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RESEARCH

Profile of Brazilian workers victims of occupational accidents with biological fluids

Perfil dos trabalhadores brasileiros vítimas de acidente de trabalho com fluidos biológicos

Perfil de los trabajadores brasileños víctimas de accidentes laborales con fluidos biológicos

Fernanda Moura D'Almeida Miranda[I], Elaine Drehmer de Almeida Cruz[I], Jorge Cestari Vinícius Félix[I], Luciana Puchalski Kalinke[I], Maria de Fátima Mantovani[I], Leila Maria Mansano Sarquis[I]

[I] *Universidade Federal do Paraná, Postgraduate Program in Nursing. Curitiba, Paraná, Brazil.*

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ABSTRACT

Objective: To characterize the Brazilian workers victims of occupational accidents with biological fluids. **Method:** Epidemiological and descriptive research, in which 284,877 notifications of the Notifiable Diseases Information System were analyzed between 2007 and 2014. We used Stata 13 for data analysis. **Results**: The highest incidence density occurred in females with 0.8 cases per 1,000 workers/year (n = 222,042, 77.9%); in the age group of 20 to 24 years old, with 0.6 cases per 1,000 workers/year (n = 64,221, 23.3%); with some high school and some college, with 0.6 cases per 1,000 workers/year (n = 141,275, 49.6%). We found that these accidents occurred among 23 occupational subgroups. For the most part, the workers had an employment relationship and had issued the Occupational Accident Notification. **Conclusion**: It is necessary to rethink the measures of orientation to workers regarding the risks and relative prophylaxis for these accidents, with the aim of reducing them.

Descriptors: Categories of Workers; Occupational Accidents; Exposure to Biological Agents; Information Systems; Occupational Health Nursing.

RESUMO

Objetivo: Caracterizar os trabalhadores brasileiros vítimas de acidente de trabalho com fluidos biológicos. **Método:** Pesquisa epidemiológica, descritiva, na qual foram analisadas 284.877 notificações do Sistema Nacional de Notificação de Agravos, entre 2007 e 2014. Utilizou-se Stata 13 para a análise dos dados. **Resultados**: A maior densidade de incidência ocorreu no sexo feminino com 0,8 caso a cada 1.000 trabalhadores/ano (n = 222.042; 77,9%); na faixa etária de 20 a 24 anos com 0,6 caso a cada 1.000 trabalhadores/ano (n = 64.221; 23,3%); com Ensino Médio e Superior incompleto com 0,6 caso a cada 1.000 trabalhadores/ano (n = 141.275; 49,6%). Verificou-se que esses acidentes ocorreram entre 23 subgrupos ocupacionais. Em sua maioria, os trabalhadores possuíam vínculo empregatício e tiveram emitida a Comunicação de Acidente de Trabalho. **Conclusão**: Faz-se necessário repensar as medidas de orientação aos trabalhadores quanto aos riscos e profilaxia relativa para estes acidentes, visando reduzi-los ou diminui-los.

Descritores: Categorias de Trabalhadores; Acidentes de Trabalho; Exposição a Agentes Biológicos; Sistemas de Informação; Enfermagem do Trabalho.

RESUMEN

Objetivo: Identificar a los trabajadores brasileños víctimas de accidentes laborales con fluidos biológicos. **Método:** Investigación epidemiológica, descriptiva, en que se evaluaron 284.877 casos en el *Sistema Nacional de Notificação de Agravos*, durante el periodo de 2007 a 2014. En el análisis de datos se empleó el *software* Stata 13. **Resultados:** La mayor incidencia de casos ocurrió con las mujeres, 0,8 caso por cada 1.000 trabajadores/año (n = 222.042; 77,9%); del grupo etario de 20 a 24 años con 0,6 caso por cada 1.000 trabajadores/año (n = 64.221; 23,3%); de educación media y superior incompletas con 0,6 caso por cada 1.000 trabajadores/año (n = 141.275; 49,6%). Dichos accidentes ocurrieron con 23 subgrupos ocupacionales. En la mayoría de los accidentes, los

trabajadores tenían vínculo laboral, siendo emitida la Comunicación de Accidente Laboral. **Conclusión:** Es necesario repensar las medidas de orientación a los trabajadores sobre los riesgos y las profilaxis de estos accidentes para minimizarlos o disminuirlos.
Descriptores: Grupos Profesionales; Accidentes de Trabajo; Exposición a Agentes Biológicos; Sistemas de Información; Enfermería del Trabajo.

CORRESPONDING AUTHOR **Fernanda Moura D'Almeida Miranda** E-mail: fernandadalmeida79@hotmail.com

INTRODUCTION

Occupational accidents with biological fluids (OABFs) are defined as those involving potentially contaminated human blood and/or biological fluids, which can lead to the transmission of more than 20 infectious-contagious pathogens, including human immunodeficiency virus (HIV), hepatitis B (HBV) and hepatitis C (HCV), by injuries caused by needles and sharps or skin or mucosal exposure. Workers are exposed to the biological risk inherent in health services, and the severity as well as the frequency of these diseases may vary[1].

We highlight that these accidents can occur in non-related health activities, such as: funeral services, beautification, public safety, urban cleaning, among others. Moreover, they may be linked to situations of urban violence that may occur during the journey to work.

A study carried out in Minas Gerais, Brazil, with 235 manicures/pedicures showed that 49.4% suffered OABFs. The majority of respondents (71.5%) reported not using PPE during customer service, and glove use was reported in only 26.4% of cases[2]. It should also be noted that these workers are exposed to microorganisms through direct or indirect contact, and accidents can occur through percutaneous, mucosal and/or full and non-intact skin exposure.

Another victim occupation of ATFB is the urban garbage collectors. A study carried out in Mato Grosso do Sul reported that biological risks are present in the work activity of these workers, such as: accidents with syringes with unclogged needles discarded in household trash. These accidents cause injuries that are gateways to the biological agents present in the trash, such as bacteria, fungi and viruses[3]. In order for these accidents to be reduced or minimized, it is necessary to make the population aware of the best packaging of household waste for disposal.

In Paraná, a study in which 253 cases of OABFs recorded in a Cerest were analyzed was carried out, among which were the occupations of accident victims, namely those not related to health such as administrative assistants (1.2%); garbage collectors (5.1%) and military and civil police, and firefighters (2.4%)[4]. It is important to enable these workers to be aware of the risks to which they are exposed and so try to avoid them.

For the treatment of ATFB victims in Brazil, the guidelines for the care and follow-up of the workers affected by ATFB were promulgated in 1999. And the notification of this aggravation became mandatory from 2004, through Ordinance No. 777 of the Ministry of Health; however, its implementation began in mid-2006, when the organization of the National Network of Attention to Worker's Health established the creation of the Reference Centers for Workers' Health throughout the national territory. These centers are responsible for the training of sentinel units in order to carry out compulsory notification of the 11 work-related injuries among them: the OABFs[5-6].

By means of Ordinance No. 104/2011, it was reiterated the obligation by the Ministry of Health to compulsory notification of the 11 health-related injuries of the worker and the obligation of Health Surveillance, state and municipal, to notify them, expanding the network of notifier units of these injuries[7]. In 2014, Ordinance No. 1.271 was published, which maintained the obligation to notify the OABFs and determined that this aggravation should be notified weekly, both by the public and private health services. This Ordinance was reiterated by Ordinance No. 204 and 205 of February 17, 2016[8-9].

In view of the mandatory reporting of these accidents, the interest in the research arose, and considering that there is no study on the Brazilian reality, the aim was to characterize the victims of work-related accidents with biological fluids in Brazil, between 2007 and 2014.

METHOD

Ethical aspects

This research respects the ethical precepts and was approved by the Research Ethics Committee (REC) according to Resolution of the National Health Council No. 466/12 of the Ministry of Health.

Conception

This is an epidemiological, descriptive, cross-sectional, population-based research.

Study site

Brazil was used as territorial base, considering its 27 federative units. Data were collected from the Notifiable Diseases Information System (SINAN), through the notification and investigation form entitled "Work-related accident with exposure to biological material".

Period

The data were provided electronically by the General Coordination of Workers Health (CGSAT) of the Brazilian Ministry of Health, referring to the period from 01/01/2007 to 12/31/2014 and were extracted on 07/27/2015.

Study population

We analyzed 284,877 notifications of OABFs recorded during this period. The inclusion criteria were: the victims were between 15 and 69 years old, being workers and/or students.

Study protocol

This is a population-based study that used SINAN data from 2007 to 2014, whose analysis used the software STATA 13[10] for statistical description of absolute and relative frequency and to carry out statistical tests such as mean, median and standard deviation, Poisson regression and incidence density.

Data analysis

For the calculation of incidence density (ID), the numerator used was equal to the total number of OABFs in the period from 2007 to 2014 and the denominator was the number of the population of workers of the Brazilian Demographic Census of 2010 multiplied by the 8 years of the research. The incidence measure used was 1,000 workers per year.

RESULTS

It was verified that the predominant gender was the female, with 77.9% of the reported cases of ATFB. The ID among the female sex was of 0.8 cases per 1,000 workers per year; while that of male sex was of 0.2 case to each 1,000 workers per year. Moreover, these results showed that the frequency of notification was 4.4 times higher among females than males.

The age group of 25 to 29 years was the most affected for both males and females, with 23.3% of those reported. Another obvious factor was the distribution of OABFs between the ages of 20 and 34, with the highest number of notifications, according to Table 1. The mean age of ATFB was 34.3 years, with a standard deviation of 9.9.

The highest ATFB ID related to the age group was between 25 and 29 years old, with 0.6 cases to each 1,000 workers per year, according to Table 1. When comparing the incidence in relation to gender, this age group was also the most affected in females; the incidence density was of 1.1 case to each 1,000 workers per year; in the male, was of 0.2 cases to each 1,000 workers per year.

In Table 2, of the cases of ATFB, it was verified that 49.6% of the workers have complete High School, followed by the workers with complete Higher Education, with 20.1%. It should be noted that the number of ignored or white was 19.9%. The highest DI was among workers with complete Higher Education; and for those with complete High School and incomplete Higher Education: 0.6 cases to each 1,000 workers per year. Regarding gender, it was identified that ID was higher in the High School and in the incomplete Higher Education among the female sex, with 1.2 cases to each 1,000 workers per year; and in males, the incidence density was higher in the complete Higher Education, with 0.4 cases to each 1,000 workers per year.

It should be pointed out that when comparing the frequency of OABFs, in the female sex there are a greater number of accidents related to the complete High School and the incomplete Higher Education when compared to the Higher education, being a proportion of 3 accidents to 1. Among male gender, this difference was of 1.2 accidents to 1.

Another finding was the incidence related to occupational groups: it was identified that the workers most affected by the OABFs with complete High School were the auxiliary dentists and dental assistants, with 42.0 cases to each 1,000 workers per year; followed by mid-level nursing and birth professionals, with 38.3 cases to each 1,000 workers per year. Among the occupations with complete higher education, the most affected were veterinarians, with ID of 17.9 cases to each 1,000 workers per year; followed by nursing and birth professionals, with 9.3 cases to each 1,000 workers per year (Table 3).

Table 1 – Distribution of work-related accidents with biological fluids by absolute and relative frequency and incidence density for gender and age bracket****, between 2007 and 2014, Brazil

Age bracket (Years old)	Female				Male				Total			
	n	Working Pop.*	%**	ID***	n	Working Pop.*	%**	ID***	n	Working Pop.*	%**	ID***
15-19	3,777	2,154,652	1.3	0.2	1,303	3,236,275	0.4	0.05	5,080	5,390,928	1.8	0.1
20-24	33,582	4,518,622	12.1	0.9	10,056	6,225,318	3.6	0.2	43,638	10,743,940	15.8	0.5
25-29	48,445	5,259,268	17.5	1.1	15,776	6,947,255	5.7	0.2	64,221	12,206,523	23.3	0.6
30-34	39,713	5,197,890	14.4	0.9	11,984	6,595,604	4.3	0.2	51,697	11,703,494	18.7	0.5
35-39	29,843	4,583,030	10.8	0.8	7,816	5,856,734	2.8	0.1	37,659	10,439,764	13.6	0.4
40-44	23,191	4,253,854	8.4	0.6	5,108	5,429,656	1.8	0.1	28,299	9,683,510	10.2	0.3
45-49	17,231	3,711,500	6.2	0.5	3,563	4,800,610	1.2	0.09	20,794	8,512,109	7.5	0.3
50-54	11,330	2,830,749	4.1	0.5	2,334	3,841,636	0.8	0.07	13,664	6,672,385	4.9	0.2
55-59	5,583	1,837,301	2.0	0.3	1,461	2,788,823	0.5	0.06	7,044	4,626,125	2.5	0.1
60-69	2144	1,422,574	0.7	0.1	1,036	2,632,367	0.3	0.04	3,180	4,054,941	1.1	0.09
Total	214,839	35,679,440	78.0	0.8	60,436	48,354,278	22.0	0.2	275,275	84,033,719	100	0.4

Source: Notifiable Diseases Information System (2016).

*Note: *Working Pop. - - It is the population of Brazilian workers according to the Demographic Census (IBGE, 2010); ** For the calculation of relative frequency, the denominator used was the total number of work-related accidents with biological fluids during the study period (N = 275,275); *** Incidence Density; ****In this table, we excluded the extreme ages (less than 15 years and over 69 years) and the white and ignored fields; regarding the time on job, most of the notifications were unfilled or ignored (N = 116,603; 40.9%), followed by workers with 2 to 5 years of work (n = 87,662, 30.8%).*

Table 2 – Distribution of work-related accidents with biological fluids by absolute and relative frequency and incidence density for schooling, between 2007 and 2014, Brazil

Schooling	Female				Male				Total			
	n	Working Pop.*	%**	ID***	n	Working Pop.*	%**	ID***	n	Working Pop.*	%**	ID***
No education and incomplete Primary Education	7,779	11,697,595	2.7	0.08	4,733	21,506,958	1.7	0.02	12,512	33,204,553	4.4	0.04
Complete Primary Education and incomplete High School	12,787	6,179,321	4.5	0.2	4,315	9,168,593	1.5	0.05	17,102	15,347,913	6.0	0.1
Complete High School and incomplete Higher Education	118,928	12,383,424	41.7	1.2	22,347	14,098,648	7.8	0.1	141,275	26,482,072	49.6	0.6
Complete Higher Education	39,395	6,096,005	13.8	0.8	17,767	4,844,297	6.2	0.4	57,162	10,940,303	20.1	0.6
Ignored/Blank	43,153	174,182	15.1	30.9	13,673	204,816	4.8	8.3	56,826	378,998	19.9	18.7
Total	222,042	36,530,527	77.9	0.8	62,835	49,823,312	22.1	0.2	284,877	86,353,839	100.0	0.4

Source: Notifiable Diseases Information System (2016).

*Note: *Working Pop. - It is the population of Brazilian workers according to Demographic Census (IBGE, 2010); **For the calculation of relative frequency, the denominator used was the total number of work-related accidents with biological fluids during the study period (N = 284,877); ***ID = incidence density.*

Table 3 – Distribution of work-related accidents with biological fluids by absolute and relative frequency and incidence density among the occupational subgroups by gender, between 2007 and 2014, Brazil

Occupational subgroups******	Female				Male				Total			
	n	Working Pop.*	%**	ID***	n	Working Pop.*	%**	ID***	n	Working Pop.*	%**	ID***
Mid-level nursing and birth professionals	127,822	396,385	44.9	40.3	17,075	76,147	6.0	28	144,897	472,532	50.9	38.3
Domestic workers and other interior cleaning workers	14,092	5,886,238	4.9	0.2	8,584	956,792	3.0	1.1	22,676	6,843,030	8.0	0.4
Physicians	9,322	130,698	3.3	8.9	12,654	188,236	4.4	8.4	21,976	318,934	7.7	8.6
Nursing and birth professionals	18,396	234,241	6.5	9.8	2,501	45,415	0.9	6.8	20,897	279,656	7.3	9.3
Veterinarians	5,024	20,843	1.8	30.1	1,901	27,294	0.7	8.7	6,925	48,137	2.4	17.9
Medical and pharmaceutical technicians	5,483	782,412	1.9	0.8	1,396	68,551	0.5	2.5	6,879	137,037	2.4	6.2
Auxiliary dentists and dental assistants	5,325	14,678	1.9	45.3	229	1,826	0.1	15.6	5,554	16,504	1.9	42.0
Personal service workers	2,768	2,326,500	1.0	0.1	124	1,487,535	0.0	0.01	4,008	3,814,035	1.4	0.1
Direct service workers	2,273	1,209,461	0.8	0.2	766	413,137	0.3	0.2	3,039	1,622,598	1.1	0.2
Labor, environmental and related health inspectors	1,527	31,894	0.5	5.9	609	87,165	0.2	0.8	2,136	119,059	0.7	2.2
Protection and security personnel	162	118,637	0.1	0.1	1,586	1,457,734	0.6	0.1	1,748	1,576,371	0.6	0.1
Pharmaceuticals	1,199	68,955	0.4	2.1	440	38,849	0.2	1.4	1,639	107,804	0.6	1.9
Physiotherapist	1,317	78,512	0.5	2.0	271	22,633	0.1	1.4	1,588	101,145	0.6	1.9
Car, truck and motorcycle drivers	26	76,222	0	0.04	1,117	2,377,227	0.4	0.05	1,143	2,453,449	0.4	0.05

To be continued

Table 3 (concluded)

Occupational subgroups******	Female				Male				Total			
	n	Working Pop.*	%**	ID***	n	Working Pop.*	%**	ID***	n	Working Pop.*	%**	ID***
Dentists	756	123,789	0.3	0.7	322	100,291	0.1	0.4	1,078	224,080	0.4	0.6
Members of the Armed Forces, police and firefighters	103	28,219	0	0.4	940	460,893	0.3	0.2	1,043	489,112	0.4	0.2
Garbage collectors and other elementary occupations	178	375,392	0.1	0.05	50	966,669	0	0.006	228	1,342,061	0.1	0.02
Personal care workers	188	1,231,174	0.1	0.01	22	159,862	0	0.01	210	1,391,036	0.1	0.01
Psychologists	70	116,490	0	0.07	12	22,329	0	0.06	82	138,819	0	0.07
Social assistants	71	120,193	0	0.07	11	26,962	0	0.05	82	147,155	0	0.06
Dietitians and Nutritionists	64	49,732	0	0.1	7	5,339	0	0.1	71	55,071	0	0.1
Health professionals not previously classified	23	19,781	0	0.1	4	3,486	0	0.1	27	23,267	0	0.1
Others****	25,853	0	9.1	_	11,098	_	3.9	_	36,951	_	13	
Total	222,042	13,440,446	77.9	2.1	62,835	8,994,372	22.1	0.9	284,877	21,720,892	100	1.6

Source: Notifiable Diseases Information System (2016).

*Note: *Working Pop. - It is the population of Brazilian workers according to Demographic Census (IBGE, 2010); **For the calculation of relative frequency, the denominator used was the total number of work-related accidents with biological fluids during the study period (N = 284,877); ***ID = Incidence Density. ****In this table, the population of workers is smaller than those presented previously due to the selection of the occupational groups; ***** "Others" are the students and occupations barely defined, according to the IBGE terminology; ****** The occupational subgroups were classified according to the Brazilian Occupational Classification (BOC) used by the IBGE.*

When comparing the ID of the occupational groups, it was observed that, in the female sex, the occupations with complete High School were the auxiliary dentists and dental assistants, with 45.3 cases to each 1,000 workers per year, and the mid-level of nursing and birth professionals, with an incidence density of 40.3 cases to each 1,000 workers per year. In the higher-level occupations, the veterinarians had 30.1 cases to each 1,000 workers per year; followed by nursing and birth professionals, with ID of 9.8; followed by physicians, with 8.9 (Table 3).

In the male sex, the highest ID in the mid-level occupations was among nursing and birth professionals, with 28.0 cases to each 1,000 workers per year; followed by auxiliary dentists and dental assistants, with 15.6 cases to each 1,000 workers per year. In the occupations of higher education, the most affected groups were: veterinarians, with 8.7 cases to each 1,000 workers per year; the physicians, with 8.4; and the nursing and birth professionals, with 6.8 cases to each 1,000 workers per year (Table 3). It is assumed that high ID in the occupational groups can be explained by two factors: there would have been more than one ATFB among the workers; and data from the 2010 Census population for these occupations would have been underestimated.

Regarding the situation in the labor market, the data showed that the majority of workers are employed (n = 199,305; 69.9%), being employed with a formal contract (n = 137,145; 48,1%) and military and civil officers (n = 62,160; 21.8%). The ATFB ID was 0.4 case to each 1,000 workers per year among employees with a formal contract. It was pointed out that the highest ID was between military employees and civil officers, with 1.6 cases to each 1,000 workers per year; followed by unpaid workers, with ID of 0.9 cases to each 1,000 workers per year. The CAT issuance occurred in 48.1% of the workers employed with a formal contract, and the field on CAT issuance was ignored or blank in (n = 58,538; 20.5%).

DISCUSSION

Studies of OABFs are usually conducted at local or regional health services; compared to this research, there was a limitation that made the discussion fragile, due to the number of notifications analyzed and also because these studies, for the most part, only addressed health workers.

The results of this research indicated that the female sex was more affected by the OABFs. A study evidencing similarity with the results found in this study, as well as the one carried out in Paraná, in which 1,217 notifications of OABFs among workers were analyzed, found that the majority of accidents occurred among females, with 83.3% of notifications[11]. It is noteworthy that the health professionals, in their majority, have more female professionals, such the Nursing area. However, the majority of occupational groups had higher ID scores among females than males.

Regarding the age bracket, the results found in this study corroborate the study carried out in Venezuela with 285 workers from clinical laboratories, the average age was 37.9 years, with a standard deviation of 9.9 years[12] - data similar to that found in this research, in which the average age was 34.6 years, with a standard deviation of 9.9 years. The OABFs among young workers point out the need for a better orientation during the training process so that they know the ways

of preventing such accidents. The high number of accidents among young workers may also be associated with inexperience and technical inability, requiring a greater time to adapt to their work activity and health services routines.

Confirming the results related to schooling, a study carried out in São Paulo with 636 nursing professionals indicates that 57.7% of the participants had completed High School, followed by 29.1% with complete Higher Education[13]. These data demonstrate that health activities in Brazil are carried out predominantly by professionals with complete High School education, and, in association with their occupations, it can be said that these are the most affected in the OABFs. The exercise of health activities by middle-level workers can be justified by the low level of education of the Brazilian population and also by economic factors, since the hiring of technicians is cheaper to the employer.

Regarding the time in the occupation, national and international studies indicate that the shorter time of experience in the work activity in the health area generates a greater number of ATFB. A study carried out in Minas Gerais with 67 professionals from the prehospital care service showed that 53.7% of the OABFs occurred with less than 4 years and 11 months of work in the institution [14]. Similar result was also presented in the Palestine study with 331 nurses, of whom 58.9% had less than 5 years of professional experience and 85.5% worked for less than 5 years in the institution [15]. These studies confirm the results found in this research, suggesting that the shorter the time in the professional activity and in the health institution, the greater the chances of the ATFB.

In this research, it was identified that the OABFs occurred among health workers and other unrelated areas. The following are some national and international studies that address the various occupations affected by OABFs. A study carried out at a Reference Center for the care of ATFB victims in a city in the interior of São Paulo, in which the accidents recorded between 2005 and 2010 were analyzed, showed that of the 461 cases of ATFB, 84.4% were among workers of the health area and 15.6% were among students. The greatest number of accidents occurred among nursing workers, with 47.3%, followed by dentistry workers, with 22.3% of accidents. Among nursing workers, the most affected were nursing assistants, with 31.7%, 7.8% nursing technicians and 7.8% nurses; and of dentistry, 14.3% were dentists and 8% were dental assistants[16].

Considering that nursing professionals had the second highest density of incidence in this research, it should be pointed out that the number of OABFs is higher among these professionals because this category has the highest number of workers in the health area and is exposed to risks in the development of their work activity, which is the direct care to the patient. Another justification for these data is that this professional category consists of almost 1.8 million workers, with 80% being of technicians and nursing assistants and 20% of nurses. It is highlighted that currently, in Brazil, there are approximately 3.5 million workers in the health area and that nursing represents 65% of this total. Also, in this study, the number of work-related accidents reported in the last 12 months were showed, according to which 35.8% of the nursing professionals surveyed were victims[17].

Also, in relation to the occupational subgroups, a study carried out in Rio de Janeiro, in a public hospital, between 1997 and 2009, in which 1,457 cases occurred with 1,193 health workers, it was pointed out that there was 15% of occurrences of ATFB involving cleaning auxiliaries, which is a reflection of the inadequate disposal of sharps in garbage, benches, beds and floors[18]. It is important to note that repair and maintenance workers, including cleaning and laundry assistants, are injured due to the carelessness of health professionals who do not properly dispose of sharps used in assistance.

Another occupation undertaken by the ATFB is that of members of the Armed Forces, who are at risk of such accidents when carrying out military operations, especially in combat or in humanitarian missions. A study carried out with US military personnel in an Afghanistan hospital pointed out that, between 2007 and 2012, there were N = 31 cases of exposure to biological fluids, with N = 19 cases of OABFs. Among the cases of ATFB, N = 16 were by percutaneous exposure and N = 3 by mucocutaneous, most (N = 14) occurred in a hospital environment, and the other N = 5 cases occurred in military operations [19].

Also identified in this research, there were the military firefighters, who are exposed to biological risks and have stressors due to their activity in emergency response. The was study carried out in Mato Grosso, in which 307 military firefighters were interviewed in the period from August to November 2010, indicated that N = 195 (63.5%) reported having suffered ATFB[20]. This study did not show the year of the occurrence of the accidents; however, when comparing with the Sinan registration number in the period of such research, it is inferred to be a cause for concern, since there may be underreporting of ATFB cases among these professionals due to the high number of accidents reported and in a single Brazilian city.

Regarding the situation in the labor market, the majority of workers victims of ATFB had an employment relationship in this research, thus had their labor and social security rights secured. Corroborating these results, a study carried out on the profile of nursing workers in Brazil showed that most of the nursing team had a formal relationship (61.3%). Still in this study, another result found that 34.4% had no relationship; they were: service providers (30.3%); cooperatives (1.9%); autonomous (1.7%) and shareholder and/or owner (0.5%)[21]. It is assumed that there is an underreporting related to the autonomous workers due to these disregarding the seriousness of the ATFB and also due to the necessity of being absent from their professional activities for the consultation and the accomplishment of examinations referring to the ATFB, which means for them the loss of financial resources.

In the present study, the CAT was emitted in 48.1% of the cases. According to this result, a study carried out in Minas Gerais with 136 prehospital care professionals in 2006, evaluated the OABFs with medical professionals, nurses, technicians and nursing assistants and drivers. Regarding the issuance of CAT: among doctors and nurses, there was not; among the auxiliaries and nursing technicians, only in 10% of the accidents; among drivers, only 16.7%. In the total, only 8.7% of the cases had the issuance of the CAT[22].

Study limitations

The limitations of this research were to fill out the notification form and SINAN data were not complete, which resulted in a high number of notifications that had the field blank and ignored, not allowing a better analysis of the results. This research does not end with these results.

Contributions to the nursing area

It is considered that this work can contribute to the training of future nurses through scientific knowledge presented and that is a source of inspiration for new research in the area of the workers' health, because knowing the causes of injuries is the best way to prevent them.

CONCLUSION

The victims of ATFB were female, young and with a complete High School education and/or incomplete Higher Education, had an employment relationship and had the Work-related Accident Notification issued. 23 occupational subgroups were identified, but most accidents occurred among health workers. It is inferred that these workers are also of reproductive age, which also shows risk of illness to their partners and children.

Also, in this research, it was possible to characterize the profile of the workers affected by the OABFs through the analysis of the data regarding the notification of this aggravation. The records of the OABFs are extremely important for the health of the workers by listing the identified problems and, thus, it is possible to suggest measures that can intervene in this reality. The analysis of the data generated by the notifications must be carried out constantly in order to be presented to the notifying and sentinel units and, thus, to improve the epidemiological surveillance system of the OABFs.

It should be emphasized that the nurse is one of the trained professionals, both for actions aimed at improving the notifications of this aggravation, as well as for the education and inspection activities of the regulations in force in the areas of health and safety at work.

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