



FACTORS ASSOCIATED WITH WORK ACCIDENTS IN THE NURSING TEAM

FATORES ASSOCIADOS AO ACIDENTE DE TRABALHO NA EQUIPE DE ENFERMAGEM

FACTORES ASOCIADOS AL ACCIDENTE DE TRABAJO EN PERSONAL DE ENFERMERÍA

Ismália Cassandra Costa Maia Dias¹, Raimunda Santana Torres², Ariadne Siqueira de Araújo Gordon³, Euzamar de Araújo Silva Santana⁴, Maria Aparecida Alves de Oliveira Serra⁵

ABSTRACT

Objective: to identify the factors that are associated to the work accident, according to the Nursing team of the orthopedic sector. **Method:** cross-sectional study, with quantitative approach, performed with 26 Nursing professionals from the orthopedic sector of a public hospital. The data collection was performed with a form and the data, stored in the software SPSS 22, then analyzed, presented in tables and discussed with the literature. **Results:** it was observed that 57.6% of the Nursing staff reported the occurrence of work-related accidents in the last three months. Factors such as having more than one employment relationship and changes in sleep were associated with the occurrence of an occupational accident. **Conclusion:** the work accident is a frequent practice in the Nursing team working in the orthopedic sector, influenced by more than one employment relationship and changes in the professionals' sleep. **Descriptors:** Nursing; Nursing Team; Worker's Health; Work Accident.

RESUMO

Objetivo: identificar os fatores que estão associados ao acidente de trabalho, segundo a equipe de Enfermagem do setor de ortopedia. **Método:** estudo transversal, de abordagem quantitativa, realizado com 26 profissionais de Enfermagem do setor de ortopedia de um hospital público. A coleta de dados foi realizada com um formulário e os dados, armazenados no software SPSS 22, em seguida, analisados, apresentados em tabelas e discutidos com a literatura. **Resultados:** observou-se que 57,6% dos trabalhadores da equipe de Enfermagem relataram a ocorrência de acidentes de trabalho nos últimos três meses. Fatores como ter mais de um vínculo empregatício e alterações no sono estavam associados à ocorrência de acidente de trabalho. **Conclusão:** o acidente de trabalho é uma prática frequente na equipe de Enfermagem que atua no setor de ortopedia hospitalar, influenciado por mais de um vínculo empregatício e alterações no sono dos profissionais. **Descritores:** Enfermagem; Equipe de Enfermagem; Saúde do Trabalhador; Acidente de Trabalho.

RESUMEN

Objetivo: identificar los factores que están asociados al accidente de trabajo, según el personal de Enfermería del sector de ortopedia. **Método:** estudio transversal, enfoque cuantitativo, realizado con 26 profesionales de Enfermería del sector de ortopedia de un hospital público. Los datos fueron recogidos con un formulario y los datos, almacenados en el software SPSS 22, entonces analizados, presentados en tablas y discutidos con la literatura. **Resultados:** se observó que el 57,6% del personal de Enfermería informó la ocurrencia de accidentes de trabajo en los últimos tres meses. Factores como tener más de un empleo y los cambios en el sueño fueron asociados con la ocurrencia de un accidente de trabajo. **Conclusión:** el accidente de trabajo es una práctica frecuente en el personal de Enfermería que actúa en el hospital en el sector de ortopedia, influenciado por más de un empleo y alteraciones en el sueño de los profesionales. **Descriptor:** Enfermería; Personal de Enfermería; Salud Ocupacional; Accidente de Trabajo.

¹Biologist, PhD, Professor, Federal University of Maranhão/UFMA. Imperatriz (MA), Brazil. E-mail: ismaliabio@gmail.com; ²Bachelor's degree in Nursing, Federal University of Maranhão/UFMA. Imperatriz (MA), Brazil. E-mail: raimunda.santana@hotmail.com; ³Nurse, Master Professor, Federal University of Maranhão/UFMA. Imperatriz (MA), Brazil. E-mail: ariadelle@hotmail.com; ⁴Nurse, Substitute Professor, Federal University of Maranhão/UFMA. Imperatriz (MA), Brazil. E-mail: euza_rio@hotmail.com; ⁵Nurse, PhD, Professor Federal University of Maranhão/UFMA. Imperatriz (MA), Brazil. E-mail: cidinhaenfaufc@yahoo.com.br

INTRODUCTION

Occupational accidents represent a public health problem, that adversely affects, workers' health and, consequently, reduces productivity, causing economic losses. A work accident is an event that occurs during work activities that cause damage to health, by causing bodily injury or alteration of work capacity, which may be permanent or temporary.¹

Hospital environments are places favorable to the occurrence of occupational accidents, since health professionals are exposed to various occupational hazards, which are understood to be caused by chemical, physical, mechanical, biological, ergonomic and psychosocial factors that can generate diseases and Accidents in the workplace. ²

Among health workers, Nursing professionals are the most affected by occupational accidents, as they are those who directly assist the patient with greater exposure to biological loads and human secretions, as well as the cleaning activities of contaminated materials and microorganisms present in Your work environment. ³

In the orthopedic sector, the Nursing team's exposure to occupational risks is amplified due to the greater dependence of the patients, since the orthopedic injuries cause problems such as pain and insufficient muscle strength, which affect their mobility and self-care capacity. In this context, rehabilitation requires, more effort and dedication from the Nursing team, in order to avoid complications and promote patient autonomy as soon as possible. ⁴

Studies show that excessive workload, low salaries, exposure to the physical and emotional care of the individuals and exposure to invasive materials, generate an unhealthy effect on the health of the Nursing team, negatively influencing their work activities. ^{5,6}

The precarious working conditions that many Nursing professionals expose themselves and the organization of the hospital institution, especially in the public healthcare institutions, are factors that generate physical and mental exhaustion, reflecting on the personal life of the worker and the performance of his activities Resulting in work accidents and a decrease in the quality of the work performed, causing problems in the organization of work and hampering the Nursing care provided to the patients.⁷

OBJECTIVE

- To identify the factors that are associated to the work accident, according to the Nursing team of the orthopedic sector.

METHOD

Cross-sectional study, with quantitative approach, performed at the orthopedic unit of a public hospital in the Northeastern region of Brazil. The research population consisted of all seven nurses and twenty-two Nursing technicians who worked in the orthopedics sector of this institution during the research period.

Participants were selected for convenience, in accordance with established eligibility criteria. Nurses and Nursing technicians of both sexes with at least one year of work in the institution were included, in the sample. Professionals in the sector who, for some reason, were removed from their functions, were excluded from the survey. At the time of data collection there was a maternity leave nurse and two Nursing holiday technicians. The sample was then composed of 20 Nursing technicians and six nurses.

Data collection was performed during the period from August to October 2015, through a semistructured questionnaire containing two parts: the first one referred to the characterization of the socio-demographic-economic profile of the professionals investigated, relating age, marital status, Sex, profession and career time; The second part characterized the work routine, occupational risks, psychoemotional factors and work accidents in the sector, in the period of three months prior to the beginning of data collection.

The approach of the professionals was performed in different shifts (day / night), during the shifts of the professionals in the unit. The researchers instructed on the objectives and importance of the research, as well as the appropriate completion of the questionnaire, being provided, to the participants, 15 days for return to the researchers.

Data collected through software such as Statistical Package for Social Sciences (SPSS Inc., Chicago, IL), version 22.0, and Microsoft Office Excel 2003, for table generation, were analyzed. The exploratory analysis of the data was done by means of descriptive statistical tests and of absolute and relative frequencies. For the verification of the normality / symmetry of the numerical data, the Shapiro-Wilks test was used.

The proportion within the categories of occupational accidents of the Nursing team of a hospital orthopedic sector was analyzed according to the socio-demographic variables, occupational risks and psychoemotional factors of the Nursing team, using Fisher's exact test. The maximum significance level used for the statistical analyzes was 5%.

The development of the study met the national and international norms of ethics in research involving human beings, with the number of opinion: 1,140,674.

RESULTS

Twenty-six Nursing staff, with a predominance of females (76.9%), mean age of 37.6 years (SD of 9.6) and majority (69.2%) of married women were analyzed. Most of the professionals (69.2%) had five to ten years of professional experience, 38.4% had a weekly workload of 30 hours and 26.9%, had 60 hours a week. Half of those investigated have another employment relationship.

It was observed that 57.6% of the Nursing staff reported the occurrence of work-related accidents in the last three months, and 97.6% of these occurred with puncturing instruments through percutaneous exposure. Work accidents were predominant among female professionals (80%), aged 20-30 (46.6%), married (73.3%), and eight to ten years of professional experience (53, 3%), hourly workload of 30 hours per week (46.6%), and having another employment relationship (73.3%).

Regarding the work-related accident and socio-demographic factors, it was found that Nursing staff, who had more than one job were associated with work-related accidents ($p < 0.05$), a statistically significant association (table 1).

Table 1. Association of sociodemographic factors with the presence of a work accident in the Nursing team of a hospital orthopedic sector. Imperatriz (MA), Brazil, 2015.

Variables	Work accident		
	Yes n=15 (%)	No n=11 (%)	<i>p-value</i>
Sex			
Female	12 (80)	08 (72.7)	0.50
Male	03 (20)	03 (27.3)	
Age (years)			
20-30	07 (46.6)	01(9.1)	0.14
31-40	05 (26.7)	06 (54.5)	
41-50	02 (13.5)	01 (9.1)	
More than 50	01 (13.2)	03 (27.3)	
Marital Status			
Married	11 (73.3)	07 (63.6)	0.45
Single	04 (26.7)	04 (36.4)	
Years in the profession			
2-4	02 (13.5)	02 (18.1)	0.10
5-7	04 (26.6)	05 (45.4)	
8-10	08 (53.3)	01 (9.3)	
>10	01 (6.6)	03 (27.2)	
Work hours			
30h	07 (46.6)	03 (27.4)	0.53
40h	02 (13.3)	04 (36.3)	
60h	04 (26.6)	03 (27.4)	
>60h	02 (13.5)	01 (8.9)	
Other Job			
Yes	11 (73.3)	02 (18.1)	0.05*
No	05 (26.7)	08 (81.9)	

*significant $p > 0,05$

Of the workers in the Nursing team who presented a work accident, 93.3% reported that the lack of lighting contributes to the occurrence of accidents; 73.3%, lack of equipment, 53.3%, lack training; 80%, lack of adequate environment; 53.4%, lack of human

resources and 73.3%, overwork and sleep disturbance.

It was observed that the change in the Nursing team's sleep was associated to the presence of a work accident in the last three months ($p < 0.05$), a statistically significant association (table 2).

Table 2. Factors determining the occurrence of work-related accidents according to the Nursing team of a hospital orthopedic sector.Imperatriz (MA), Brazil, 2015.

Variables	Work accident		
	Yes n=15 n (%)	No n=11 n (%)	p-value
Lack of lighting			
Yes	14 (93.3)	08 (72.7)	0.18
No	01 (6.7)	03 (27.3)	
Lack of equipment			
Yes	11 (73.3)	09 (81.8)	0.49
No	04 (26.7)	02 (18.2)	
Lack of training			
Yes	08 (53.3)	06 (54.5)	0.63
No	07 (46.7)	05 (45.5)	
Lack of adequate environment			
Yes	12 (80)	09 (81.8)	0.65
No	03 (20)	02 (18.2)	
Human Resources Insufficiency			
Yes	07 (46.6)	07 (63.6)	0.32
No	08 (53.4)	04 (36.4)	
Work overload			
Yes	11 (73.3)	09 (81.8)	0.49
No	04 (26.7)	02 (18.2)	
Change in sleep			
Yes	11 (73.3)	04 (36.3)	0.05*
No	04 (26.7)	07 (63.7)	

*significant p>0,05

DISCUSSION

This study evidenced that most of the Nursing professionals investigated have suffered work accidents in the last three months.

The socioeconomic profile of the Nursing team in this study was similar to that found in other locations in Brazil⁸⁻⁹ and in regions such as Palestine,¹⁰ China,¹¹ and Canada,¹² characterized by women in the young adult age, married, with five to ten years of professional experience. These data reflect the historical, social and cultural context of women's participation in occupations that are related to care, as well as the emancipation of women and the need to conquer the labor market.¹³

This study showed that the occupational accidents suffered by the Nursing team were associated with having more than one employment relationship. In Brazil, the on-the-job work regime, with twelve-hour work activities, followed by thirty-six hours of rest, allows Nursing professionals to dedicate themselves to another productive activity. In this scenario, long working hours can generate work overload, one of the components of the labor process that can trigger potential or effective changes in workers' health, such as physical and mental exhaustion.¹⁴

Some authors consider that the overload of the Nursing professional can be a facilitating condition for the occurrence of accidents, which, associated with the reduced number of Nursing staff, may favor imperfections,

recklessness and negligence in the practices. Researchers believe that observance of satisfactory conditions of the physical area or the suitability of furniture, equipment or other conditions for the safety of the worker and the user are of fundamental importance to enable healthy environments.¹⁵⁻⁶

In addition, this research reveals the alteration in sleep of the Nursing team associated with the occurrence of work accidents in the orthopedic hospital sector. As Nursing works in shifts, work overload favors the onset of sleep disturbances, decreased alertness and reasoning, and the possibility of developing depression and suicidal tendencies.¹⁷ The effects of these changes can lead to an increase in work-related accidents and / or impairment of the quality of life of these workers, compromising the assistance provided by these professionals.¹⁸⁻⁹

A study of 2033 Nursing professionals in tertiary hospitals in China showed high prevalence of sleep disorder in the Nursing team, with sleep disorders being influenced by factors such as high demands, low pay, work overload, many years of work and not performing physical exercise.²⁰

In this scenario, it is necessary to adopt political and institutional strategies to improve the working conditions of the Nursing team, especially in the orthopedic sector, where the workload is increased by reducing the autonomy of the patient who is with mobility changed. Thus, it is suggested: valuing of work processes with better remuneration, recognition and adequate work

environments. Promotion of physical activities, to reduce fatigue, improve physical performance and obtain quality sleep. Provide support or psychological support in order to combat the tensions and emotional demands experienced by the Nursing team.

During the development of this study, the researcher encountered limitations such as the restricted cross-sectional design to identify associations, not allowing to determine cause and effect relationships between the studied variables, besides not allowing the follow-up of the participants between the exposure and the outcome. It has a sample from a single service, so the generalization of the results in relation to the general population is impaired. The evaluation was made only by autorelato and there was no other measure of reliability of the report. Finally, the recall bias, once the work accidents occurred in the last three months have been investigated, therefore, even with limitations already mentioned, the result of this research becomes relevant, since it contributes to the knowledge of the factors that influence the occurrence of occupational accidents of the Nursing team, subsidizing the elaboration of adequate public policies for the needs of this class of workers. Thus, it is recommended that similar studies on the health of Nursing workers be elaborated in different geographic regions, with different socioeconomic and cultural conditions, so as to build a more consistent scenario of the Nursing professionals' occupational reality in the hospital environment.

CONCLUSION

The study showed that the work accident is a frequent practice in the Nursing team that operates in the orthopedic hospital sector. In addition, having more than one employment relationship and changes in sleep interferes with the occurrence of occupational accidents.

REFERENCES

1. Roland-Lévy C, Lemoine J, Jeoffrion C. Health and Well-being at Work: The Hospital Context. *Eur Rev Appl Psychol* [Internet]. 2014 [cited 2015 Feb 10];64(2):53-62. Available from: <http://dx.doi.org/10.1016/j.erap.2014.01.002>.
2. Ulutasdemir N, Cirpan M, Copur EO, Tanir F. Occupational Risks of Health Professionals in Turkey as an Emerging Economy. *Ann Glob Health* [Internet]. 2015 [cited 2015 Feb 15]; 81(4):522-9. Available from: <http://dx.doi.org/10.1016/j.aogh.2015.08.019>.
3. Tarigan LH, Cifuentes M, Quinn M, Kriebel D. Prevention of needle-stick injuries in healthcare facilities: a meta-analysis. *Infect Control Hosp Epidemiol* [Internet]. 2015 [cited 2016 July 10];36(7):823-9. Available from: <http://dx.doi.org/10.1017/ice.2015.50>.
4. Mullen K, Gillen M, Kools S, Blanc P. Hospital nurses working wounded: motivations and obstacles to return to work as experienced by nurses with injuries. *Work* [Internet]. 2015 [cited 2016 June 04]; 50(2):295-304. Available from: <http://dx.doi.org/10.3233/WOR-131800>.
5. Stimpfel AW, Brewer CS, Kovner CT. Scheduling and shift work characteristics associated with risk for occupational injury in newly licensed registered nurses: An observational study. *Int J Nurs Stud* [Internet]. 2015 [cited 2015 Aug 29];52(11):1686-1693. Available from: <http://dx.doi.org/10.1016/j.ijnurstu.2015.06.011>.
6. Ruotsalainen JH, Verbeek JH, Mariné A, Serra C. Preventing occupational stress in healthcare workers. *Cochrane Database Syst Rev* [Internet]. 2015 [cited 2016 Mar 13];(4):CD002892. Available from: <http://dx.doi.org/10.1002/14651858.CD002892>.
7. Tveito TH, Sembajwe G, Boden LI, Dennerlein JT, Wagner GR, Kenwood C, Stoddard AM, Reme SE, Hopcia K, Hashimoto D, Shaw WS, Sorensen G. Impact of organizational policies and practices on workplace injuries in a hospital setting. *J Occup Environ Med* [Internet]. 2014 [cited 2015 Feb 15];56(8):802-8. Available from: <http://dx.doi.org/10.1097/JOM.0000000000000189>.
8. Sulzbacher E, Fontana RT. Conceptions of nursing staff about the exposure to physical and chemical risks in hospital environment. *Rev Bras Enferm* [Internet]. 2013 [cited 2015 May 16];66 (1):25-30. Available from: <http://dx.doi.org/10.1590/S0034-71672013000100004>.
9. Urbanetto Jde S, Magalhães MC, Maciel VO, Sant'Anna VM, Gustavo Ada S, Poli-de-Figueiredo CE, et al. Work-related stress according to the Demand-Control Model and Minor Psychic Disorder in nursing workers. [Internet]. 2013 [cited 2016 Sept 12];47(5):1186-93. Available from: <http://dx.doi.org/10.1590/S0080-623420130000500024>.
10. Peng J, Jiang X, Zhang J, Xiao R, Song Y, Feng X, et al. The impact of psychological capital on job burnout of Chinese nurses: the

mediator role of organizational commitment. PLoS One [Internet]. 2013 [cited 2015 Aug 16];8(12):e84193. Available from: <http://dx.doi.org/10.1371/journal.pone.0084193>.

11. Wang X, Liu L, Zou F, Hao J, Wu H. Associations of Occupational Stressors, Perceived Organizational Support, and Psychological Capital with Work Engagement among Chinese Female Nurses. Biomed Res Int. [Internet]. 2017 [cited 2017 Jan 12];5284628. Available from: <http://dx.doi.org/10.1155/2017/5284628>.

12. Wu S, Singh-Carlson S, Odell A, Reynolds G, Su Y. Compassion Fatigue, Burnout, and Compassion Satisfaction Among Oncology Nurses in the United States and Canada [Internet]. 2016 [cited 2016 Dec 12];43(4):E161-9. Available from: <http://dx.doi.org/10.1188/16>.

13. Kim M, Ryu E. Structural Equation Modeling of Quality of Work Life in Clinical Nurses based on the Culture-Work-Health Model. J Korean Acad Nurs [Internet]. 2015 [cited 2015 Dec 04];45(6):879-89. Available from: <http://dx.doi.org/10.4040/jkan.2015.45.6.879>.

14. Bae SH, Fabry D. Assessing the relationships between nurse work hours/overtime and nurse and patient outcomes: systematic literature review. Nurs Outlook [Internet]. 2014 [cited 2015 Dec 20];62(2):138-56. Available from: <http://dx.doi.org/10.1016/j.outlook.2013.10.009>.

15. Dall'Ora C, Griffiths P, Ball J, Simon M, Aiken LH. Association of 12 h shifts and nurses' job satisfaction, burnout and intention to leave: findings from a cross-sectional study of 12 European countries. BMJ Open [Internet]. 2015 [cited 2016 May 18];5(9):e008331. Available from: <http://dx.doi.org/10.1136/bmjopen-2015-008331>.

16. Han K, Trinkoff AM, Gurses AP. Work-related factors, job satisfaction and intent to leave the current job among United States nurses. J Clin Nurs [Internet]. 2015 [cited 2016 June 15];24(21-22):3224-32. Available from: <http://dx.doi.org/10.1111/jocn.12987>.

17. Rosado IVM, Russo GHA, Maia EMC. Generating health elicits illness? The contradictions of work performed in emergency care units of public hospitals. Cien Saude Colet [Internet]. 2015 [cited 2016 May 25];20(10):3021-32. Available from: <http://dx.doi.org/10.1590/1413-812320152010.13202014>.

18. Feleke SA, Mulatu MA, Yesmaw YS. Medication administration error: magnitude and associated factors among nurses in Ethiopia. BMC nursing [Internet]. 2015 [cited 2016 July 19];141:53. Available from: <http://dx.doi.org/10.1186/s12912-015-0099-1>.

19. d'Ettorre G, Greco M. Healthcare Work and Organizational Interventions to Prevent Work-related Stress in Brindisi, Italy. Saf Health Work [Internet]. 2015 [cited 2016 July 22];6(1):35-8. Available from: <http://dx.doi.org/10.1016/j.shaw.2014.10.003>.

Han Y, Yuan Y, Zhang L, Fu Y. Sleep disorder status of nurses in general hospitals and its influencing factors. Psychiatr Danub [Internet]. 2016 [cited 2016 Sept 24];28(2):176-83. Available from: http://hdbp.org/psychiatria_danubina/pdf/dnb_vol28_no2/dnb_vol28_no2_176.pdf

Submission: 2017/01/24

Accepted: 2017/07/03

Publishing: 2017/07/15

Corresponding Address

Maria Aparecida Alves de Oliveira Serra
Universidade Federal do Maranhão
Centro de Ciências Sociais, Saúde e Tecnologia
Rua Urbano Santos, s/n
Bairro Centro
CEP: 65900-410 - Imperatriz (MA), Brazil