. Participaron de un estudio transversal 127 trabajadores de un centro quirúrgico. Sobre un porcentaje de accidentados del 23,6% (30/127), el 73,3% sufrió accidentes involucrando agujas, 6,7% se accidentó con hojas de bisturí y 6,7% se accidentó con electrocauterizador. Los factores que contribuyeron a los accidentes fueron: falta de atención (36,7%), malas condiciones de trabajo (20,0%), descuido (13,3%), prisa (10,0%) y casualidad / azar (6,7%). Sólo el 15,4% de los accidentes fueron registrados. La falta de notificación se debió a la irrelevancia del accidente, desconocimiento del protocolo de rutina, displicencia y sobrecarga de trabajo. Los resultados alertan sobre la importancia de implementar estrategias para adopción / revisión de protocolos post accidentes, apuntando a la reducción de la cantidad de accidentes y a evitar la ausencia de registro de los mismos.

DESCRIPTORES

Accidentes de trabajo.
Salud laboral.
Servicio de Cirugía en Hospital.
Personal de salud.

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INTRODUCTION

Occupational accidents caused by exposure to biological material are a constant source for health institutions and workers, as the hospital environment favors the occurrence of these events, mainly due to the high frequency of invasive procedures and the work intensity and dynamics[1].

In health professionals' work at different care delivery units, accident risks can differ according to the work process, the specific characteristics of care delivery, infrastructure and available resources.

Accidents involving piercing and cutting material and body fluids stand out, which are due to activities like the handling of needles, scalpel blades, scissors and other instruments[1].

In this context, the surgical center, due to the characteristics of patient care delivery, demanding both skill and precision, associated with workers' high stress levels, can favor the occurrence of needlestick injuries contaminated by microorganisms and/or infectious material[2].

According to the Centers for Disease Control and Prevention (CDC), approximately 384,325 cases of percutaneous accidents involving health workers occur every year in American hospitals, with contamination risks amounting to 0.3% for the Human Immunodeficiency (HIV) virus (HIV), between 6% and 30% for the Hepatitis B virus (HBV) and between 0.5% and 2% for Hepatitis C (HCV)[1-2].

> ...the surgical center [...] can favor the occurrence of needlestick injuries contaminated by microorganisms and/or infectious material...

Despite the lack of Brazilian data about the magnitude of occupational accidents in the national context, different regulatory standards, decrees and guidelines officially recommend occupational accident prevention measures for health workers and institutions. These measures relate to the use of individual protection equipment, minimization of consequent problems and compulsory accident notification[3-6].

Hence, reflections about the high levels and magnitude of occupational accidents caused by piercing and cutting material and about health professionals' frequent lack of knowledge about the importance of working in conditions that are safe for themselves and the patients motivated this research. The researchers hope its results can contribute to the assessment of biosafety protocols adopted in health professionals' care practices, particularly at the surgical center, as well as to the greater dissemination of knowledge production about the theme, with a view to health professionals' greater awareness and the consequent adoption of a different perspective on their practice.

OBJECTIVE

Identify the incidence of needlestick injuries, materials involved, contributing factors and post-accident conducts.

METHOD

An epidemiological and cross-sectional research was carried out. Data were collected in March and April 2007 at the surgical center of a general public university hospital were teaching, research and care delivery take place. First, approval for the research was obtained from the Research Ethics Committee under Opinion No 558/06, in compliance with National Health Council Resolution 196/96 about research involving human beings. Professionals voluntarily answered the questionnaire after giving their explicit authorization through the signing of the Free and Informed Consent Term (FICT).

The study population comprised all employees from the health professional team (physicians, nurses, nursing auxiliaries and technicians and maintenance staff) who worked at the surgical center of the study hospital.

A semistructured questionnaire was used for data collection, including questions related to demographic aspects (gender, age, profession, service time, time of work at the sector), questions about the occurrence of needlestick injuries in 2006 and conducts immediately after the occupational accident (notification or not). The study was limited to 2006 in order to minimize any memory bias. Participants answered the questionnaire in the researcher's presence, in a private room, at a previously scheduled time. None of the selected professionals refused to participate.

After the collection, data were coded and inserted in the Statistical Program for the Social Sciences (SPSS) for Windows database, (version 11.5: SPSS, Inc. Chicago, III). Then, data were described statistically, calculating percentages, and presented as tables and graphs.

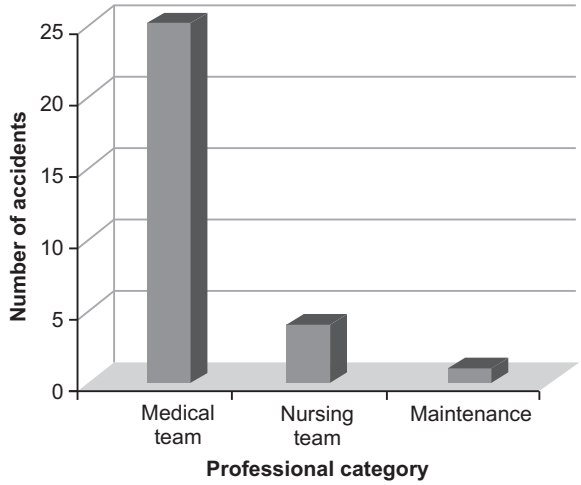
RESULTS AND DISCUSSION

All multiprofessional team members who were active at the surgical center at the time of research participated, excluding workers on holiday, leave or medical leave, totaling 127 (83.5%) professionals from the sector. These were distributed in the following categories: external physicians (2.4%), preceptor physicians (21.4%) and medical residents (30.1%) (medical team); nurses (1.6%), nursing technicians (20.9%) and nursing auxiliaries (16.5%) (nursing team); and general service professionals (7.1%).

The professionals' mean age was 34 years; mean time sine graduation was ten years; mean activity time at the study hospital was eight years and mean work time at the surgical center seven years. This finding was similar to another research about health professionals working at hospitalization units, with a mean age of 37.7 years and 8.5 years working at the institution[7].

As shown in Figure 1, 30 needlestick injuries were reported among the surgical center professionals of the study hospital in 2006. The global accident incidence rate was 23.6% (30/127), 83.3% of which in the medical team, 13.4% in the nursing team and 3.3% in the maintenance category during the study period.

Figure 1 - Distribution of occupational accidents in 2006 involving piercing and cutting material among surgical center professionals - Belo Horizonte - 2007



Similarly to these findings with regard to categories, another study[8] among surgical center professionals registered 44.5% of accidents among medical residents, 24.1% among physicians, 14.7% among nursing technicians and auxiliaries, 10.2% among nurses and 11.3% among cleaning professionals.

With regard to the piercing-cutting material involved in the accidents, the ranking was as follows: needle (73.3%), followed by scalpel blade (6.7%), electrocautery (6.7%) and others, such as surgical instruments.

Factors contributing to the accidents' occurrence among workers were lack of attention (36.7%), followed by bad work conditions (20.0%), a colleague's carelessness (13.3%), hurry (10%) and coincidence/bad luck (6.7%). This differs from another research in which lack of attention was considered the main factor associated with 48.1% of nursing professionals' exposures in a hospital network[2].

The high incidence of occupational accidents involving the medical team may be related with professionals' posture as shown by the abovementioned justifications, which indicate decreased perception of accident risks.

This decreased perception was also observed after the occupational accident, due to the low demand for medical care (30%) and post-accident laboratory tests (26.7%). Likewise, findings from another research also indicated low rates (33%) of medical care demands after the accident, demonstrating that health professionals tend to be careless with their own health in cases of exposure to piercing and cutting material involving blood and/or body fluids[9].

The lowest demand for post-accident care from specialized physicians came from medical professionals (24%). This can be understood as professionals' self-care, due to their academic training. In this case, this attitude should be reconsidered, as not all medical specialties know the correct routine conduct after exposure.

After the accident, the way the notification is done should support the worker, ranging from medical care, laboratory tests for the accident victim and source patient, to registration in the Occupational Accident Communication (CAT) form, which should officially occur within 24 hours, depending on the work regime[10].

In all cases, the medical assessment and laboratory tests after the accident should be aimed at proposing the adequate conduct in terms of chemoprophylaxis, vaccination and follow-up by the institution's trained medical professional.

Despite the victim's great concern with the possibility of diseases like AIDS, hepatitis B and hepatitis C, occupational illness prevention also includes immunization against tetanus and diphtheria (adult), measles, mumps and rubella (MMR), yellow fever and hepatitis B, through the complete vaccination schedule recommended by the Ministry of Health[5,10].

In this sense, research has evidenced inadequate prevention through vaccination against Hepatitis B in health professionals (56% to 90%), while a complete vaccination schedule (three doses) is recommended for all workers[5,11-12].

In this respect, a possible inference is remarkable with respect to how workers perceive the contamination ("it won't happen to me"), making adherence to biosafety standards more difficult, mainly with regard to the vaccination schedule against hepatitis B.

In this research, this inference that *it won't happen to me* was also supported by the main justifications for not submitting the patient to laboratory tests, due to the fact that the exposure is characterized as mild, unimportant, indifference, verification of the source patient's recent tests, high accident frequency and burocracy. Besides, the source patient was submitted to laboratory tests in only 36.7% of accident cases.

It was also observed in this research that post-accident laboratory tests were more frequent among patients than among professionals. According to literature, this result can be explained by the feelings professionals experience when

they are victims of accidents, such as fear about test results, stress, anxiety, anguish, among others[2,13].

Thirty accidents were found, but only 26 accident victims answered questions about the notification, which was officially done in only 15.4% (4) of cases. Subnotification amounted to 76.9% (20) in the medical team and 7.7% in the nursing team[2].

Factors contributing to subnotification were categorized and are described in Table 1.

Table 1 - Frequency of factors that contributed to the subnotification of occupational accidents among accident victims working at the Surgical Center - Belo Horizonte - 2007

Determining factors	N	%
Irrelevant accident	05	22.7
Lack of knowledge about routine protocol	05	22.7
Indifference	05	22.7
Source patient with recent tests	02	9.5
High number of accidents	03	13.6
Administrative difficulties for registration	02	9.5
Total	**22**	**100.0**

These results evidenced the considerable subnotification of accidents (84.6%), higher than literature findings, ranging from 18.2% to 53.9%. This confirms the need for institutional interventions to increase this registration, with a view to improving workers' understanding about self-care, making them reflect on their professional practice and, mainly on the legal aspect of the occupational accident[14-15].

One way to minimize subnotification is by providing information about the importance of and obligation to register accidents. In this sense, the lack of information about the register can be another important aspect of subnotification, as a form of guaranteeing labor rights and supporting claims for better safety conditions at work. This factor was perceived in only 22.7% of professionals under analysis, in line with literature and confirming its importance for subnotification[16-17].

For cases of exposure to biological agents, NR 32 established conducts like diagnosis, follow-up and prevention of seroconversion and diseases, decontamination of the work environment, medical treatment and emergency care for professionals, besides information about care delivery to workers (care protocols, immunoglobulin administration, vaccines, drugs, material and special inputs for workers)[5].

These instructions should be disseminated at the institutions through posters and individual information to the workers, addressing prevention measures and routines at the work site in view of exposure to biological agents. Many health services do not know this standard though, or do not disseminate it to enhance professionals' involvement, with a view to stimulating critical and participatory thinking for the prevention of occupational accidents.

One study[2] also registered factors contributing to subnotification, mentioning lack of knowledge about the notification (35.8%), considering the notification unnecessary (25.6%) and lack of time, as well as source patients with negative test results and accidents classified as simple (49.9%).

Other known factors that can also influence subnotification among health professionals but were not identified in this research are fear, stigma, legal implications, punishments and even dismissals[18].

These findings are limited by the small sample size, mainly in some categories under assessment, which did not permit association tests. Another important aspect that should have been observed was the interviewees' possible omission about accident events out of constraint or fear of losing their job.

CONCLUSION

This study revealed the high incidence of occupational accidents involving piercing and cutting material and considerable subnotification in the multiprofessional care team, mainly when analyzed separately, particularly in the medical team.

The needle was the main material involved in accidents and the reasons attributed to the accident events among these workers were lack of attention, bad work conditions, colleague's carelessness, hurry and coincidence/bad luck.

Irrelevance of the accident, lack of knowledge about the routine protocol, indifference and work overload were considered factors that contributed to the subnotification of accidents.

In view of these results, effective prevention and control programs should be put in practice, involving piercing and cutting material, the notification flow and the return of accident statistics in the multiprofessional care team, with a view to raising these professionals' awareness about the severity of this issue, the risks they are exposed to and individual responsibility in the prevention context.

These data also alert to the importance of the theme, underlining the need to construct, adopt and/or put in practice accident notifications strategies, protocols and conducts when involving biological material, either through a permanent education program, clinical meetings and/or thematic seminars, in order to promote all professionals' greater involvement.

Moreover, continuing and active epidemiological surveillance of occupational accidents is important and adds up to other conducts. This also represents an indicator in occupational health care and serves to translate reality into data.

The researchers hope this study will support occupational health care planning and management, permitting

the follow-up of trends and variations in the accident context, with a view to the review of best practice conducts and protocols for the care team. These study results can also contribute to comparisons with other institutions and surgical centers or other units with similar characteristics.

REFERENCES

1. Nishide VM, Benatti MCC, Alexandre NMC. Ocorrência de acidente do trabalho em uma unidade de terapia intensiva. Rev Lat Am Enferm.. 2004;12(2):204-11.

2. Pereira ACM, Silva AR, Rocha CF, Cordeiro IS, Lopes CM. Work accidents with needles and other Sharp medical devices in the nursing team at public hospitals. Online Braz J Nurs [periódico na Internet]. 2004 [citado 2005 mar. 20];3(3):[cerca de 10 p]. Disponível em: http://www.uff.br/nepae/objn303pereiraetal.htm

3. Brasil. Ministério da Saúde. Portaria n. 777, de 28 de abril de 2004. Dispõe sobre os procedimentos técnicos para a notificação compulsória de agravos à saúde do trabalhador em rede de serviços sentinela específica, no Sistema Único de Saúde – SUS [legislação na Internet]. Brasília; 2004. [citado 2008 abr. 25]. Disponível em: http://dtr2001.saude.gov.br/sas/PORTARIAS/Port2004/GM/GM-777.htm

4. Brasil. Ministério do Trabalho e Emprego. Secretaria de Inspeção do Trabalho. Portaria n. 25, de 15 de outubro de 2001. Altera a Norma Regulamentadora - NR 6, que trata de Equipamento de Proteção Individual [legislação na Internet]. Brasília; 2006. [citado 2008 abr. 25]. Disponível em: http://www.trabalhoseguro.com/Portarias/port_25_2001_altera_nr6.html

5. Brasil. Ministério do Trabalho e Emprego. Portaria n. 485, de 11 de novembro de 2005. Aprova a norma regulamentadora n. 32 (Segurança e Saúde no Trabalho em Estabelecimentos de Saúde) [legislação na Internet]. Brasília; 2005. [citado 2008 abr. 25]. Disponível em: http://www.mte.gov.br/legislacao/Portarias/2005/p_20051111_485.pdf

6. Centers for Disease Control and Prevention (CDC). Healthcare Infection Control Practices Advisory Committee. Guideline for Isolation Precautions: preventing transmission of ifnectious agents in healthcare settings. Atlanta; 2007.

7. Brevidelli M, Cianciarullo T. Compliance with standard-precautions among medical and nursing staff at a university hospital. Online Braz J Nurs [periódico na Internet]. 2006 [citado 2007 jan. 4];5(1). Disponível em: http://www.uff.br/objnursing/index.php/ nursing/article/view/291/57

8. Basso M. Acidentes ocupacionais com sangue e outros fluídos corpóreos em profissionais de saúde [dissertação]. Ribeirão Preto: Escola de Enfermagem de Ribeirão Preto, Universidade de São Paulo; 1999.

9. Azap A, Ergnul O, Memikoglu KO, Yesxilkaya A, Altunsoy A. Occupational exposure to blood and body fluids among health care workers in Ankara, Turkey. Am J Infect Control. 2005;33 (1):48-51.

10. Brasil. Ministério da Saúde. Secretaria de Atenção à Saúde. Departamento de Ações Programáticas Estratégicas. Exposição a material biológico. Brasília; 2006.

11. Silva RJO, Athayde MJPM, Silva LGP, Braga EA, Giordano MV, Pedrosa ML.Vacinação anti-hepatite B em profissionais de saúde. DST J Bras Doenças Sex Transm. 2003;15(3):51-5.

12. Almeida CAF, Benatti MCC. Exposições ocupacionais por fluidos corpóreos entre trabalhadores da saúde e sua adesão à quimioprofilaxia. Rev Esc Enferm USP. 2007;41(1):120-6.

13. Vieira M, Padilha MICS. O HIV e o trabalhador de enfermagem frente ao acidente com material perfurocortante. Rev Esc Enferm USP. 2008;42(4):804-10.

14. Tarantola A, Golliot F, L'Heriteau F, Lebascle K, Ha C, Farret D, et al. Assessment of preventive measures for accidental blood exposure in operating theaters:a survey of 20 hospitals in Northern France. Am J Infect Control. 2006;34(6):367-82.

15. Damasceno AP, Pereira MS, Souza ACS, Tipple AFV, Prado MA. Acidentes com material biológico: a percepção do profissional acidentado. Rev Bras Enferm. 2006; 59(1):72-7.

16. Marziale MHP. Subnotificação de acidentes com perfurocortantes na enfermagem. Rev Lat AM Enferm. 2003;56(2):164-8.

17. Marziale MHP, Rodrigues CM. A produção científica sobre os acidentes de trabalho com material perfurocortante entre trabalhadores de enfermagem. Rev Lat Am Enferm. 2002:10 (4):144-57.

18. Sêcco IAO, Robazzi MLCC, Gutierrez PR, Matsuo T. As notificações de acidentes de trabalho com material biológico entre trabalhadores da equipe de enfermagem de hospital-escola público. Cient Ciênc Biol Saúde. 2004;5/6(1):89-95.

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