

# Work accidents involving nursing professionals in Brazil: 2007-2017

## Acidentes de trabalho envolvendo profissionais de enfermagem no Brasil: 2007-2017

### Accidentes de trabajo de profesionales de enfermería en Brasil: 2007-2017

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# REVISA

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#### RESUMO

**Objetivo:** analisar a frequência de registros de acidentes de trabalho (ATs) com PEs no Brasil entre 2007 a 2017. **Método:** Trata-se de um estudo epidemiológico, exploratório, descritivo com abordagem quantitativa. Foram utilizados dados extraídos dos Anuários Estatísticos de Acidentes do Trabalho (AEAT) e Sistema Eletrônico do Serviço de Informações ao Cidadão (e-SIC) desenvolvidos pelo Ministério da Economia (ME). **Resultados:** Após o processo de organização e análise dos dados foi identificado o universo de 2.706 registros. A maior preponderância identificada entre as categorias foi de 48,8% (n=1.321) técnicos em enfermagem (NWs) e por tipo de acidente o típico com 49,6% (n=1.129). **Conclusão:** Por meio da presente pesquisa foi verificado ascensão progressiva da frequência de registros de casos de ATs envolvendo PEs no recorte histórico e geográfico analisado.

**Descritores:** Enfermagem; Acidente de trabalho; Exposição a agentes biológicos.

#### ABSTRACT

**Objective:** to analyze the frequency of records of work accidents (WAs) with PEs in Brazil between 2007 and 2017. **Method:** This is an epidemiological, exploratory, descriptive study with a quantitative approach. Data extracted from the Statistical Yearbook of Accidents at Work (AEAT) and the Electronic System of the Citizen Information Service (e-SIC) developed by the Ministry of Economy (ME) were used. **Results:** After organizing and analyzing the data, a universe of 2,706 records was identified. The highest preponderance identified among the categories was 48.8% (n=1,321) nursing technicians (NTs) and by type of accident the typical with 49.6% (n=1,129). **Conclusions:** Through this research, there was a progressive increase in the frequency of records of WA cases involving PEs in the analyzed historical and geographic cut.

**Descriptors:** Nursing; Work accident; Exposure to biological agents.

#### RESUMEN

**Objetivo:** analizar la frecuencia de registros de accidentes de trabajo (ATs) con EP en Brasil entre 2007 y 2017. **Método:** Se trata de un estudio epidemiológico, exploratorio, descriptivo con enfoque cuantitativo. Se utilizaron datos extraídos del Anuario Estadístico de Accidentes de Trabajo (AEAT) y del Sistema Electrónico del Servicio de Información al Ciudadano (e-SIC) desarrollado por el Ministerio de Economía (ME). **Resultados:** Luego de organizar y analizar los datos, se identificó un universo de 2.706 registros. La mayor preponderancia identificada entre las categorías fue del 48,8% (n=1.321) técnicos de enfermería (TE) y por tipo de accidente el típico con 49,6% (n=1.129). **Conclusión:** A través de esta investigación, se produjo un aumento progresivo en la frecuencia de registros de casos de AT que involucran a EP en el corte histórico y geográfico analizado.

**Descritores:** Enfermería; Accidente de trabajo; Exposición a agentes biológicos.

ORIGINAL

## Introduction

Nursing Workers (NWs) engaged in the provision of health services perform activities that require physical proximity to the patient, in addition to handling various materials and equipment and are therefore predisposed to a series of risks that can result in Work Accidents (WAs).<sup>1</sup> According to Brazilian legislation (art. 19 of Law No. 8,213 / 91), occupational accidents (OAs) are accidents that occur during work and that result in bodily injury or functional disturbance that causes death, loss or reduction, permanent or temporary, of the activity's capacity.<sup>1-2</sup>

A typical accident is considered to be one that occurs during work performance, such as a commuting accident that occurs during commuting between the home and the workplace and as acquired or triggered by special conditions, in which the activity is performed and relate to it.<sup>2-3</sup> Every WA must be registered with the competent social security authority, using the Work Accident Report (CAT) for this purpose.<sup>3</sup>

Thus, hospitals provide services in order to treat patients with different pathologies, however, it is an environment that subjects professionals to various risks, among which are the physical, chemical, mechanical, biological, ergonomic and psychological agents, which can cause WA and / or occupational disease (s).<sup>4</sup> Hospital workers are placed in an environment (s) with risk level II, according to Regulatory Norm (NR) number 04, for performing health care activities in their various types of complexity.<sup>4-5</sup>

Although the nursing professional provides care and care for their patients, the literature demonstrates that when it comes to exercising care that is important to themselves, they tend to be, usually, "negligent".<sup>6</sup> In this sense, the biological agents to which nursing professionals are frequently exposed are bacteria, fungi, bacilli, parasites, protozoa and viruses.<sup>6-7</sup>

Some of these pathogens, such as HIV and Hepatitis B and C viruses, have been consistently reported as the most important cause of infectious and contagious uncle's diseases, through accidents with sharps.<sup>8-9</sup> Thus, the WAs generated by exposure through contaminated biological material, must be notified in a standardized form by the Ministry of Health (MS) in the Notifiable Diseases Information System (SINAN) and in Reference Centers in Occupational Health (CEREST).<sup>8-10</sup>

To further intensify the risks that affect health professionals, there is the fact that workers in this sector suffer limitations imposed by their own living and health conditions.<sup>10</sup> In order to guarantee workers' accident benefits, most companies try to organize some forms of recording these accidents, however, in practice, there is a reduction in the normalization of these procedures and a deficient disclosure to professionals in the face of this phenomenon.<sup>10-11</sup>

In this sense, it becomes necessary to establish routines related to immediate precautionary measures, such as guidelines, as well as the availability of chemoprophylaxis in cases of exposure to biological material from HIV-AIDS patients or strangers.<sup>9-11</sup> According to the specifications of Law number 6.514 / 1977, the Personal Protective Equipment (PPE) is defined as being, every device or product, of individual use used by the worker, to

guarantee the protection of risks that may threaten safety and health in labor activity.<sup>12</sup>

Already according to article number 166 of the referred legislation, the employing company is obliged to supply these devices to employees, free of charge, in addition to the appropriate equipment and in perfect condition and functioning aiming at developing the due protection to possible WA.<sup>12</sup> Nursing, more than other professional categories of the multidisciplinary team, depends heavily on adherence to the use of PPE's due to the particularities of the work, in addition to the number of interventions and procedures to be implemented, which increases the risks of contamination.<sup>9-10,12-13</sup>

Several studies are currently demonstrating the fact that a considerable portion of nursing and health professionals are not fully adhering, or incorrectly adhering to the use of PPE.<sup>13</sup> In view of this exposed problem, it is necessary to face the health of nursing professionals with the same relevance as that of users of care, since work plays an essential role in the population's living conditions and well-being.<sup>13-14</sup>

In this sense, the quality of the services provided by employees also depends on the organization of the protected work exercise, with regard to the conditions under which this activity is implemented, preventing them from suffering wear, illness or WA.<sup>14</sup> Considering the previous context, the objective of this research is to analyze the number of occupational accidents among nursing professionals in the geographic section formed by "Brazil" in the historical section formed by the years "2007 to 2017".

## Method

This is an epidemiological, exploratory, descriptive study with a quantitative approach, which proposed to analyze the frequency of records of work accidents involving nursing professionals in Brazil, over a 10-year time series.

The data were extracted from a database in the Statistical Yearbook of Accidents at Work (AEAT) of the Social Security Secretariat and through requests for access to information in the Electronic System of the Citizen Information Service (e-SIC), both of a nature public, free and open access, being organized and maintained by the Ministry of Economy (ME).

In this analysis study of the WA of nursing professionals, the information is constituted, while the analytical categories were organized through the National Classification of Economic Activities (CNAE) number "8,650", which corresponds to the activities of health professionals, except doctors and dentists, years, professional category, types of accidents and number of professionals who developed occupational disease.

After data acquisition, they were organized for analysis using Microsoft Office Excel 2016® software, which belongs to the Microsoft Office 2016® package, for Windows®. Descriptive statistical analysis was implemented, with the implementation of one (01) figure and four (04) explanatory tables and calculations related to their respective percentages (%).

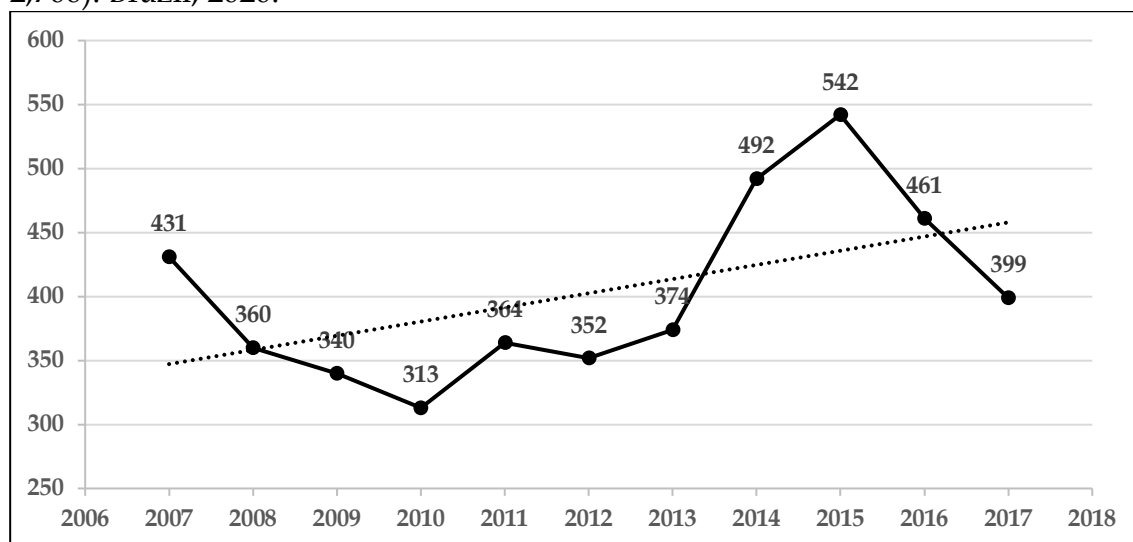
For the discussion of the data obtained, electronic bibliographic surveys were carried out with national and international databases, including the Virtual Health Library of Brazil (VHL®), Latin American Literature in Health Sciences (Lilacs®), Minerva- UFRJ, Saber-USP, Scientific Electronic Library Online (SciELO®), thus acquiring articles from scientific journals and related legislation. The present study did not present any conflict of interest.

## Results

After the process of organizing and analyzing the data, the universe of 4,428 accidents that occurred in the geographic and historical framework instituted was identified, in relation to the activities of health professionals, except doctors and dentists in Brazil. It was also found that of the categories of economic activities analyzed, 61.1% (n = 2,706) were nursing professionals (NP), with a mean and standard deviation (402.5 ± 70.9).

The greatest preponderance was made up of 48.8% (n = 1,321) nursing technicians (NWs), among workers who triggered occupational disease, the TE also stands out with 38% (n = 27). In this sense, in relation to the PEs that had a WA record, it was found that the highest preponderance was identified in 2015 with 12.2% (n = 542) and the lowest in 2010 with 7.1% (n = 313), as shown in Figure 1.

**Figure 1** - Distribution of WAs records for PEs in Brazil from 2007 to 2017 (n = 2,706). Brazil, 2020.



Source: Adapted by the authors, Brazil, 2020.

Analyzing the total number of cases between the years 2007 to 2017, there was an increase in the number of WA cases with NP. Table 1 shows the amount of WA with these professionals, which occurred in the 10-year time series, with the year 2015 having the highest preponderance with 12.2% (n = 542) and the year 2010 registering the lower preponderance with 7.1% (n = 313).

**Table 1** - Distribution of occupational accident records involving all activities of health professionals, except doctors and dentists in Brazil from 2007 to 2017 (n = 4,428). Brazil, 2020.

Year	Typical	%	Path	%	OD	%	Total	%
2017	205	8	190	10,7	04	4,4	399	9
2016	267	10,4	188	10,6	06	6,7	461	10,4
2015	317	12,4	220	12,4	05	5,6	542	12,2
2014	286	11,2	201	11,3	05	5,6	492	11,1
2013	206	8,1	162	9,1	06	6,7	374	8,4
2012	210	8,2	138	7,8	04	4,4	352	7,9
2011	217	8,5	139	7,8	08	8,9	364	8,2
2010	168	6,6	127	7,1	18	20	313	7,1
2009	192	7,5	134	7,5	14	15,6	340	7,7
2008	220	8,6	129	7,2	11	12,2	360	8,1
2007	270	10,6	152	8,5	09	10	431	9,7
<b>Total</b>	<b>2.558</b>	<b>100</b>	<b>1.780</b>	<b>100</b>	<b>90</b>	<b>100</b>	<b>4.428</b>	<b>100</b>

Source: Adapted by the authors, Brazil, 2020.

Legend: OD: Occupational Disease \* The values shown in the table were faithful to the data acquired.

In Table 2, it was identified that the category that suffered the most WA was that of NT with 48.8% (n = 1,321) cases, immediately afterwards the nurse professional registered 24.9% (n = 674) and nursing assistants (NA) 24.2% (n = 655) cases.

**Table 2-** Distribution of work accident records involving nursing professionals by category in Brazil, 2007 to 2017 (n = 2,706). Brazil, 2020.

Professional category	f	%
<b>Nursing Technician(NT)</b>	<b>1.321</b>	<b>48,8</b>
Occupational Nursing Technician	19	0,7
Psychiatric Nursing Technician	07	0,2
Intensive Care Nursing Technician	04	0,1
<b>Nurse</b>	<b>674</b>	<b>24,9</b>
Work nurse	05	0,1
Surgical Center Nurse	03	0,1
Nephrologist Nurse	03	0,1
Auditor Nurse	02	0,1
Neonatologist Nurse	01	0,04
Psychiatric Nurse	01	0,04
Intensive Care Nurse	01	0,04
<b>Nursing assistant (NA)</b>	<b>655</b>	<b>24,2</b>
Work Nursing Assistant	10	0,3
<b>Total</b>	<b>2.706</b>	<b>100</b>

Source: Adapted by the authors, Brazil, 2020. \* The values shown in the table were faithful to the data acquired.

In Table 3, it was identified that the prevalence of cases is higher among NWs, accounting for 48.8% (n = 1,321) cases, both in typical and commuting accidents, and those of the typical type, correspond to the highest number of cases among all cases. professional categories analyzed, totaling 2,277 cases.

**Table 3** - Distribution of records of occupational accidents involving nursing professionals, by type of accident in Brazil from 2007 to 2017 (n = 2,706). Brazil, 2020.

Professional category	Typical	%	Path	%	Total	%
<b>Nursing Technician</b>	<b>1.129</b>	<b>49,6</b>	<b>192</b>	<b>44,8</b>	<b>1.321</b>	<b>48,8</b>
Occupational Nursing Technician	11	0,4	08	1,8	19	0,7
Psychiatric Nursing Technician	05	0,2	02	0,4	07	0,2
Intensive Care Nursing Technician	02	0,09	02	0,4	04	0,1
<b>Nursing assistant</b>	<b>564</b>	<b>24,8</b>	<b>91</b>	<b>21,2</b>	<b>655</b>	<b>24,2</b>
Work Nursing Assistant	07	0,3	03	0,7	10	0,3
<b>Nurse</b>	<b>544</b>	<b>23,9</b>	<b>130</b>	<b>30,3</b>	<b>674</b>	<b>24,9</b>
Work nurse	05	0,2	0	-	05	0,1
Surgical Center Nurse	03	0,1	0	-	03	0,1
Auditor Nurse	02	0,09	0	-	02	0,07
Nephrologist Nurse	02	0,09	01	0,2	03	0,1
Intensive Care Nurse	01	0,04	0	-	01	0,04
Neonatologist Nurse	01	0,04	0	-	01	0,04
Psychiatric Nurse	01	0,04	0	-	01	0,04
<b>Total</b>	<b>2.277</b>	<b>100</b>	<b>429</b>	<b>100</b>	<b>2.706</b>	<b>100</b>

**Source:** Adapted by the authors, Brazil, 2020. \* The values presented were faithful to the data acquired.

Table 4 shows the number of professionals who had an occupational disease (OD), and it is possible to identify that NT are the category that most presented OD, adding 38% (n = 27) of the cases and Nurses registered the lowest frequency, with a total of 22.5% (n = 16).

**Table 4-** Distribution of records of professionals who had a record of occupational disease (OD) in Brazil from 2007 to 2017 (n = 71). Brazil, 2020.

Professional category	f	%
<b>Nursing Technician(NT)</b>	<b>27</b>	<b>38</b>
Intensive Care Nursing Technician	01	1,4
Psychiatric Nursing Technician	01	1,4
Occupational Nursing Technician	-	-
<b>Nursing assistant(NA)</b>	<b>24</b>	<b>33,8</b>
Nursing Assistant at Work	01	1,4
<b>Nurse</b>	<b>16</b>	<b>22,5</b>
Surgical Center Nurse	01	1,4
Auditor Nurse	-	-
Intensive Care Nurse	-	-
Work nurse	-	-
Nephrologist Nurse	-	-
Neonatologist Nurse	-	-
Psychiatric Nurse	-	-
<b>Total</b>	<b>71</b>	<b>100</b>

**Source:** Adapted by the authors, Brazil 2020. \* The values shown in the table were faithful to the data acquired.

## Discussion

In relation to the increase in the frequency of records of WA cases of nursing professionals in Brazil, a relationship is found with what is exposed in the scientific literature, when it is exposed that, due to the complexity of the activities performed by these professionals, they coexist more time with patients in addition to performing a large amount of direct and indirect care with them.<sup>13-15</sup> In this way, for some authors, there is practically “no concern” about the worker and, thus, it is possible to observe the nosocomial paradox in relation to caring for the sick and allowing the people who care for them to get sick.<sup>14-15</sup>

The risks inherent to the hospital environment are multiple, but in the specialized literature, some are presented that are considered the most evident.<sup>15,16</sup> They are classified as, physical risk that is associated with the material structure of the workplace, chemical risk that corresponds to the interaction of nursing professionals with chemicals, biological risk resulting from the contact that the professional has with organic substances, ergonomic risk that are related with labor procedures involving effort and physical posture.<sup>13-16</sup>

Regarding accidents that occur in the hospital environment, they can generate major psychosocial clashes, coupled with the risk of contamination of various disorders.<sup>16-17</sup> The WAs that occur in healthcare environments have several causes, including overload of work, carelessness, development of work activities in three (03) or more institutions, reduction or inadequacy of PPE's, physical tiredness, stress and weaknesses that arose in the course of professional practice.<sup>15-17</sup>

In relation to the TE, constituting itself as the category that suffers the most WA, it also finds support in the scientific literature when it is proposed that, in addition to being quantitatively in greater number among the employees of the Serbs of health, they assume a large portion of direct and indirect care directed to patients, followed by nurses, who develop more complex procedures and interventions.<sup>17-18</sup> On the other hand, in the nursing team, the technician develops his activities during the workday, being more exposed to risks of various orders, due to the character of the activities carried out, such as carrying out hygiene and promoting patient comfort, organizing the environment, contempt for urine, drainage of secretions and emptying of collection vials.<sup>4,15-17</sup>

In this way, NWs make up one of the largest part of the numerous victims of WAs with sharps.<sup>17,19</sup> In relation to what was identified with regard to the greater preponderance of typical accidents, a correlation with the scientific literature was also identified when it is proposed that they occur in the execution of work and the various activities, corresponding to the largest number, due to a significant number of PEs do not introduce the technical knowledge of prevention in their daily practical activities.<sup>18-20</sup>

Considering this reality, it is necessary that companies and health institutions invest more strongly in this preventive process, continuously in programs and training, encouraging professionals to reflect on their actions and attitudes, thus effecting real behavioral changes, with the objective of invigorate adherence to the use of PPE.<sup>19-20</sup> On the other hand, accidents that happen in the

hospital environment occur mainly due to the reduction in the use of care and precautionary instruments, regarding safety and prevention measures.<sup>20-21</sup>

PPE's are important resources to mitigate the risks of numerous workplaces, however, the process of resistance of professionals to use these important equipment, represent and present themselves as factors that most concern researchers of this important theme.<sup>18-21</sup> In this sense and, due to various factors and situations, the concern with the resistance of nursing and health professionals in relation to the use of PPE's is increasing more and more, requiring the development of new mechanisms and strategies to mitigate this public health problem..<sup>19-22</sup>

NWs are the workers who least adhere to the use of PPE, and several studies point to the reduction of experience and training in this category, however, a large part of this class reports the existence of discomfort, forgetfulness, unconcern, as being some of the main reasons that lead them to not use this important protective equipment.<sup>21-22</sup> NWs are the workers who least adhere to the use of PPE, and several studies point to the reduction of experience and training in this category, however, a large part of this class reports the existence of discomfort, forgetfulness, unconcern, as being some of the main reasons that lead them to not use this important protective equipment.<sup>19-22</sup>

Nursing workers, over the period of acquired experience, may, due to several factors, not perform their work activities with the necessary accuracy, when carrying out their procedures and care.<sup>20-21</sup> On the other hand, reasons related to the inappropriate infrastructure available in the workplace, in addition to the reduced availability of protective equipment, the reduced knowledge of the various types of prevention procedures by nursing and health professionals, and the great intense pressure exercised by superiors, can strongly contribute to this non-adherence in the use of equipment, in addition to the emergence of various situations of accident generation.<sup>20-24</sup>

In the case of what has been identified in relation to commuting accidents, it is pointed out by the scientific literature that, generally, they are related to the use of public transport and also motorcycles, which are used as a private transport for the locomotion process to the work.<sup>18-19</sup> In this context, the greatest preponderance of the analyzed occurrences was related to the falls generated in the boarding process, that is, "going up" and disembarking, in other words, "getting off" in public transport ("bus") and, traffic accidents, involving motorcycles that are normally vehicles considered to be the most vulnerable.<sup>18-22</sup>

Still on commuting accidents, Provisional Measure (MP) number 905/2019, presents in its body changes in the preventive area, because, in this document, the "Green and Yellow Work Contract" was instituted, changing the labor and social security legislation.<sup>24</sup> Among the topics published in this important document, changes are presented in relation to these accidents, revoking article number 21, item IV, letter "d", of Law No. 8,213 / 91, which equates the commuting accident suffered by the employee to the accident typical work, and thus, with this decision, it will no longer be considered as AT and therefore, as long as the MP is valid, companies will not need to report a CAT.<sup>24</sup>



In this context, the NP represent a large part of the population that suffers from health problems, caused by the work they perform, since they constitute themselves as collaborators of a category of professionals who experience this problem on a daily basis.<sup>20,21,25</sup> The causes of work-related illnesses come from working relationships, which cause discomfort, conflicts, stress and in extreme situations, decrease in vital capacity, which may cause, in some cases, the anticipation of the professional's death.<sup>25</sup>

On the other hand, it was also possible to identify that the category that registered the most cases of occupational disease was that of TE, the same being in common with the scientific literature, because of these collaborators, they are normally responsible for the great part of direct care with patients.<sup>20,25,26</sup> In the work environment, there are multiple ergonomic factors related to environmental and organizational problems, which increase the risk of the appearance of Repetitive Strain Injuries (RSI) and Work-related Musculoskeletal Disorders (WMSD) and, among them, are the presence of inadequate technological resources, including furniture, the lack of special equipment to move the sick, in addition to the reduction of permanent health education for professionals.<sup>25-26</sup>

It is still important to highlight what is defended by some researchers, in relation to "precariousness" and "negligence" related to the formalization of accident records of nursing and health professionals.<sup>6,10</sup> Studies show that hospital management usually has several difficulties in providing compliance with the protocol so that these episodes are properly recorded, due to the fact of weakening or in some way denigrating the organization's image before the market and society.<sup>6,10,25</sup>

The causes of underreporting of WAs exposed by nursing and health professionals, possibly indicate the reduced information in relation to the various risks, the epidemiological and legal aspects that involve this problem, as well as the subordination of employees to the conditions of imposed by the employer.<sup>25-27</sup> On the other hand, the phenomenon of underreporting WAs is also closely related to defense mechanisms of the worker, that is, when he is faced with the possibility of contamination and associates with the idea of death, it generates fear and fear.<sup>25-28</sup>

Thus, according to some researchers, it was verified over the years, a lower frequency of notification of WAs among employees classified while not competing, making clear their fear of losing their jobs, a serious issue that leads us to a reflection about the ethical and moral aspects involved in labor relations in our country.<sup>27-29</sup>

## Conclusion

Through this research, an increase in the frequency of WA records with PEs was identified in the analyzed geographical and historical profile. It was also possible to verify that, among NP, ET is the category that suffers the most WA, due to the characteristics of the activities performed by them and also, for assuming the largest share of the care provided to patients in the various hospital environments.

There are several aspects that contribute to the WA happening, for example, excessive work activities, physical and mental exhaustion, in addition to stress, these being some of the factors that cause the inattention and neglect

of the PEs. Thus, the improvement of working conditions must be operationalized, aiming to allow the reduction of WAs, remembering that the physical and emotional health of workers, constitutes itself as something essential for increasing productivity, generating results and institutional progress.

Although the present research has limitations, it constitutes a genuine contribution to a better interpretation of the analyzed phenomenon. The issue of underreporting the WAs of PEs was also identified in the present study, which may constitute a hindrance to this phenomenon that is a public health problem.

PEs' WAs are a noisy problem with health institutions in their various modalities, generating direct and indirect impacts including finances on companies belonging to this sector of activity and also the process of removing the victimized employee. On the other hand, some publications specifically point to the issue of reducing EPI's adherence by PEs, which is a barrier in relation to the resistance to the use of these important instruments.

Overload, stress, improvisation, and professional exhaustion are also constituted as phenomena closely related to the emergence of WAs among PEs, needing to be vigorously combated in daily work. The limited knowledge of some EPs in relation to the importance of the process of notifying the WA (s), is also configured as an existing barrier in the best combat and control of this problem, needing to be rethought strategies for its mitigation.

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