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Profile of sharps accidents among nursing teams and related factors

Perfil e fatores associados aos acidentes com perfurocortantes entre a equipe de enfermagem

Perfil y factores asociados a los accidentes con cortopunzantes en el equipo de enfermería

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ABSTRACT

Objective: to analyse the accidents with sharps profile among the nursing staff reported at two hospitals. **Methods:** this descriptive, documentary study was conducted at a teaching hospital and a philanthropic hospital in the interior of São Paulo State. Data were collected from accident notification forms involving biological material and nursing personnel between 2016 and 2020, and analyzed using descriptive statistics. The research protocol was approved by the research ethics committee. **Results:** 208 accidents were identified: 187 (89.9%) at the philanthropic hospital and 21 (10.1%) at the university hospital; respectively, 119 (63.64%) and 35 (18.71%) among nursing technicians, and 51 (27.27%) and 8 (38.1%), during sharps disposal. Needles caused 166 (79.8%) accidents. **Conclusion:** at both hospitals, most accidents involved needles, at the time of sharps disposal, and mainly affected nursing technicians.

Descriptors: Nursing; Occupational Risks; Accidents, Occupational; Medical Waste; Needlestick Injuries; Occupational Accidents Registry.

RESUMO

Objetivo: analisar o perfil dos acidentes ocorridos com materiais perfurocortantes entre a equipe de enfermagem notificados em dois hospitais. **Métodos:** estudo documental e descritivo realizado em um hospital de ensino e um filantrópico do interior paulista. Os dados foram coletados em fichas de notificação de acidentes com material biológico envolvendo profissionais da enfermagem entre 2016 e 2020, e analisados por meio de estatística descritiva. Protocolo de pesquisa aprovada pelo comitê de Ética em Pesquisa da instituição envolvida. **Resultados:** foram identificados 208 acidentes: 187 (89,9%) no hospital filantrópico e 21 (10,1%) no hospital de ensino. No hospital filantrópico e no hospital universitário foram notificados, respectivamente, 119 (63,64%) e 35 (18,71%) acidentes entre os técnicos de enfermagem; sendo 51 (27,27%) e 8 (38,1%) durante descarte de perfurocortante. Agulhas causaram 166 (79,8%) acidentes. **Conclusão:** os acidentes nos dois hospitais ocorreram majoritariamente por agulhas, no momento de descarte de perfurocortante, acometendo principalmente os técnicos em enfermagem.

Descritores: Enfermagem; Riscos Ocupacionais; Acidentes de Trabalho; Ferimentos Penetrantes Produzidos por Agulha; Notificação de Acidentes de Trabalho.

RESUMEN

Objetivo: analizar el perfil de los accidentes con objetos cortopunzantes entre el personal de enfermería notificados en dos hospitales. **Métodos:** estudio documental y descriptivo realizado en un hospital universitario y un hospital filantrópico del interior de São Paulo. Los datos se recolectaron en fichas de notificación de accidentes con material biológico involucrando profesionales de enfermería entre 2016 y 2020 y se analizaron mediante estadística descriptiva. Investigación aprobada por el comité de ética en investigación de la institución involucrada. **Resultados:** se identificaron 208 accidentes: 187 (89,9%) en el hospital filantrópico y 21 (10,1%) en el hospital universitario. En el hospital filantrópico y en el hospital universitario fueron relatados 119 (63,64%) y 35 (18,71%) accidentes, respectivamente, entre técnicos de enfermería; siendo 51 (27,27%) y 8 (38,1%) durante la eliminación de objetos cortopunzantes. Las agujas provocaron 166 (79,8%) accidentes. **Conclusión:** los accidentes en ambos hospitales ocurrieron en su mayoría por agujas, en el momento de la eliminación de objetos cortopunzantes, afectando principalmente a los técnicos de enfermería.

Descriptores: Enfermería; Riesgos Laborales; Accidentes de Trabajo; Residuos Sanitarios; Lesiones por Pinchazo de Aguja; Notificación de Accidentes del Trabajo.

INTRODUCTION

Occupational Accidents (OAs) are characterized as sudden occurrences during the development of work activities, which can result in harms to workers' health through functional disorders or bodily injuries that cause death or loss or reduction of the capacity for work[1]. Among workplaces, hospitals are considered environments that offer a high risk for OAs, with presence of physical, chemical, biological, ergonomic and psychosocial risks[2].

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In turn, accidents with biological risk are the most common and represent a cause for concern for health professionals, given the potential for dangerousness and unhealthy conditions, as they are associated with direct contact with body fluids or manipulation of contaminated sharps that can facilitate the transmission of several pathogens, including the Human Immunodeficiency Virus (HIV) and Hepatitis C and B (HCV and HBV)[3]. It is noted that the greater the complexity of the health service, the more procedures are performed, also increasing the presence of sharps and, consequently, a greater exposure risk for health professionals[4].

In this context, Nursing professionals stand out as the category of workers most susceptible to accidents with biological risk, as they represent the largest professional segment working in health services, in addition to carrying out direct care activities with the patients and having regular contact with organic fluids and sharp devices[5].

Nursing professionals attribute several causes for the occurrence of accidents, with the following among them: inattention, haste, tiredness, distraction, work overload, non-use of Personal Protective Equipment (PPE), inappropriate disposal of materials and handling from the collection boxes[6,7]. In addition, lack of adequate physical and material resources, lack of organization in work processes and little support in the care of workers are also factors that increase the risk of accidents[8].

Given the above, it is verified that, although the topic is widely studied, gaps in knowledge still persist, such as the need to identify the main factors associated with accidents, from the epidemiological profile, to the professionals' attitudes, working conditions and influences of the disease caused by the type 2 coronavirus (COVID-19) pandemic in the occurrence of incidents, as well as the rules and protocols adopted by health facilities after an accident.

Thus, this study aimed at analyzing the profile of accidents involving sharps among the Nursing team members in two hospitals.

METHOD

This is a documentary, retrospective and descriptive study with a quantitative approach. Data collection was carried out from the notification forms of accidents with biological material involving Nursing workers in the period from 2016 to 2020 at a teaching hospital and in the period from 2017 to 2020 at a philanthropic hospital in inland São Paulo.

This time frame represents a significant sample of notifications recorded at the teaching hospital (small size), allowing the observation of important aspects of the problem, despite possible seasonality. In the philanthropic hospital, the time interval analyzed was shorter due to data availability the institution, as the records were accessible from 2017 onwards.

For the analysis of the notifications, the following inclusion criteria were adopted: accidents with sharps involving the Nursing team notified in the period from January 1st, 2016 to December 31st, 2020. Thus, other types of reported accidents involving other health professionals were excluded, as well as trainees from technical and higher Nursing courses.

The variables investigated were number of accidents in each year, role of the professional involved, agent and description of the agent causing the injury, circumstance and cause of the accident at both hospitals, as well as the protocols adopted after the occurrence of an accident. In addition to that, in the philanthropic hospital, the workers' length of service was verified, although this information was not available in the teaching hospital files.

The data were stored in a structured Microsoft Excel database , double-typed, and later converted into graphics using the EPI INFO Program. Subsequently, they were analyzed resorting to descriptive statistics, using frequency, mean and standard deviation.

In addition, the causes of the accidents were grouped into two categories: I) unsafe practices referring to the professionals' inappropriate attitudes and behaviors that can lead to accidents, such as performing procedures in a hurry or with inattention, poor dexterity when performing techniques and non-compliance with safety standards and protocols; and II) unsafe conditions related to the working conditions in general, such as lack of materials and adequate environment, lack of PPE, overwork, overload of tasks for the professionals and poor working conditions in general.

As for the ethical aspects, the research protocol was approved by the Research Ethics Committee of the institution involved.

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RESULTS

In the periods analyzed, 208 accidents involving sharps were identified among Nursing professionals, adding up the notifications of both hospitals, with the characterization related to the University Hospital presented in Table 1 and, in the case of the Philanthropic Hospital, in Table 2.

TABLE 1: Accidents with sharps recorded at the University Hospital from 2016 to 2020. São Carlos, SP, Brazil, 2020.

	Period						
Characteristics	**2016 (n=3)**	**2017 (n=3)**	**2018 (n=7)**	**2019 (n=2)**	**2020 (n=6)**	**Total (n=21)**	**Mean/Year 4.2**
Sector							
Medical Clinic	0 (0%)	1 (33.33%)	3 (42.86%)	0 (0%)	2 (33.33%)	6 (28.57%)	1.2
Pediatrics/Nursery	1 (33.33%)	0 (0%)	1 (14.29%)	0 (0%)	0 (0%)	2 (9.52%)	0.4
Emergency Room/SMU	2 (66.67%)	2 (66.67%)	3 (42.86%)	1 (50%)	4 (66.67%)	12 (57.14%)	2.4
SAD	0 (0%)	0 (0%)	0 (0%)	1 (50%)	0 (0%)	1 (4.76%)	0.2
Function							
Nurse	1 (33.33%)	1 (33.33%)	2 (28.57%)	2 (100%)	4 (66.67%)	10 (47.62%)	2
Nursing Technician	2 (66.67%)	2 (66.67%)	5 (71.43%)	0 (0%)	2 (33.33%)	11 (52.38%)	2.2
Causative agent							
Needle	2 (66.67%)	1 (33.33%)	5 (71.43%)	2 (100%)	5 (83.33%)	15 (71.43%)	3
Catheter	1 (33.33%)	2 (66.67%)	1 (14.29%)	0 (0%)	0 (0%)	4 (19.05%)	0.8
Razor blade	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (16.67%)	1 (4.76%)	0.2
Surgical material	0 (0%)	0 (0%)	1 (14.29%)	0 (0%)	0 (0%)	1 (4.76%)	0.2
Description of the agent							
Abocath	1 (33.33%)	2 (66.67%)	1 (14.29%)	0 (0%)	0 (0%)	4 (20%)	0.8
Needle with light	2 (66.67%)	1 (33.33%)	4 (57.14%)	2 (100%)	3 (60%)	12 (60%)	2.4
Suture needle	0 (0%)	0 (0%)	1 (14.29%)	0 (0%)	0 (0%)	1 (5%)	0.2
Scalpel blade	0 (0%)	0 (0%)	1 (14.29%)	0 (0%)	0 (0%)	1 (5%)	0.2
Scalp	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (40%)	2 (10%)	0.4
Circumstance of the accident							
Drug administration	1 (33.33%)	1 (33.33%)	1 (14.29%)	0 (0%)	1 (16.67%)	4 (19.05%)	0.8
Agitation in the patient	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (16.67%)	1 (4.76%)	0.2
Instrument preparation	0 (0%)	0 (0%)	1 (14.29%)	0 (0%)	0 (0%)	1 (4.76%)	0.2
Sharps disposal	1 (33.33%)	1 (33.33%)	3 (42.86%)	1 (50%)	2 (33.33%)	8 (38.1%)	1.6
Inattention	0 (0%)	1 (33.33%)	0 (0%)	0 (0%)	0 (0%)	1 (4.76%)	0.2
Carrying out a trichotomy	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (16.67%)	1 (4.76%)	0.2
Handling of the sharps disposal box	0 (0%)	0 (0%)	0 (0%)	1 (50%)	1 (16.67%)	2 (9.52%)	0.4
Carrying out a venipuncture	0 (0%)	0 (0%)	2 (28.57%)	0 (0%)	0 (0%)	2 (9.52%)	0.4
Use of inappropriate devices	1 (33.33%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (4.76%)	0.2
Cause of the accident							
Unsafe condition	2 (66.67%)	1 (33.33%)	2 (28.57%)	0 (0%)	1 (16.67%)	6 (28.57%)	1.2
Unsafe practice	1 (33.33%)	2 (66.67%)	5 (71.43%)	2 (100%)	5 (83.33%)	15 (71.43%)	3

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TABLE 2: Accidents with sharps recorded at the Philanthropic Hospital in the period from 2017 to 2020. São Carlos, SP, Brazil, 2020.

	Period					
Characteristics	**2017 (n=51)**	**2018 (n=38)**	**2019 (n=45)**	**2020 (n=53)**	**Total (n=187)**	**Mean/Year 46.75**
Sector						
CME	4 (7.84%)	1 (2.63%)	0 (0%)	0 (0%)	5 (2.67%)	1.25
Surgery Center	5 (9.8%)	5 (13.16%)	7 (15.56%)	9 (16.98%)	26 (13.9%)	6.5
Surgical Clinic	5 (9.8%)	2 (5.26%)	3 (6.67%)	5 (9.43%)	15 (8.02%)	3.75
Medical Clinic	16 (31.37%)	13 (34.21%)	21 (46.67%)	18 (33.96%)	68 (36.36%)	17
Maternity Ward	4 (7.84%)	7 (18.42%)	3 (6.67%)	1 (1.89%)	15 (8.02%)	3.75
Pediatrics/ Nursery	1 (1.96%)	1 (2.63%)	2 (4.44%)	1 (1.89%)	5 (2.67%)	1.25
Emergency Room	9 (17.65%)	3 (7.89%)	7 (15.56%)	15 (28.3%)	34 (18.18%)	8.5
SAD	0 (0%)	0 (0%)	0 (0%)	2 (3.77%)	2 (1.07%)	0.5
ICU	7 (13.73%)	6 (15.79%)	2 (4.44%)	2 (3.77%)	17 (9.09%)	4.25
Function						
Nursing Assistant	8 (15.69%)	8 (21.05%)	10 (22.22%)	9 (16.98%)	35 (18.72%)	8.75
Nursing Technician	36 (70.59%)	21 (55.26%)	27 (60%)	35 (66.04%)	119 (63.64%)	29.75
Nurse	7 (13.73%)	9 (23.68%)	8 (17.78%)	9 (16.98%)	33 (17.65%)	8.25
Causative agent						
Needle	42 (82.35%)	32 (84.21%)	38 (84.44%)	39 (73.58%)	151 (80.75%)	37.75
Ampoule	1 (1.96%)	0 (0%)	2 (4.44%)	1 (1.89%)	4 (2.13%)	1
Catheter	1 (1.96%)	2 (5.26%)	2 (4.44%)	6 (11.32%)	11 (5.88%)	2.75
Surgical material	7 (13.73%)	4 (10.53%)	3 (6.67%)	7 (13.21%)	21 (11.23%)	5.25
Description of the agent						
Abocath	1 (2.04%)	2 (5.26%)	2 (4.65%)	6 (11.32%)	11 (6.01%)	2.75
Needle with light	36 (73.47%)	25 (65.79%)	24 (55.81%)	30 (56.6%)	115 (62.84%)	28.75
Insulin needle	5 (10.2%)	4 (10.53%)	9 (20.93%)	6 (11.32%)	24 (13.11%)	6
Suture needle	1 (2.04%)	2 (5.26%)	2 (4.65%)	2 (3.77%)	7 (3.83%)	1.75
Others	1 (2.04%)	0 (0%)	1 (2.33%)	1 (1.89%)	3 (1.64%)	0.75
Scalpel blade	1 (2.04%)	4 (10.53%)	2 (4.65%)	5 (9.43%)	12 (6.56%)	3
Clamp	2 (4.08%)	0 (0%)	0 (0%)	1 (1.89%)	3 (1.64%)	0.75
Scalp	0 (0%)	1 (2.63%)	3 (6.98%)	1 (1.89%)	5 (2.73%)	1.25
Scissors	2 (4.08%)	0 (0%)	0 (0%)	1 (1.89%)	3 (1.64%)	0.75
Circumstance of the accident						
Opening the ampoule seal	1 (1.96%)	0 (0%)	2 (4.44%)	0 (0%)	3 (1.6%)	0.75
Drug administration	7 (13.73%)	0 (0%)	5 (11.11%)	7 (13.21%)	19 (10.16%)	4.75
Assistance in procedures or surgeries	7 (15.68%)	2 (5.26%)	4 (8.88%)	6 (11.32%)	19 (10.16%)	4.75
Others	1 (1.96%)	4 (10.52%)	3 (6.67%)	4 (7.55%)	12 (6.41%)	3
Sharps disposal	13 (25.49%)	8 (21.05%)	14 (31.11%)	16 (30.19%)	51 (27.27%)	12.75
Needle disconnection	1 (1.96%)	3 (7.89%)	0 (0%)	1 (1.89%)	5 (2.67%)	1.25
Scalpel blade disconnection	0 (0%)	3 (7.89%)	0 (0%)	3 (5.66%)	6 (3.21%)	1.5
Access clearance	1 (1.96%)	0 (0%)	3 (6.67%)	0 (0%)	4 (2.14%)	1
Handling the sharps disposal box	0 (0%)	1 (2.63%)	0 (0%)	1 (1.89%)	2 (1.07%)	0.5
Preparation of material for sterilization	3 (5.88%)	1 (2.63%)	1 (2.22%)	0 (0%)	5 (2.67%)	1.25
Carrying out blood collection	13 (25.49%)	13 (34.21%)	9 (20%)	10 (18.86%)	45 (24.06%)	11.25
Needle recapping	4 (7.84%)	3 (7.89%)	2 (4.44%)	2 (3.77%)	11 (5.88%)	2.75
Removal of material from the Tray	0 (0%)	0 (0%)	2 (4.44%)	3 (5.66%)	5 (2.67%)	1.25
Cause of the accident						
Unsafe behavior	0 (0%)	24 (63.16%)	35 (77.78%)	43 (81.13%)	102 (75%)	25.5
Unsafe condition	0 (0%)	14 (36.84%)	10 (22.22%)	10 (18.87%)	34 (25%)	8.5

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It is noted that 187 (89.9%) accidents occurred at the philanthropic hospital during the 2017-2020 period, with emphasis on 2020, responsible for the highest number of notifications. At the teaching hospital, 21 occurrences were recorded between 2016 and 2020, with the highest number of accidents in 2018.

The emergency department had the highest number of occurrences in the teaching hospital, with 12 (57.14%) incidents recorded, followed by the medical clinic with 6 (28.57%) records. Regarding the professional category, Nursing technicians were the most affected with 11 (52.38%) accidents.

Among the sharps, the main instruments used at the time of the accident were needles, responsible for 15 (71.43%) injuries in the teaching hospital. It is also noted that needles with light were the most recurrent material among the accidents with sharps recorded in Nursing workers.

With regard to the circumstances of the accidents, it is noted that sharps disposal was the situation that generated the highest number of occurrences, with 8 (38.1%) cases and a mean of 1.6 accidents per year in the teaching hospital, followed by drug administration with 4 (19.05%) records. In addition, it was verified that carrying out unsafe practices caused 2.5 times more accidents than performing procedures under unsafe conditions.

During the 2017-2020 period at the philanthropic hospital, the medical clinic was the sector with the highest number of accidents, with 68 (36.36%) reports; followed by the urgency/emergency and surgical center sectors with 34 (18.18%) and 26 (13.9%), respectively.

As for the professional category, in the philanthropic hospital, nursing technicians suffered 119 (63.64%) accidents, a higher number than the records of accidents reported among nurses and nursing assistants, which added up to 68 accidents. With regard to the manipulated objects, there was predominance of needles as the main cause of accidents with 151 (80.75%), of which the majority were needles with light.

In the philanthropic hospital, sharps disposal was the circumstance in which the most accidents occurred, with 51 (27.27%) notifications, followed by blood collection with 45 (24.06%) and drug administration medication and assistance in procedures or surgeries in third place, which accounted for 19 (10.16%) accidents each. It is also noted that 11 (5.88%) injuries occurred during needle recapping and 102 (75%) accidents were caused by unsafe behaviors.

With regard to the causative agent, it was found that the injuries are mostly caused by needles, as they have high rates in both hospitals, adding up to 166 (79.8%) of all occurrences.

The study showed that, at the philanthropic hospital, 87 (46.52%) accidents were reported among workers with between 1 and 6 years in the job and that 82 (43.85%) were reported among employees with less than one year of service, with professionals recently hired less than a year standing out in 2020 (Figure 1).

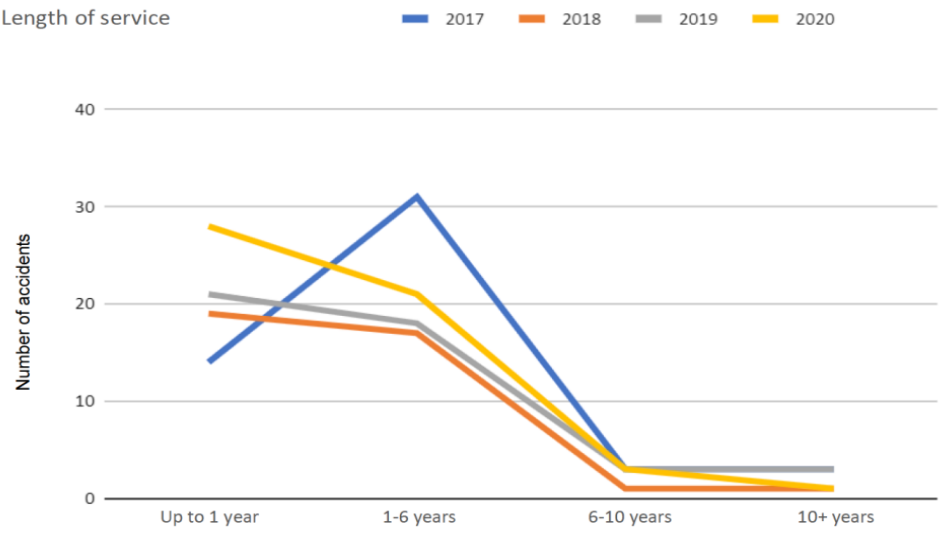

FIGURE 1: Number of accidents recorded according to length of service at the Philanthropic Hospital. São Carlos, SP, Brazil, 2020.

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The care flow adopted in the institutions after the occurrence of an accident was also verified; both institutions adopt similar protocols, being recommended that any professionals victim of an accident should immediately inform their superior about what happened, then the supervisor must direct them to carry out opening the service record; and, subsequently, receive medical care from the on-duty clinician or occupational and nursing physician, who completes the Occupational Accident Report (OAR). After the first consultation, the professional must go to the Occupational Health and Safety Service (OHSS) to carry out medical follow-up, as well as to deliver the second copy of the OAR and fill out the accident notification form.

Finally, all accident records state that the employees were provided guidelines on care measures and information regarding safe practices for handling sharps, describing training and workshops both for the accident victim and for the entire team.

DISCUSSION

The results found in this study show a significant difference in the number of accidents recorded in each hospital, a fact that can be directly related to the number of professionals in each institution since, when analyzing the number of occurrences recorded in relation to the total number of professionals, it is observed that, proportionally, the philanthropic hospital had twice as many occurrences as the teaching hospital. Thus, the analysis of the number of notifications recorded in larger and smaller hospitals allows formulating the hypothesis that health care points with greater flows of patients may present more chances for the occurrence of accidents.

From this perspective, the high number of accidents recorded at the philanthropic hospital in 2020 is highlighted, which was the first year of the COVID-19 pandemic, a scenario in which the Nursing job market was largely affected, given that events like this increase the demand for health workers and evidence the chronic problems faced by this category.

During this initial pandemic period, this philanthropic hospital received the largest number of patients with suspected and confirmed COVID-19 in the municipality and, therefore, had the need to create new beds and hire more professionals to meet the high demand. Thus, in addition to the greater number of professionals hired and possibly exposed, the factors arising from the stress caused by facing a pandemic, which increases anxiety in professionals who worked on the front line, are observed as aggravating factors.

Problems such as lack of access to PPE or diagnostic tests when showing symptoms for COVID-19, concern about the contamination risks of family members and uncertainty about their access to health services in case of infection, as well as insecurity for being active in some sector that was little familiar to them, or even lack of access to updated information, were elements that caused greater wear out on service providers at the beginning of the pandemic[9].

With regard to the number of records of accidents with sharps, a study carried out in a municipality in inland Rondônia showed 6.3% incidence of accidents with sharps among health professionals notified in the Information System for Notifiable Diseases (*Sistema de Informação de Agravos de Notificação*, SINAN), over the two-year period[10]. The low incidence of accidents with sharps can be related to underreporting, given that it is not possible to measure whether in fact all occurrences were reported.

On the other hand, a study carried out at two hospitals in Aracaju/SE, showed 53.9% frequency of accidents among the Nursing team members, with more than one third of the professionals interviewed not reporting the occurrence[11].

Thus, the hospitals analyzed in this study may also have had lower rates due to underreporting. It should be noted that both hospitals offer different services and serve a different number of patients, so that the number of procedures and interventions that use sharps vary according to the type of assistance provided and exert direct impacts on the frequency of accidents.

Nursing technicians stand out among the Nursing team members, a result that is similar to other national studies, which also state that these professionals are responsible for half of the occurrences[10,12]. This situation is related to the activities carried out by this category since, according to Law No. 7,498 of June 25th, 1986, which provides for the Nursing practice, technicians are responsible for carrying out medium-level procedures and, for this reason, they spend a large part of their time providing direct care to the patients and performing invasive procedures[13].

In relation to the work environments, the medical clinic, surgical center, emergency room or urgency medical service were the places with the highest number of occurrences recorded. The medical clinic may have had the highest accident rates because it covers several clinical specialties and has a high flow of patients, while the surgical center is a

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place where different types of sharps and high-risk procedures are used, which can generate stress or fatigue to the professionals, contributing to the occurrence of injuries.

In this context, a research study carried out at a reference hospital in the state of Mato Grosso showed that the Intensive Care Unit (ICU) for adults was the sector with the highest number of accidents with 25.3%, followed by the medical clinic (24.7%)[14]. The urgency and emergency sector is also considered one of the areas with the highest number of accidents with sharps, showing that the risks in this unit can be aggravated by circumstances that require quick actions and by the high volume of care that needs to be carried out with agility, resulting in inattention[15]. Thus, it is verified that each work sector has its particularities and elements that can promote or accentuate the risk of accidents.

In relation to the material used during occurrence of the injuries, the predominance of needles becomes evident, and more specifically, needles with light as the main causes of accidents. In line with this finding, a study carried out in Poland showed that 76.8% of the injuries suffered by the Nursing team were caused by needles and that the chances of being injured with hollow needles are 4.9 times greater for this category than for other professional groups[16].

Thus, it is believed that the higher incidence of needlestick injuries occurs due to the type of activities that are carried out by Nursing professionals, as many of them inevitably require this instrument for their effectiveness, while for other health professionals, other relevant instruments were found, with suture needles and cannulas as the main causes of accidents among physicians and paramedics, respectively[16].

In this context, the investigation into the circumstances of the accidents reveals that sharps disposal was the main action that resulted in exposure to biological material in both hospitals studied, reinforcing that many of the professionals did not present adequate behaviors in the disposal of these materials. Subsequently, there are activities related to blood collection and drug administration, procedures whose performance requires professionals to maintain constant attention and, consequently, any stressor can result in accidents.

Although less frequent, there were also reports of injuries resulting from the practice of manual recapping and disconnection of needles, in addition to handling materials from the sharps disposal box, which are attitudes prohibited by Regulatory Standard No. 32 of the National Health Surveillance Agency (*Agência Nacional de Vigilância Sanitária*, ANVISA)[2]. Execution of these reckless acts can be related not only to lack of knowledge about safety standards or lack of adequate training, but mainly to the professionals' reluctance to adhere to the biosafety standards.

A study carried out at a hospital in São Paulo evaluated the Nursing professionals' knowledge and attitudes about standard precautions and 13.4% of the respondents answered that they were not aware of the prohibition on bending, twisting or actively capping needles[17]. Along the same lines, a survey carried out in Ethiopia indicated the presence of reckless attitudes when disposing of materials, with 44% of the nurses reporting recapping needles after use, at least once in their work period. In addition to that, the most frequent procedures for exposure were application of injections and sample collection of biological material, which were caused by high workload, improper disposal of equipment and fatigue[18].

Regarding length of service, this study allowed observing that the employees who have worked less time in the institution were the most affected, which is possibly associated with lack of skill and experience in performing the procedures, when compared to those who have more practice and, therefore, carry out their activities in a safer way. In addition, even if they have professional experience, newly hired professionals may perform their duties with some fear or anxiety due to the adaptation process, which also contributes to the occurrence of accidents.

The factors that contribute to accidents involving newly hired nurses include lack of experience, so that they did not completely master the techniques of handling sharps, or even do not know how to correctly manipulate needles with a safety device and lack of adherence to standard precautions[19].

On the other hand, a literature review indicated that older professionals are less likely to suffer accidents because they perform more administrative activities, therefore maintaining less contact with invasive procedures that require the use of sharps[20].

The workers' unsafe behaviors were responsible for the highest number of accidents, whereas unsafe conditions were less frequent, indicating that the institutions are complying with the standards and providing means for the professionals to offer safer assistance. However, it can be inferred that the professionals still have habits that can increase the exposure risk.

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The analysis of the care flow shows that the hospitals have well-defined protocols for these situations, a measure of major importance for workers' safety, as it is indispensable to carry out due care immediately after occurrence of the accident, being decisive for the outcome of the situation. Therefore, it is emphasized the need for professionals to notify the accident and follow the institution's rules and regulations, in order to guarantee their health.

In this context, Ordinance No. 1,748 of August 30th, 2011, which updated RS 32, made it mandatory for employers to prepare and implement a Risk Prevention Plan for Accidents with Sharps[21]. The strategies for preventing accidents refer to updating and improving the Risk Prevention Plan for Accidents with Sharps, so that this document must include clinical management, instruction and monitoring of the employees, need for adherence to chemoprophylaxis and notification of the incident, as well as raising awareness among the employees about proper PPE use and participation in training and permanent education activities that must be offered by health institutions[22].

Study limitations

This study has limitations, which refer to the fact that the research was carried out only on the basis of accident notification forms, not being possible to measure the real magnitude of the problem and the actual number of injuries that occurred in the institutions, considering that some accidents may not have been reported. However, the current study presents relevant data on the epidemiological profile of the accidents, the associated risk factors and the course of action applied by the hospitals analyzed.

CONCLUSION

It is concluded that accidents with sharps are considered a frequent problem in Nursing professionals' routine, as they still present significant numbers of occurrences. In general, many aspects of the profile of the accidents are similar in both hospitals, such as predominance of injuries caused by needlesticks and sharps disposal as the main moment for injuries to occur. It is also noted that nursing technicians are the category most affected by accidents, especially the less experienced professionals.

Based on these findings, it is verified that this topic still has gaps to be filled, emphasizing the importance of investigating the impacts that OAs cause in the professionals' lives and their perceptions and feelings in the face of such situation, also analyzing the behaviors and strategies applied by the employees to minimize occupational risks.

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