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UNDERREPORTING OF OCCUPATIONAL ACCIDENTS WITH BIOLOGICAL MATERIAL OF NURSING TECHNICIANS IN A UNIVERSITY HOSPITAL

SUBNOTIFICAÇÃO DE ACIDENTES DE TRABALHO COM MATERIAL BIOLÓGICO DE TÉCNICOS DE ENFERMAGEM EM HOSPITAL UNIVERSITÁRIO

SUBINFORME DE ACCIDENTES LABORALES CON MATERIAL BIOLÓGICO DE TÉCNICOS DE ENFERMERÍA EN UN HOSPITAL UNIVERSITARIO

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Objective: to quantify the underreporting and reasons for not recording occupational accidents with biological material of nursing technicians in a university hospital. Method: quantitative cross-sectional research with a sample proportion of 25%. Participants were 275 professionals from nine units who answered a questionnaire about occupational risk. Results: 747 accidents were reported, 71% of which were not reported. The variables: working hours, units and types of exposure were statistically correlated with underreporting ($p< 0.05$). The reasons for not recording: "Nursing work leads to accidents with biological material" were 3.5 times more likely to underreport percutaneous blood accident; and "Leaving the unit can overload co-workers" was 2.3 times more likely to report mucocutaneous accident. Conclusion: the underreporting of accidents was 2.4 times higher than the notifications, with predominance of mucocutaneous exposure and the main reasons were related to the low perception of occupational risk and work overload.

Descriptors: Occupational health. Occupational risks. Accidents, occupational. Nursing. Occupational exposure. Notification.

Objetivo: quantificar a subnotificação e motivos do não registro dos acidentes de trabalho com material biológico de técnicos de enfermagem em hospital universitário. Método: pesquisa de corte transversal quantitativa com proporção amostral de 25%. Participaram 275 profissionais de 9 unidades que responderam questionário sobre risco ocupacional. Resultados: foram relatados 747 acidentes, sendo 71% não notificados. As variáveis: horário de trabalho, unidades e tipos de exposição foram correlacionadas estatisticamente à subnotificação ($p < 0,05$). Os motivos para não registro: "Quem trabalha na enfermagem sofre acidente com material biológico" apresentou 3,5 vezes mais chances de subnotificar acidente percutâneo com sangue; e "A saída pode sobrecarregar colegas de

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trabalho" teve 2,3 vezes mais chances de subnotificar acidente mucocutâneo. Conclusão: as subnotificações dos acidentes foram 2,4 vezes maiores que as notificações, com predomínio da exposição mucocutânea e os principais motivos foram relacionados à pouca percepção sobre o risco ocupacional e a sobrecarga de trabalho.

Descritores: Saúde do trabalhador. Riscos ocupacionais. Acidentes de trabalho. Enfermagem. Exposição ocupacional. Notificação.

Objetivo: cuantificar la sub-notificación y las razones para no registrar accidentes de trabajo con material biológico de técnicos de enfermería en un hospital universitario. Método: investigación transversal cuantitativa con una proporción de muestra del 25%. Los participantes fueron 275 profesionales de nueve unidades que respondieron un cuestionario sobre el riesgo laboral. Resultados: se notificaron 747 accidentes, 71% de los cuales no fueron reportados. Las variables: horas de trabajo, unidades y tipos de exposición se correlacionaron estadísticamente con la sub-notificación (p< 0.05). Las razones para no registrar: "Quienes trabajan en enfermería sufren accidentes con material biológico" fueron 3,5 veces más propensas a sub-reportar accidente de sangre percutáneo; y "La producción puede sobrecargar a los compañeros de trabajo" era 2,3 veces más probable que notificara un accidente mucocutáneo. Conclusión: la sub-notificación de accidentes fue 2,4 veces mayor que las notificaciones, con predominio de la exposición mucocutánea y las principales razones estaban relacionadas con la baja percepción del riesgo laboral y la sobrecarga de trabajo.

Descriptores: Salud laboral. Riesgos laborales. Accidentes de trabajo. Enfermería. Exposición profesional. Notificación.

Introduction

The context of work in hospital institutions, in which new technologies predominate, requires nursing with technical domain, scientific knowledge and adequate dimensioning of human resources for quality and safety care[1].

The praxis of the nursing team requires care to patients during 24 hours, physical proximity, performing procedures of direct care of invasive character, with the use of needle-sharp objects, which allows for the occurrence of several moments of exposure to biological material with the possibility of occupational accidents (OA) in their routine[2].

Occupational exposure may occur percutaneously (needle or sharp objects) or by direct contact with blood or organic fluids in mucous membranes and/or unhealthy skin, with human immunodeficiency viruses, hepatitis B and C, being considered the highest risk for infections[3].

In 2011, hospitals in the United States recorded 253,700 work-related injuries and diseases, with a rate of 6.8 to 100 workers, higher than the rates of the construction and manufacturing industries, considered potentially dangerous, with 4.3 and 3.9, respectively, for every 100 workers[4].

In Brazil, in 2015, among the 20 occupations with the highest exposure to biological material, 47,292 occurrences were recorded, 49.6% among nursing technicians and assistants[5].

The literature shows that this problem is present in the daily routine of nursing in different countries and continents[6-9], generating a high economic cost and psychosocial suffering to the worker[10].

Currently, there is an association between OA and biological material and work overload of nursing technicians, and stress is considered a risk predictor for these diseases[11].

The notification of the OA is a legal and mandatory requirement for the employer, who must register in the protocol of Communication of Occupational Accident (CAT) for Social Security, when the worker has the contract governed by the Consolidation of Labor Laws (CLT). This practice is fundamental because it legitimizes labor and social security rights[12]. In the case of statutory public servants, the OA should be communicated to the Department of State Medical Investigation (DPME)[13].

Nevertheless, underreporting of OA presents high rates[9,14] and hinders the promotion of corrective actions, as well as intervention strategies that ensure greater notification in organizations.

Notification of OA is necessary when there is contact with blood or potentially infectious organic fluids, such as: semen, vaginal secretion, liquor, synovial fluid, serous fluids (pleural, peritoneal, pericardial), amniotic fluid and non-infecting fluids (sweat, tears, feces, urine and saliva), when contaminated with blood[3].

To reduce occupational exposure and transmission of pathogens, international recommendations called "Standard Precautions" were adopted, and the use of personal protective equipment, hand hygiene, careful handling of needle-sharp objects and disposal in perforation-resistant containers were recommended[15].

Given the severity of percutaneous accidents, countries such as the United States of America, Canada, Brazil, Taiwan, the United Kingdom and the European Union have enacted legislation on the use of safety devices to minimize the occurrence of these events[16].

Knowledge about the incidence of underreporting of OA of nursing technicians with biological material is fundamental, because this category represents an expressive number of the workforce with occupational exposure in health institutions[5]. This study provides information from the institutional scenario and provides subsidies for the adoption of prevention and protection measures for workers' health.

Given the problem, the aim of this study was to quantify the underreporting of OA with biological material of nursing technicians and the respective reasons for non-reporting.

Method

A cross-sectional study of quantitative nature was carried out, developed in a large-sized and high-complexity public university hospital, located in a city in inland São Paulo, from September to December 2017.

The sample consisted of nursing technicians; at the time of the research, the institution had a staff of 1,022 professionals in this category. The proportion of approximately 25% was used, and the sample consisted of 275 nursing technicians. The sampling was of the simple random probabilistic type, with proportional distribution in the units and work shifts.

The professionals from the units: Adult (UIA) and Pediatric Hospitalization (PED), Adult (ADU-ICU) and Pediatric Intensive Care (PED-ICU), Referred Emergency (EPP), Surgical Center (CC), Sterile Material Center (MDC), Imaginology (IMA) and Specialized Outpatient And Procedures Service (SEAMPE) were invited to participate in the investigation.

Nursing technicians who performed direct or indirect care to the institution's patients during work shifts were adopted as eligibility criteria: morning (M) from 6:55 a.m. to 1:10 p.m., afternoon (E) from 1:00 p.m. to 7:15 p.m., and night (N) from 7:05 p.m. to 7:05 a.m. SEAMPE performed the activities from 7:00 a.m. to 6:30 p.m., being called administrative hours (AH) in this study. Exclusion criteria were: professionals who were off duty, on vacation, medical leave, maternity leave and absent for health reasons.

For the study protocol, a questionnaire was elaborated with three blocks of questions structured as follows:

Block 1: Related to socioeconomic characterization and functional situation;

Block 2: Related to the occurrence of OA with biological material, reported and underreported. The response pattern was structured on a Likert scale with five options: none = 0; one = 1; two = 2; three = 3; four = 4; five or more = 5;

Block 3: Related to the reasons for non-notification of OA with 15 answer options, and more than one alternative could be chosen.

The data were included in the MSExcel 2016 spreadsheet (Microsoft) and analyzed in the statistical program BioEstat 5.2. The Chi-square test was used for analysis of the contingency table, the Binomial test for the comparison between the proportions, and the Logistic Regression for the combined analysis of the reasons for underreporting. The internal consistency of the questionnaire referring to Block 2 was assessed by Cronbach's alpha coefficient. For all data, the values of $p< 0.05$ were considered as statistically significant.

The research followed the ethical precepts in accordance with the guidelines of Resolution n. 466/2012 and was approved by the Research Ethics Committee of the University under Opinion n. 2.242.789/2017.

Results

The participants were 275 nursing technicians, with ages ranging from 22 to 66 years, with predominance of females (83.6%), married (57.1%), complete higher education (33.8%) and monthly income of approximately three to four minimum wages (80.5%). The majority reported having only one job (78.5%), with a weekly work of 30 hours (77.8%) and CLT labor bond (46.9%).

Cronbach's alpha coefficient was calculated for Block 2 and had a value of 0.65, being considered moderate reliability.

Table 1 shows the distribution of reported and unreported OA according to the variables investigated.

Table 1 – Distribution of the number of occupational accidents reported and unreported according gender, age group, units, work shift and type of occupational exposure. State of São Paulo, Brazil – September to December 2017 (N=747)

Variables	AO Notification				p*
	Yes (217)		No (530)		
	n	%	n	%	
Gender					
Female	170	28.2	432	71.8	0.37
Male	47	32.4	98	67.6	
Age group					
19 - 29 years	17	23.6	55	76.4	0.15
30 - 39 years	56	25.0	168	75.0	
40 - 49 years	81	32.9	165	67.1	
50 - 59 years	60	32.1	127	67.9	
Units					
Sterile Material Center	25	47.2	28	52.8	0.0001
Imaginology	21	70.0	9	30.0	
Surgical Center	60	43.8	77	56.2	
Specialized Outpatient And Procedures Service	18	48.6	19	51.4	
Pediatrics	10	16.9	49	83.1	
Referred Emergency Unit	16	36.4	28	63.6	
Pediatric Intensive Care Unit	1	4.3	22	95.7	
Adult Intensive Care Unit	13	10.2	114	89.8	
Adult Hospitalization Unit	53	22.4	184	77.6	
Work shift					
Morning	83	33.6	164	66.4	0.0011
Afternoon	59	29.4	142	70.6	
Night	57	21.8	205	78.2	
Administrative	18	48.6	19	51.4	
Types of exposure					
Percutaneous with blood	90	65.7	47	34.3	0.0001
Percutaneous without blood	75	28.7	186	71.3	
Mucocutaneous	52	14.9	297	85.1	

Source: Created by the authors.

*Chi-Square Test.

The nursing technicians reported having suffered 747 OA with exposure to biological material, 217 of which were reported (29%) and 530 not reported (71%), and the comparison between proportions showed statistically significant differences (p<0.0001).

Among the participants, 76% suffered at least one OA during the working life period at the

institution and 61% reported having had at least one OA not reported.

There was a statistically significant association for underreporting for the variables working hours, types of occupational exposure and work units. The highest proportions of underreporting occurred in the night shift (78.2%), in mucocutaneous exposure (85.1%), in the PED-ICU (95.7%) and ADU-ICU (89.8%) units.

Chart 1 shows the participants' answers for the possible reasons for not reporting the OA in the institution, and one or more reasons could be chosen.

Chart 1 – Distribution of frequencies of answers related to the reasons for not reporting the OA. State of São Paulo, Brazil – September to December 2017 (N= 1129)

Reason	Description	n	%
1	Delay in post-accident care	174	15.4
2	Lack of time to leave the unit	130	11.5
3	Leaving the unit can overload co-workers	115	10.2
4	Excess of work	115	10.2
5	Guilt for not using personal protective equipment in an accident at work	109	9.7
6	Not sure where and how to notify	96	8.5
7	Fear of being blamed for the accident at work	80	7.1
8	Negative serology of the patient involved in the accident	58	5.1
9	Mild accident does not need to be reported and is part of the job	55	4.9
10	Fear of being punished by the boss	47	4.2
11	Antiretroviral medication causes unpleasant effects	44	3.9
12	Fear of discovering some disease	31	2.7
13	Nursing work leads to accidents with biological material	28	2.5
14	Impossibility of identifying the patient involved in the accident	25	2.2
15	It is difficult to become ill after an accident	22	1.9
Total		1129	

Source: Created by the authors.

Table 2 shows the association of reasons with records of non-notification in different types of occupational exposure.

Table 2 – Logistic regression of reasons associated with non-notification by types of occupational exposure to biological material. State of São Paulo, Brazil - September to December 2017

Type of exposure	p-value	Odds Ratio	95% Confidence Interval
Percutaneous with blood			
Reason 13	0.04	3.5	1.03 - 11.85
Percutaneous without blood			
No reasons associated	> 0.05	--	--
Mucocutaneous			
Reason 9	0.0098	2.5	1.25 - 4.16
Reason 3	0.012	2.3	1.21 - 4.16

Source: Created by the authors.

As shown in Table 2, only reasons 3, 9 and 13 presented a significant association with underreporting ($p< 0.05$).

Logistic Regression (Table 2) reveals that nursing technicians who declared "Nursing work leads to accidents with biological material" were 3.5 times more likely not to report OA with percutaneous exposure with blood ($p< 0.04$).

The underreporting of mucocutaneous exposure reported by nursing technicians was associated with the reasons "Mild accident does not need to be reported and is part of the job" and "Leaving the unit may overload co-workers", who were 2.5 and 2.3 times more likely, respectively, not to report the OA.

Discussion

In this study, there was a predominance of females, a result that is similar to other studies[7-9], and although currently nursing has a wide field of activity, historically the profession consists of an expressive contingent of women[17].

The night shift presented the highest proportion of underreporting, which may be related to the operational process. The professional, when injured, is referred to the UER, and on the first working day, needs to seek the specialized medical service, and the delay was the main reason listed by the participants for the non-notification of OA. This condition, together with stress and tiredness resulting from the extensive work day, seems to be discouraging, since the delay is an important barrier to notification[18].

This result points to the need to review the care flow and requires the participation of managers and workers as those directly involved in the situation, assuming the leading role in defending their health at work[19].

Studies have shown that inadequate services, insufficient staff, excessive mental load can cause tiredness, attention deficit and result in OA[20-21].

The daily life in intensive care units is permeated by uninterrupted workload, use of technologies and requires an active nursing team gathering individual and collective knowledge[1]. In the present investigation, the PED-ICU and the ADU-ICU presented the highest proportions of underreporting, which may be suggestive of work overload, which hinders professionals to leave for notification.

The underreporting of OA with mucocutaneous exposure, with blood spatter and/or other organic fluids (297) was 5.7 times higher than the notification (52), and may be related to the belief that this occurrence is common in nursing (reason 9).

There are studies with results similar to the present investigation, with low rates of notification of OA with mucocutaneous exposure[6,9,18], and only in one study[6] a higher frequency of notification was identified for this type of work exposure.

Considering that workers' beliefs can compromise the perception of occupational risk, continuing education, with periodic training, may favor the adoption of preventive behaviors[21-22] and the adherence to Standard Precautions.

In this study, only percutaneous exposure with blood had a higher proportion of notification than non-notification. Studies revealed that percutaneous accidents were the most reported[7,9,18,23], and are probably related to stress and fear of acquiring infections[23].

Needle-sharp accidents represent a serious problem and their reduction depends on investments in safety devices. Although the initial cost is expensive, it dilutes over time. It is noteworthy that zeal can favor the worker's perception of his/her value at work[10].

Although notification provides legal support to workers and legitimizes labor rights[12], underreporting of accidents is an obstacle and requires efforts to implement protective measures and strategies that enable greater notification.

Reasons 3, 9 and 13 were statistically associated with underreporting, and low risk perception was also found in other studies[6,9,18]. The current research has identified that insufficient risk perception is a determining aspect for underreporting.

Regarding percutaneous accident, it is suggestive that workers have attributed little importance to its occurrence, which they considered as a remote or unlikely possibility for infections[18].

In the present study, nursing technicians presented a higher proportion of underreporting in mucocutaneous exposure, and it was indicative that they underestimated the occupational risk in this type of exposure, increasing the rates of underreporting. There is need to sensitize professionals[24] about the potential risk of pathogen acquisition, resulting from any type of occupational exposure[3].

Due to work overload, the professional favored commitment to the team and care, to the detriment of his/her own health care and notification.

Although some authors point out that the meaning of work in the 21st century is based on the empowerment and socioeconomic rise of nursing and no longer devoted to selflessness and sacrifice[25], the present study revealed the opposite, with altruism prevailing in work relations, because, even with technological advances, the human being constitutes a fundamental element for care[2].

The reasons declared by nursing technicians for non-notification of accidents with biological material, such as delay in care (15.4%), lack of time to leave the unit (11.5%), and overwork (10.2%), among others, presented relevant percentages, but, in the present study, they were not statistically correlated with underreporting. However, they should be taken into account in the planning of corrective actions, as they are configured as pillars for the protection of workers' health.

It is important to highlight that the research relied on the participants' memory, and in particular, those accidents considered of lesser relevance may not have been remembered, so the results may be underestimated.

Conclusion

The underreporting of OA with biological material of nursing technicians was 2.4 times higher than the notifications, with predominance of mucocutaneous exposure. The highest proportions of underreporting occurred in the PED-ICU and ADU-ICU units and with professionals who worked in the night shift of the institution.

The main reasons for underreporting are related to the low perception of occupational risk and work overload to which workers are daily submitted in their routines. Furthermore, the results indicated that the preventive strategies adopted are insufficient and require in-service education, with periodic training, to raise awareness of biological risk.

New studies on the subject should be developed, with a view to building prevention measures to reduce OA and improving the quality of life of nursing workers.

Collaborations:

1 – conception, design, analysis and interpretation of data, writing of the article and final approval of the version to be published: Katia Maria Rosa Vieira;

2 – writing of the article and relevant critical review of the intellectual content and final approval of the version to be published: Francisco Ubaldo Vieira Junior;

3 – final approval of the version to be published: Zélia Zilda Lourenço de Camargo Bittencourt.

References

1. Branco LLWV, Beleza LO, Luna AA. Carga de trabalho de enfermagem em UTI neonatal: aplicação da ferramenta Nursing workload in neonatal ICU: application of the Nursing activities score tool. Rev Fund Care Online. 2017;9(1):144. DOI: 10.9789/2175-5361.2017. v9i1.144-151

2. Miranda FMD, Cruz EDA, Félix JCV, Kalinke LP, Mantovani MF, Sarquis LMM. Profile of Brazilian workers victims of occupational accidents with biological fluids. Rev Bras Enferm. 2017;70(5):1061-8. DOI: 10.1590/0034-7167-2016-0482

3. Brasil. Ministério da Saúde. Secretaria de Vigilância em Saúde. Departamento de Vigilância,

Prevenção e Controle das Infecções Sexualmente Transmissíveis, do HIV/Aids e das Hepatites Virais. Profilaxia Pós-Exposição de Risco (PEP) à Infecção pelo HIV, IST e hepatites [Internet]. Brasília (DF); 2017 [cited 2019 Nov 10]. Available from: http://www.aids.gov.br/pt-br/pub/2015/protocolo-clinico-e-diretrizes-terapeuticas-para-profilaxia-pos-exposicao-pep-de-risco

4. Occupational Safety and Health Administration. Facts about Hospital Worker Safety [Internet]. Washington, D.C. (EUA); 2013 [cited 2019 Oct 10]. Available from: https://www.osha.gov/dsg/hospitals/documents/1.2_Factbook_508.pdf

5. Departamento Intersindical de Estatística e Estudos Socioeconômicos. Anuário da saúde do trabalhador 2015 [Internet]. São Paulo (SP); 2016 [cited 2019 Nov 26]. Available from: http://escola.dieese.org.br/escola/pdfs/anuario-saude-trabalhador

6. Nouetchognou JS, Ateudjieu J, Jemea B, Mbanya D. Accidental exposures to blood and body fluids among health care workers in a Referral Hospital of Cameroon. BMC Res Notes. 2016;9(94):1-6. DOI: 10.1186/s13104-016-1923-8

7. Zhang X, Gu Y, Cui M, Stallones L, Xiang H. Needlestick and sharps injuries among nurses at a teaching hospital in China. Workplace Health Saf. 2015;63(5):219-25. DOI: 10.1177/2165079915580035

8. Uğurlu Z, karahan A, Ünlü H, Abbasoğlu A, Elbas NÖ, Işik SA, et al. The Effects of Workload and Working Conditions on Operating Room Nurses and Technicians. Workplace Health Safe. 2015;63(9):399-407. DOI: 10.1177/2165079915592281

9. Chalya PL, Seni J, Mushi MF, Mirambo MM, Jaka H, Rambau PF, et al. Needle-stick injuries and splash exposures among health-care workers at a tertiary care hospital in north-western Tanzania. Tanzan J Health Res. 2015;17(2):1-15. DOI: 10.4314/thrb.v17i2.3

10. Mannocci A, De Carli G, Di Bari V, Saulle R, Unim B, Nicolotti N, et al. How much do needlestick injuries cost? A systematic review of the economic evaluations of needlestick and sharps injuries among healthcare personnel. Infect Control Hosp Epidemiol. 2016;37(6):635-46. DOI: 10.1017/ice.2016.48

11. Vieira KMR, Vieira Junior FU, Bittencourt ZZLC. Nursing technicians: working conditions and accidents in a school hospital. J Nurs UFPE on line. 2019;13:e242224. DOI: 10.5205/1981-8963.2019.242224

12. Brasil. Lei nº 8.213, de 24 de julho de 1991. Dispõe sobre os Planos de Benefícios da Previdência Social e dá outras providências [Internet]. Diário Oficial da União. Brasília (DF); 1991 [cited 2019 Nov 15]. Available from: https://www2.camara.leg.br/legin/fed/lei/1991/lei-8213-24-julho-1991-363650-publicacaooriginal-1-pl.html

13. Governo do Estado de São Paulo. Secretaria Estadual de Saúde. Servidor Público Estadual/SES [Internet]. Cartilha temática 9. 2012(esp) [cited 2019 Jun 10]. Available from: http://www.saude.sp.gov.br/resources/crh/ggp/cartilhas/acervo-cartilhas/cartilha9-servidorpublico.pdf

14. Carvalho DC, Rocha JC, Gimenes MCA, Santos EC, Valim MD. Work incidents with biological material in the nursing team of a hospital in Mid-Western Brazil. Esc Anna Nery. 2018;22(1):e20170140. DOI: 10.1590/2177-9465-ean-2017-0140

15. Garner JS. Guideline for isolation precautions in hospitals. Infect Control Hosp Epidemiol [Internet]. 1996;17(1):54-80. DOI: 10.1017/S0195941700006123

16. Cooke CE, Stephens JM. Clinical, economic, and humanistic burden of needlestick injuries in healthcare workers. Med Devices (Auckl). 2017;10:225-35. DOI: 10.2147/MDER.S140846

17. Salimena AMO, Elias EA, Souza IEO, Vieira LB. Falatório e ocupação no cotidiano das profissionais de enfermagem no cuidado de si e do outro. Rev baiana enferm. 2016;30(1):316-24. DOI: 10.18471/rbe.v1i1.14393

18. Ferreira MD, Pimenta FR, Facchin LT, Gir E, Canini SRMS. Subnotificação de acidentes biológicos pela enfermagem de um hospital universitário. Cienc Enferm [Internet]. 2015 [cited 2019 Dec 6];21(2):21-9. Available from: https://scielo.conicyt.cl/pdf/cienf/v21n2/art_03.pdf

19. Strausz MC, Guilam MCR, Oliveira SS. A intervenção em saúde do trabalhador na perspectiva dos atores históricos do campo. Rev bras saúde ocup. 2019;44:e25. DOI: 10.1590/2317-6369000015118

20. Sarsangi V, Salehiniya H, Hannani M, Marzalehs, MA, Abadi, YS, Honarjoo F, et al. Assessment of workload effect on nursing occupational accidents in hospitals of Kashan, Iran. Biomed Res Ther. 2017;4(8):1527-40. DOI: 10.15419/bmrat.v4i08.226

21. Santos SVM, Macedo FRM, Silva LA, Resck ZMR, Nogueira DA, Terra FS. Work accidents and self-esteem of nursing professional in hospital settings. Rev Latino-Am Enfermagem. 2017;25:e2872. DOI: 10.1590/1518-8345.1632.2872

22. Pereira-Ávila FMV, Estelle Michinov E, Luna TDC, Conde PS, Pereira-Caldeira NMV, Góes FGB. Standard precautions questionnaire: adaptação cultural e validação semântica para profissionais de saúde no Brasil. Cogitare enferm. 2019;24:e59014. DOI: 10.5380/ce.v24i0.59014

23. Toska A, Saridi M, Wozniak G, Rekleiti M, Mouskou S, Souliotis K, et al. Incidence and frequency of mucocutaneous exposure and percutaneous injuries in Greek nurses: are they protected enough? Balkan Military Medical Review. 2014;17(4):120-5. DOI: 10.5455/bmmr.176132

24. Vieira KMR, Vieira Junior FU, Bittencourt ZZLC. Occupational accidents with biological material in a school hospital. Rev Bras Enferm [Internet]. 2019;72(3):772-8. DOI: 10.1590/0034-7167-2018-0630

25. Rodrigues AL, Barrichello A, Morin EM. Os sentidos do trabalho para profissionais de enfermagem: Um estudo multimétodos. Rev Adm Empresas. 2016;56(2):192-208. DOI: 10.1590/S0034-759020160206

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