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Serious work accidents in Rio Grande do Norte: a cross sectional study

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ABSTRACT

Aim: To describe the profile of serious occupational accidents in the state of Rio Grande do Norte, Brazil, from 2007 to 2014. **Method:** This is a cross-sectional study on the serious workplace accidents reported in the Information System for Notifiable Diseases. **Results:** there was an increase in the reporting of these occurrences involving predominantly male workers between 25 and 44 years and the typical accidents during the entire period. The most common development was a temporary disability and the hands were the most affected part of the body; the mining and construction industries had the largest number of cases and the registered employees were the most victimized professionals. **Conclusion:** The findings demonstrate the importance of reporting accidents at work in the health services to support decision-making and planning of public policies.

Descriptors: Accidents, Occupational; Occupational Health; Epidemiology, Descriptive; Occupational Accidents Registry; Occupational Risks; Public Health Surveillance.

INTRODUCTION

Historically, workers have endured many unfortunate events in the workplace, resulting in major repercussions in the social, economic and health spheres. Exposure to physical, chemical, ergonomic, psychosocial and/or biological risks arising from the execution of professional activities can result in diseases and occupational injuries[1]. Work-related aggravation results in diseases and accidents that affect the general population, but which especially acquires different characteristics in certain categories of workers[2].

The International Labor Organization (ILO) estimates that 2.34 million people worldwide die each year from job-related accidents and diseases. This equates to a daily average of more than 6,300 deaths. It is also estimated that workplace accidents and occupational diseases result in an annual loss of 4% in gross domestic product (GDP), or an estimated 2.8 billion dollars in direct and indirect costs of injuries and illnesses[3].

Among the problems, which can occur during employment, workplace accidents (WA) are considered the most serious and, therefore, have a greater epidemiological importance due to their high occurrence rates in Brazil. They represent approximately 25% of injuries from external causes in emergency services and over 70% of accident benefits from Social Security[4].

For reporting and analysis purposes, the Ministry of Health (MOH) considers that severe work accidents (SWA), which result in physical or functional mutilation, or which lead to injuries whose nature implies extremely serious events, such as multiple traumas, amputations, crushing, cranial trauma, spinal fractures, spinal cord injury, trauma with visceral lesions, electrocution, suffocation, burns, loss of consciousness and miscarriage; may have very damaging, or even fatal, consequences. Moreover, accidents involving individuals who are younger than 18 years of age are considered to be serious occupational accidents[2,3].

In Brazil, WA are considered to be a major public health problem because they, not only cause harm to workers and employers, but also affect the country's economy; therefore, they deserve to be analyzed in terms of the aspects for better understanding and controlling the risks. However, in Brazil, the knowledge in terms of the magnitude of the problem is still very limited, contrary to the existence of a legal structure, so that WA are notified and the information produced is used to guide the actions in the promotion and prevention of damage to the health of workers. Thus, under reporting is a reality that impedes knowledge, in terms of the actual conditions in which the work develops, disqualifying social rights and international security to workers[5-6].

The National Occupational Health Policy has been in force since 2004, and aims to reduce work-related accidents and diseases, through health promotion, rehabilitation and health surveillance. Its main strategy is through the National Network for Integral Occupational Health Care (RENAST), which is composed of the State and Regional Occupational Health Reference Centers (CEREST) (scientific and technical support centers in the work/health/disease process, which are aimed at developing prevention and surveillance actions to improve working conditions and the quality of life of workers). In addition, there are sentinel medical service networks of medium and high complexity, responsible for diagnosing accidents and diseases related to work and recording them in the Notification

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Disease Information System (SINAN-NET), a system developed for the collection and dissemination of data generated routinely in epidemiological surveillance[2].

This calls for complete, updated and reliable information on the occurrence of accidents and diseases to which workers are subject in the exercise of their professions, for the guidance in terms of measures to minimize such events and to subsidize the development of targeted policies on the workers who are often victims of occupational accidents and diseases. Existing data sources provide incomplete information, which shows partial and often, mismatched panoramas, thus requiring specific studies to better understand this issues[7].

In addition, diseases and disorders related to the workplace are hardly recognized as related to work, especially today, given the globalization characterized by the diffusion of new technologies, the flow of ideas, the exchange of goods and services, the increase in capital and financial flows, the internationalization of business, and the movement of people, especially changing the way people and nations interact. There has been a major revolution in labor law, whose reflection is seen in the casualization of labor and occupational health. In fact, the recognition of the problem as originating at work, and finding the causal link has been made into a real ordeal for workers searching for a diagnosis and the link between their health problems and their work activity[4,8].

Within the whole context surrounding the occurrence and formal knowledge of occupational accidents in Brazil, the underreporting of such accidents, including fatal events, is recognized as an obstacle to the planning of occupational health surveillance actions. Studies[3,4,7] have shown that the reported statistics correspond to less than a third of total deaths, and even the Ministry of Social Security states that the real figures are understated.

In Brazil, many studies[4,8-11] have shown that one of the major gaps regarding workers' health is related to the limitations of the Information System (IS), which allows the estimation and systematically monitoring of the real impact of work on workers' health. In this sense, the under-reporting of diseases and work-related events undermines the development of a risk profile and the actual worker's situation in order to support the planning of health actions and safety. This situation is mainly due to ignorance in terms of the impact of work accidents on workers' health and the lack of answers organized by the Unified Health System (UHS) regarding their prevention and control

Considering the magnitude and importance of this theme, the aim of this study was to describe the profile of SWA in the state of Rio Grande do Norte as reported to the SINAN/CEREST between 2007 and 2014.

METHOD

This was a cross-sectional study, conducted with secondary data relating to the SWA, which occurred in Rio Grande do Norte between 2007 and 2014, from the notification of this diseases and accidents in SINAN/CEREST.

Sinan is part of the UHS information system from an ongoing process of collection, transmission and dissemination of information in terms of reportable diseases and accidents, constituting a fundamental tool of the epidemiological surveillance system. The data is collected and entered into the munici-

pality, sent to the regional health authorities and forwarded weekly to the state secretariat. Fortnightly data is sent to the federal organization. For the notification of diseases and disorders related to work, routines and data flows are defined, based on the capabilities and operational capacity of CEREST organizations and their sentinel units[2].

The state of Rio Grande do Norte is located in the Northeast of Brazil. It has 167 municipalities in 52,811 km^2, which is equivalent to 3.42% of the area of the Northeast region and 0.62% of the surface area of Brazil; plus an estimated population of 3,373,959 inhabitants. Officially, the only metropolitan area of the state is the region of Natal. The state includes the following municipalities: Natal, Parnamirim, São Gonçalo do Amarante, Ceará-Mirim, Macaíba, Extremoz, São José de Mipibu, Nísia Floresta, Monte Alegre and Vera Cruz.

Inclusion criteria were all cases of serious occupational accidents recorded in SINAN between 2007 and 2014, suffered by workers aged between 16 and 65 years. The excluded workers were those below 16 years and above 65 years, due to the incidence calculation to be performed based on the economically active population (EAP), defined for this age group. The calculation of the effects was carried out only until 2013, since the 2014 AEP was only disclosed in November 2015.

Through Ordinance 777, of April 28, 2004, the Ministry of Health regulated the compulsory notification of accidents and diseases related to the work place. That ordinance was replaced by Ordinance No. 104 in January 2011 and by Ordinance No. 1271 in June 2014, which, among other official documents, was concerned with the relationship of illnesses, diseases and public health events of mandatory notification. The ordinance has determined immediate notification of all SWA, regardless of labor linkage from the deployment of the Research Sheet (RS), through SINAN.

The study variables were the notified by occupational injury type (fatal WA or mutilation), gender, age, education, occupation, economic area of operation, worker's situation in the labor market and developments.

Characteristics related to WA were investigated, such as the body parts affected, the situation in the labor market, the type of accident and the evolution of cases.

The data recorded in the records were exported and tabulated through TabWin version 3.6, linked to SINAN-NET, and Microsoft Office Excel 2010. For the analysis, descriptive statistics were performed through absolute and relative frequency measures. The annual incidence of accidents was obtained by dividing the absolute number of accidents by the economically active population for each year studied per 100,000.

Risks related to gender, age and education for the year 2010 were also calculated, when the census data of the population led to a disaggregation by such features. The analysis was based on descriptive statistics and estimation of the incidence of accidents. To perform the analysis, we used the statistical program SPSS (version 20).

This study was conducted with public access aggregated secondary data provided by the state CEREST upon approval and written consent of the state administrator. In addition, the study was part of the research project entitled "Magnitude of morbidity related to work in Rio Grande do Norte", approved by the Ethics Committee of the Federal University of Rio Grande do Norte through the opinion No. 014/2014.

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RESULTS

The ATG reported cases showed a significant increase in the analyzed period, with an increase in the incidence of SWA by almost 10 times in the year 2011 (41.8/100 thousand) compared to 2007 (4.2/100,000).

Table 1: Frequency and incidence of serious occupational accidents and recorded each year in Rio Grande do Norte, 2014.

Year	n	%	Incidence Rate (per 100,000 between PEA)
2007	66	2	4,2
2008	116	3,6	7,2
2009	681	20,9	41
2010	511	15,7	37,2
2011	654	20,1	41,8
2012	560	17,2	35,3
2013	672	20,6	40,6
Total	3260	100	-

Source: authors

Regarding gender, male predominance was observed (91.8%), representing a six times higher risk compared to women. Most cases happened to workers in the age group 25-44 years (54.3%). However, the hazard ratio for this variable was not statistically significant. SWA also occurred among children, adolescents and young adults: 18 cases in the age group from 5 to 14, and 803 between 15 and 24 years. In addition, there was a predominance of low or little schooling amongst the victims, representing a risk five times higher between them. The number of incomplete or ignored data was relatively high (57.4%), compromising the analysis of this variable.

Table 2: risk ratio for serious industrial accidents according to gender, age and educational level. Rio Grande do Norte, 2014.

Variable	Hazard ratio	Confidence interval
Sex		
Female	1	-
Male	6,26	(6,20; 6,32)
Age group		
Até 24 anos	1	-
25 to 44 years.	1,21	(0,98; 1,44)
45 years and up	1,09	(0,83; 1,35)
Education		
University Graduation	1	-
Completed high school	3,38	(2,46; 4,30)
Complete elementary school	5,29	(4,36; 6,21)
Uneducated/incomplete elementary school	4,54	(3,64; 5,44)

Source: SINAN/CEREST/RN

In Table 3 it is observed that there was a predominance of typical accidents in all the analyzed years (n=2908/76.3%). Temporary disability was the most common outcome (2115/55.5%) and death occurred in 3.3% (127) of the cases. The hand was the most affected part of the body (1488/13.1%), followed by the upper limbs (708/6.19%) and lower limbs (644/5.63%) and the head (483/4.22%).

From Table 4 it can be seen that according to occupation, mining and construction industry workers were the ones who suffered more accidents (25.1%), followed by agricultural workers (12.5%) and workers of the service sector (11.1%).

When considering the bonds, the SWA victimized workers in different situations in the market. After excluding the ignored or blank ones, we can highlight the registered employee with a higher reporting frequency (34.2%); followed by the self-employed (13.1%); and the unregistered employee (9.1%).

Table 3: Frequency of serious occupational accidents second type of accident, evolution of the case and part of the body affected. Rio Grande do Norte, 2014

Variable	2007	2008	2009	2010	2011	2012	2013	2014	N	%
	n	n	n	n	n	n	n	n		
Type of accident										
Typical	61	88	572	408	528	432	444	375	2908	76,3
Path	5	24	78	73	85	82	189	119	655	17,2
Ignored/Blank	0	4	31	30	41	46	39	55	246	6,5
Case evolution										
Healing	1	5	34	99	113	185	140	124	701	18,4
Temporary disability	21	40	557	297	321	212	354	313	2115	55,5
Permanent partial disability	40	44	25	23	21	26	68	43	290	7,6
Permanent total disability	0	2	6	2	4	2	6	4	26	0,7
Death by accident	3	14	25	18	24	16	14	13	127	3,3
Death (other causes)	0	1	0	0	1	2	2	1	7	0,2
Others	0	0	6	7	4	4	4	8	33	0,9
Ignored / Blank	1	10	28	65	166	113	84	43	510	13,4
Body parts affected										
Whole body	3	10	10	11	9	26	17	15	101	0,9
Eyes	4	3	30	22	20	20	22	11	132	1,1
Head	6	21	90	54	98	75	74	65	483	4,2
Neck	1	3	10	8	9	2	3	7	43	0,4
Chest	0	5	47	29	33	33	23	25	195	1,7
Abdomen	1	5	22	13	15	27	16	10	109	1
Hand	25	35	286	219	265	224	225	209	1488	13,1
Upper limb	12	26	132	75	114	98	144	107	708	6,2
lower limb	6	18	89	98	95	73	155	110	644	5,6
Foot	10	11	53	51	74	40	82	45	366	3,2
Other	2	6	36	17	23	33	17	29	163	1,4
Ign / Blank	128	205	1238	936	1207	1035	1238	1014	7001	61,2
Total									11433	100

Source: SINAN/CEREST/RN

Table 4: Frequency of serious occupational accidents by type of occupation of the injured worker. Rio Grande do Norte, 2014.

SUBGROUP	2007	2008	2009	2010	2011	2012	2013	2014	Total	%
Workers in mining and quarrying and construction	28	38	183	134	180	127	145	116	951	25,1
Workers in the agricultural exploitation	1	7	40	56	99	96	87	89	475	12,5
Service workers	3	8	84	63	60	47	89	67	421	11,1
Other workers in conservation, maintenance and repair	0	3	74	45	40	78	59	40	339	9
Cross functions workers	15	14	42	38	40	30	37	28	244	6,4
Metals and composites processing workers	7	9	45	24	32	19	28	30	194	5,1
Wood and furniture industry workers	0	4	31	22	28	17	28	21	151	4
Food, beverages and tobacco manufacturing workers	1	3	26	25	27	28	18	19	147	3,9
Repair and mechanical maintenance service workers	7	7	38	12	25	13	26	15	143	3,8
Other occupations	4	23	114	89	119	104	150	117	720	19

Source: SINAN/CEREST/RN

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Table 5: Frequency of serious industrial accidents according to the worker's situation in the labor market. Rio Grande do Norte, 2014.

LABOUR MARKET SITUATION	2007	2008	2009	2010	2011	2012	2013	2014	Total	%
Ign / Blank	1	7	367	126	191	185	114	58	1049	27,5
Registered employee	64	85	137	190	193	168	270	197	1304	34,2
Unregistered employee	0	2	25	36	59	49	82	92	345	9,1
Self employed	1	9	37	53	84	79	117	119	499	13,1
Statutory public servant	]	5	8	14	14	13	22	15	91	2,4
Public servants Hired Under Employment Laws	0	2	1	3	6	3	2	2	19	0,5
Retired	0	1	1	7	5	7	3	5	29	0,8
Unemployed	0	1	1	1	1	6	3	4	17	0,4
Temporary worker	0	1	3	11	4	11	18	13	61	1,6
Co-op worker	0	2	83	27	61	19	16	6	214	5,6
Free lancer	0	1	13	41	29	13	12	23	132	3,5
Employer	0	0	3	0	1	1	3	4	12	0,3
Others	0	0	2	2	6	6	10	11	37	1

Source: SINAN/CEREST/RN

DISCUSSION

In this study, there was a significant increase in SWA notification in the period analyzed, especially in terms of the incidence in 2011 (41.8/100,000). A similar situation was found in the studies of Scussiato et al[9]. However, the study by Almeida et al[10] found different results with a significant decreasing trend in the incidence of WA, because the authors analyzed the incidence using the Department of UHS (DATASUS) as a database, which uses the source of the Ministry of Social Welfare, or only used the information from the workers insured by the INSS.

This situation demonstrates the importance of this information system by SINAN/UHS in order to provide greater visibility of the situation of this problem in Brazil, as it includes all workers, not just those covered by social security. Furthermore, with the inclusion of this aggravation as a compulsory notification event in the lobby of reportable diseases and injuries by the MOH, it aims to facilitate planning and surveillance and control of work-related ailments.

Furthermore, notifications and investigations of WA are among the main requirements for surveillance activities. Incentives for forming a network with notifying units should be reflected in the sentinel network structuring actions and training of its professionals. These actions favor the consolidation of SINAN deployment strategies and the continuity of activities in order to overcome the large-scale under-reporting of WA[2].

Brazil is considered to have a world record for WA, with three deaths every two hours and three non-fatal workplace accidents every minute. In 2009, there were approximately 750,000 WA among workers insured by the INSS, including 2,851 fatal ones. That is, on average 31 workers per day did not return to work activities due to disability or death, which represents one death every three hours that year. However, these data only show the reality of formally employed workers, namely, those insured by the INSS. However, it is estimated that half of the economically active population (EAP) works informally in Brazil[11]. A similar situation was observed in a study in India, where 90% of the labor force works in

the informal economy, especially in agriculture and the service sector, demonstrating a major weakness in health and safety and social security[12].

The informal market workers are those who, in addition to low pay, are deprived of social security benefits, lacking the financial support guaranteed in cases of illness and accidents or remunerated retirement. In this exercise, the other side of precariousness is the lack of unionization and the negligence recognized by employers regarding protection, safety, and health measures, since these workers are at the margins of the state's control[6,11,12].

This study also found that young workers are at greater risk of accidents. A similar situation has been found in other national and international studies[6,9,11,13,14], in which most accidents have affected young men, who were active participants in the workforce performing higher risk activities in terms of accidents. The high number of injuries in this age group is of concern, since WA can cause disability and sequelae, limiting and undermining professionals' productive capacities.

Another aspect worth mentioning is the occurrence of WA in children and adolescents - a situation also seen in this study. This fact reveals another aggravating factor against the worker, especially among children and adolescents, as it represents an important cause of morbidity and mortality among individuals in this age group[15].

Although child labor is legally prohibited in Brazil (except for special circumstances, such as apprentice programs for teens 14 to 16 years), this situation is still found mainly in areas of deeper social inequalities. Data from the International Labor Organization (ILO) confirms that there are 115 million children working in dangerous activities in the world, and, every minute a child suffers a WA, disease or trauma, jeopardizing their health and their social, psychological and intellectual development[15].

The ILO report also states that there are around 4.2 million children working in Brazil and more than half of them are working in activities considered of high occupational risk, such as manufacturing, mining and agriculture. However, this reality is not limited to developing countries like Brazil, but there is also evidence in the US and European countries that indicates a high vulnerability of young people in terms of WA[15].

Regarding the educational level, there was a high risk of up to five times the level of WA in workers with less education. This is supported by the studies of Bortoleto et al[6], Scussiato et al[9], Mascarenhas et al[13] and Celik et al[14]. In the studies of Bortoleto et al[6] and Celik et al[14] the results show that WA happened to those with fewer professional skills, lower wages and less decision-making power; in a population with little or no trade union links who were unaware of their rights as citizens and workers.

Regarding the functions of the professionals working in construction, agriculture and in services with the highest number of WA recorded, there was a similarity between the national and international data[9,16,17,18]. In Brazil, construction is the largest hand--absorbing work sector, thus it has become an important productive sector in the economic environment[16]. On the other hand, the magnitude of the occurrence of WA in construction makes it stand out as one of the most dangerous branches of production, since these workers have the most advanced stages of labor precariousness in relation to other workers. In Spain, however, it was found that mining workers had a higher risk of WA

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and lost more working days than construction workers[19].

In addition, various studies have pointed to a greater number of deaths related to WA in agricultural, transport and construction areas[20]. However, the studies of Mascarenhas et al[13] and Celik et al[14] showed a higher prevalence ratio of WA for laborers in the production of goods and services for the industrial and agricultural sectors, as well as in the repair and maintenance services.

The prevalence of typical work accident occurred in all the years analyzed, corroborating other studies[6,9,11,17]. In a similar study, Miranda[11] and colleagues found records in SINAN, including 52% of typical fatal WA in Brazil. However, the study of Adams et al[10] had divergent results and a decreasing tendency in terms of the typical WA incidence rate and a considerable increase in terms of the incidence of commuting accidents in Brazil. Thus, once again, we can see that the source of information restricted to workers insured by the INSS does not reflect the reality of the situation of other workers.

On the other hand, commuting accidents showed considerable growth during the period. This phenomenon is similar to the studies of Almeida et al[10] and Mascarenhas et al[13], in which it was emphasized that, among the factors that may have contributed to the growth in the number of commuting accidents in Brazil are the increase in the number of vehicles per capita, the introduction of the motorcycle as a means of commuting to work because of its speed and economy, the increase of violence and urban growth that has started to reach workers, especially in large urban centers, making it an important triggering factor for this type of accident.

Concerning the development of the cases, temporary disability prevailed in approximately 56% of cases of accidents in this study. In their study, Scussiato et al[9] also showed that more than half of injured workers suffered this type of disability, demonstrating that there was work absenteeism and severity in the accidents. Studies also showed that WA brings great losses and major social and economic impact for companies, workers, social security and society due to these absences for incapacity, with an estimated loss of around half a million working days per year[3, 4, 9, 11, 13,14].

With the potential to cause limitations and disabilities, the WA may also compromise the daily activities of the employee, including implications for the development of their daily routines and leisure activities. As a result, the affected individuals can generate feelings of frustration and uselessness. These feelings, in most cases, are accompanied by pain, insomnia, mood fluctuations, low self-esteem, depression, anxiety, professional devaluation, and others that are often symptoms of mental disorders, making it one of the major consequences for workers[20].

Importantly, the inability generated by this type of accident compromises the productive capacity of workers and it limits, or prevents, the family's livelihood. It often causes inconvenience to the economic and social situation, as the decrease in the income and consumption standards and financial instability as well.

Regarding the injured body parts in the accidents investigated, the hands, the upper and lower limbs and head were the most affected. Accordingly, Scussiato et al[9] found similar results. Other studies[6,16,17] have also pointed out the parts cited as among the most affected body parts in WA.

Considering the situation in the labor market, it became clear that the most affected victims of SWA were the registered workers.

However, if the ignored or blank cases had their employment relationships revealed, they would have the potential to change this evidence. A study that depicted the characterization of SWA in southern Brazil showed similar findings regarding the higher incidence of these accidents among workers with a formal contract[9].

However, it was observed that the forms of precarious employment, as in the case of unregistered employees and independent workers, are more susceptible to risks. This was revealed by the absence of social protection and is mainly because these professionals undergo worse working conditions.

Considering that social security is a fundamental right of citizens and presupposes assistance to all against risks throughout life and at work, it is one of the requirements proposed by the ILO to promote decent working environments, in that it promotes income security and social services for workers and their families[3].

From a legal standpoint, it is worth highlighting that the multiplicity of employment contracts is a result of corporate restructuring and reorganization of flexible working relationships experienced in the current labor world. In this context, it is not always what is established as the standard of protection to workers in the Brazilian labor legislation is respected, causing dissatisfaction and conflicts that have contributed greatly to the increase of risks related to work and, consequently, increases in diseases and accidents.

The findings of this research suggest an increase in the reporting of WA after the implementation of Ordinance 104 in 2011. However, it does not mean that the quality and coverage of information is appropriate (as demonstrated by other studies in Brazil), since the absence of notification does not necessarily indicate the lack of cases, but it often means an indication of a lack of notification or under-reporting[3,8,9,10,11,12,13,18].

In Brazil, under-reporting of WA is a major problem in the context of public health, a fact that not only hinders surveillance, but also the provision of labor and social security rights acquired. Also, there is still the ideological role of concealing the harmful impact of the productive organization of the health of workers[17].

However, the causes of under-reporting are multiple and, at times, difficult to eliminate. Nevertheless, it is possible to minimize them and, thus, to improve the monitoring system by acting on the components of health services to improve their efficiency from the proposed integration of the reporting units and the strengthening, the training, and the continuous supervision of these systems.

In this sense, this study also showed that the problems related to information systems in terms of health in Brazil continues to require better records, both with regard to coverage and data quality. The considerable number of blank or ignored data in all variables reinforces this incompleteness and inconsistency in terms of the notification. On the other hand, developments related to the WA notifications points to an improvement in the sensitivity of SINAN and a timid and gradual improvement.

It is important to consider that advances and changes in this situation also depend on improvements and proper structuring of the Worker's Health Reference Centers (CEREST), making them able to meet the growing demands of occupational health surveillance in a country of continental dimensions, which presents complex and structural changes in the labor market[3].

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Furthermore, we must consider as a limitation of this study, the use of data produced by the surveillance system. Although it may initially be the best source for analysis of epidemiological data, it is known that there are problems in SINAN (such as missing and blank data) that show superficial investigation and the very under-reporting, which prevents a situational diagnosis of Workers' Health Surveillance, with a more in-depth and accurate basis[4.18].

CONCLUSION

The occurrence of SWA is a reality to be faced within the governability of the areas of health, labor and employment and social security, which can permanently damage workers, their families and the society as a whole. The SINAN is a health-care information system that has the ability to explain how these accidents occur, and who are the most affected, so that the worker's health policy, human health, and also adult health, are more effective and may have a positive impact on life quality.

Considering this reality, the study showed a significant increase in the reporting of SWA in the analyzed period, characterized by the sequential publication of ordinances that regulated the notification of the accident by the SINAN. These findings demonstrate the positive outcome of the compulsory notification of WA, along the health services that meet the affected workers, in the sense of knowledge, in terms of the occurrence of such accidents for decision-making in planning and public health policies.

However, despite the limitations of information systems regarding workers' health, they have become fundamental tools of analysis and dissemination, thus allowing the planning and optimizing of health surveillance, in order to contribute to the implementation of health and security policies. Therefore, it is necessary to propose strategies and contributions that minimize the main existing difficulties and limitations. Thus, we can highlight the lack of integration between ministries (e.g., Health, Welfare and Labor), the dismantling of the health surveillance services (epidemiological, sanitary, environmental and worker) and the information systems, the under-reporting of records, and poor adherence of professionals to mandatory reporting, hindering a more accurate analysis of the actual epidemiological situation of workers in Brazil.

Finally, studies such as this become necessary because, with a more accurate description being closer to the reality of the epidemiological situation of WA and affected workers, it becomes possible to understand this phenomenon more deeply, in order to expand knowledge in this area and to provide support for other research.

It is hoped that this information will be used properly by public administrators so that SWA will have a small impact, thus preserving the life and health of many Brazilian workers and ensuring that their work is a source of dignity for everyone involved - workers, their families and society.

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