

WORK-RELATED INJURIES NOTIFIED IN THE WORKER HEALTH INFORMATION SYSTEM

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ABSTRACT: objectives: Describe the sociodemographic and work-related characteristics and identify the work-related injuries, reported in the Worker Health Information System of the State of Rio Grande do Sul. **Method:** A descriptive documentary study that gathered information by examining the records of the Individual Disease Notification Report, year 2015, at the *Sistema de Análise de Negócios* (SAN) of the 26 municipalities comprised by the 19th Regional Health Department of Rio Grande do Sul. Data analysis used simple and relative frequency calculation. **Result:** In total, 1,016 injuries were reported, mostly in men: 760 (74.8%); aged 18-29 years: 273 (26.8%). The most commonly reported injury was other occupational accidents, 787 (77.5%); 809 (79.6%) occurred in the workplace and 398 (39.2%) in the urban area. **Conclusion:** Most injuries (accidents and illnesses) involved young individuals, at working age, often resulting in permanent physical and mental disabilities.

DESCRIPTORS: Worker's health; Notification; Occupational accidents; Occupational diseases; Health Information System.

AGRAVOS RELACIONADOS COM O TRABALHO NOTIFICADOS NO SISTEMA DE INFORMAÇÕES EM SAÚDE DO TRABALHADOR

RESUMO: objetivos: descrever características sociodemográficas e de trabalho e identificar os agravos relacionados com a atividade laboral, notificados no Sistema de Informação em Saúde do Trabalhador do estado do Rio Grande do Sul. **Método:** estudo descritivo documental, com acesso aos registros de notificação do Relatório Individual de Notificação de Agravio, ano 2015, no Sistema de Análise de Negócio dos 26 municípios de abrangência da 19ª Coordenadoria Regional de Saúde do Rio Grande do Sul. Análise dos dados por meio de cálculo de frequência simples e relativa. **Resultado:** notificados 1.016 agravos, predomínio de homens 760 (74,8%), na faixa etária dos 18 aos 29 anos, 273 (26,8%). Tipo de agravo mais notificado foi outros acidentes de trabalho, 787 (77,5%); aconteceram no local de trabalho 809 (79,6%) e na zona urbana 398 (39,2%). **Conclusão:** percebe-se que a maioria dos agravos (acidentes e doenças) ocorridos foi com jovens, em plena idade produtiva, cujas marcas, físicas e psíquicas, muitas vezes, irão segui-los para toda a vida.

DESCRIPTORES: Saúde do trabalhador; Notificação; Acidentes de trabalho; Doenças ocupacionais; Sistema de Informação em Saúde.

AGRAVIOS ASOCIADOS CON EL TRABAJO NOTIFICADOS EN EL SISTEMA DE INFORMACIONES EN SALUD DEL TRABAJADOR

RESUMEN: Objetivos: Describir características sociales, demográficas y de trabajo e identificar los agravios asociados con la actividad laboral, apuntados en el Sistema de Información en Salud del Trabajador del estado de Rio Grande do Sul. **Método:** Estudio descriptivo documental, con acceso a los registros de notificación del Informe Individual de Notificación de Agravio, año 2015, en el Sistema de Análisis de Negocio de los 26 municipios que abarca la 19ª Coordinación Regional de Salud de Rio Grande do Sul. Análisis de los datos hecha por medio de cálculo de frecuencia simple y relativa. **Resultado:** Notificados 1.016 agravios, predominio de hombres 760 (74,8%), con media de edad de 18 a 29 años, 273 (26,8%). El tipo de agravo más apuntado fue otros accidentes de trabajo, 787 (77,5%); ocurrieron el local de trabajo 809 (79,6%) y en el área urbana 398 (39,2%). **Conclusión:** Se percibe que la mayoría de los agravios (accidentes y enfermedades) ocurrió con jóvenes, en edad productiva, cuyas señales, físicas y psíquicas, muchas veces, los seguirán por toda la vida.

DESCRIPTORES: Salud del trabajador; Notificación; Accidentes de trabajo; Enfermedades ocupacionales; Sistema de Información en Salud.

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● INTRODUCTION

Although work is very rewarding and promotes the quality of life of the individuals, work-related events such as occupational diseases and injuries may have a negative impact on the workers' lives ⁽¹⁾. Work-related illnesses and injuries have been affecting workers since the earliest times. However, it was only after the Industrial Revolution that occupational health became a serious matter of concern, because of the quick deterioration of the health of workers who often faced diseases, disabilities and even death because of their very hard and unhealthy working conditions ⁽¹⁾.

Workers suffer work-related injuries, i.e., these injuries are directly associated to their professional activities or to their dangerous and unsafe working conditions. Thus, workers' become increasingly affected by injuries, requiring monitoring⁽³⁾ and follow-up of their morbidity and mortality profile that involves work-related accidents, occupational diseases and work-related diseases ⁽⁴⁾.

According to the Brazilian legislation: Article 19 of Law No. 8,213 of 1991 and Complementary Law No. 150 of 2015, occupational accidents are those that occur

... in the course of a person's employment in the workplace (e.g. a company) or as a domestic worker employed in a home, or in the course of work of insured persons (...), causing bodily harm or functional disturbance, with permanent or temporary loss or reduced capacity to work, or even death^(5:14).

In 2013, according to the World Health Organization, 2.34 million workers died due to accidents and work-related diseases ⁽⁶⁾. It is estimated that 6,300 people die every day and 860,000 are injured or sick as a result of accidents or occupational diseases ⁽⁷⁾. In Brazil, 704,136 thousand work-related accidents were reported in 2014⁽⁸⁾.

The onset of the occupational disease is often insidious, over time, and can be divided into occupational injury and work-related disease. The occupational injury "is produced or triggered by risk factors arising from a specific work activity,". In turn, work-related disease is "acquired or triggered by many risk factors associated to the work activity and the work environment" ^(5:14).

When a relationship between the disease or accident and work activity is established, these events are of compulsory notification at the SINAN, according to the provision of Ordinance no 77/ GM of April 28, 2004 ⁽⁹⁾. Another tool is the Work Accident Communication (CAT), which must be sent by the company to the Social Security "on the first business day after the date of incapacity onset, irrespective of whether or not the worker is away, and immediately in case of death" ^(10:1).

In Rio Grande do Sul, work-related injuries (diseases and accidents) are subject to compulsory notification in the Worker Health Information System of Rio Grande do Sul (SIST/RS) since 2000. The System was implemented through the Decree 40.222/2000. The Individual Report of Notification of Injuries (RINA) is the instrument used to notify accidents and injuries at the SIST. ⁽¹¹⁾.

According to the International Labor Organization ⁽⁶⁾, data compilation is necessary to improve the preventive strategies for occupational accidents and diseases. The effectiveness of prevention depends on national collaboration between occupational health and safety institutions and occupational disease and occupational disease protection schemes. Prevention of injuries is of utmost importance, since it involves the protection of workers' lives and the survival of these individuals and their families, contributing to the social and economic development ⁽⁶⁾.

In this regard, reliable and accurate data on work-related injuries, such as the characteristics of the workers and their work activities, is needed. Based on such data, the Occupational Health Reference Centers, the health and nursing teams can adopt more accurate accident prevention and health promotion actions and guidelines on the protection against risks arising from their work activities; maintenance and recovery of their health; and rehabilitation, both individually and collectively ⁽¹²⁾.

The present study aimed to describe the sociodemographic and work characteristics and to identify the injuries related to the work activity reported in the Worker Health Information System.

● METHOD

Descriptive and documentary study with a quantitative approach. Data was collected in 2016 when the researchers accessed the Business Analysis System (SAN), at the website (<https://san.procergs.rs.gov.br>), which allows the compilation of records of (RINA), reported by the health teams in SIST/RS. The data examined was produced in 2015, including information from the 26 municipalities covered by the 19th, Regional Health Coordination (CRS) of the State of Rio Grande do Sul (RS).

The State of Rio Grande do Sul is divided into 19 CRS. The 19th CRS was selected because it is headquartered in Frederico Westphalen, located in the northern macro-region of the state, covering municipalities that develop curricular and extracurricular activities at the institution where the researchers perform their activities.

Authorization of the manager of the Reference Center for Occupational Health (CEREST), headquartered in Palmeira das Missões, of the technician responsible for the SIST/SAN was obtained to develop the study, which was approved by the Research Ethics Committee under statement No. 1,029,559. Registration and passwords of access were made available. The report generated by the SAN ensures the anonymity of the participants. Only the objective of the study is described.

The data was generated by report after the selection of the variables in the SAN system, such as: worker identification (gender, ethnicity/color, age group, schooling, zone, employment relationship, occupation); identification of the workplace (type of activity); description of the institution where the worker was assisted (type of care provided); description of the injury (type of injury, main diagnosis, site of the accident, outcome, agent causing the grievance, relationship of the grievance with work). All variables were typed into a database created with the Microsoft Excel® software and after simple and relative frequency calculation.

● RESULTS

In 2015, 1,016 complaints were reported in the 26 municipalities covered by the 19th Regional Health Coordination/RS.

The total number of workers affected by the injuries was 760 (74.8%) men; 908 of the participants (89.4%) were white; 273 (26.8%) were aged 18-29 years, and 460 (45.3%) had incomplete primary education, according to Table 1.

Table 1 – Sociodemographic characteristics of the workers who suffered health injuries in 2015. N=1.016. Frederico Westphalen, RS, Brazil, 2017 (continues)

Variables	N	%
Gender		
Male	760	74.8
Female	256	25.2
Color/ethnicity		
White	908	89.4
Brown	66	6.5
Not reported	28	2.7
Black	8	0.8
Indigenous	5	0.5
Yellow	1	0.1

Age range		
05 to 13 years	1	0.1
14 to 15 years	5	0.5
16 to 17 years	14	1.4
18 to 29 years	273	26.8
30 to 39 years	239	23.5
40 to 49 years	222	21.8
50 to 59 years	166	16.3
60 to 65 years	49	4.8
66 to 70 years	25	2.5
Above 70 years	22	2.2
Education		
Cannot read/write	15	1.5
Literate	6	0.6
Incomplete primary education	460	45.3
Complete primary education	162	15.9
Incomplete secondary education	74	7.3
Complete secondary education	228	22.4
Incomplete higher education	19	1.8
Complete higher education	28	2.7
Specialization/residency	4	0.4
Not reported	20	1.9

According to Table 2, the most commonly reported type of injury was other occupational accidents, 787 (77.5%), that is, other injuries that are not serious work accidents or exposure to biological material.

The injuries occurred more frequently in the workplace ($n = 809 / 79.6\%$) and in the urban area ($n = 398 / 39.2\%$). The most common causative agent of the injuries was strike caused by thrown, projected or falling object ($n = 95 / 9.4\%$), followed by contact with non-motorized hand tools ($n = 76 / 7.5\%$). In addition to these data, there were also reports of other less frequent causative agents, which accounted together for 18.2% of the injuries.

Table 2 – Description of the injury and causative agent notified in 2015. N=1.016. Frederico Westphalen, RS, Brazil, 2017 (continues)

Variables	N	%
Type of injury		
Other work accidents	787	77.5
Other diseases	116	11.4
Serious work accident	83	8.2
Exposure to biological material	19	1.8
Work-related Repetitive Strain Injuries/Osteoarticular Diseases (RSI/DORT)	6	0.6
Mental disorder	3	0.3
Occupational dermatoses	2	0.2
Site of the accident		

In the workplace	809	79.6
Not reported	127	12.5
Route accidents	49	4.8
Ignored	31	3.1
Zone		
Urban	398	39.2
Rural	374	36.8
Ignored	244	24
Causative agent		
Strike/Fall	159	15.6
Strike caused by thrown, projected or falling object	95	9.4
Fall on same level from slipping, tripping and stumbling	29	2.8
Fall on same level NOS	20	1.9
Fall from, out of or through building or structure	15	1.5
Contact	310	30.5
Contact with nonpowered hand tools	76	7.5
Contact with other and unspecified machinery	61	6
Contact with other powered hand tools and household machinery	58	5.7
Contact with knife, sword and dagger	49	4.8
Contact with unspecified agricultural machinery	34	3.3
Contact with sharp glass	16	1.6
Contact with and (suspected) exposure to communicable disease	16	1.6
Penetration	116	11.4
Penetrating wound with foreign body entered through the eye or through a natural orifice	65	6.4
Foreign body entering through skin	51	5
Bite	29	2.8
Bitten or mauled by other mammals (cat, bovine, pig, horse, mare and others)	15	1.5
Bitten or stung by nonvenomous insects and other nonvenomous arthropods	14	1.4
Circumstances related to the work or lifestyle	39	3.8
Circumstance related to the working conditions	25	2.5
Circumstances related to living conditions	14	1,4
Others	363	35.7
Overexertion and strenuous or repetitive movements (related to the work or professional sport)	75	7.4
Accidental poisoning by and exposure to other noxious and unspecified chemical substances	49	4.8
Caught, crushed, jammed or pinched in or between objects	23	2.3
Motorcycle driver injured in a noncollision transport accident	16	1.6
Assault by smoke, fire and flames	15	1.5
Other causative agents	185	18.2

According to Table 3, the main diagnosis was wrist and hand injury with 247 (24.3%) cases. There were other less frequent diagnoses that accounted together for 252 (24.8%) cases.

Table 3 – Description of the main diagnosis of the injuries notified in 2015. N=1.016. Frederico Westphalen, RS, Brazil, 2017

Variables	N	%
Main diagnosis		
Upper limbs	351	34.5
Hand and wrist injury	247	24.3
Shoulder and arm injury	32	3.1
Superficial trauma of the wrist and hand	20	1.9
Shoulder bursitis	17	1.7
Traumatic amputation of had at wrist level	12	1.2
Forearm injury	12	1.2
Fracture at wrist and hand level	11	1,1
Lower limbs	128	12.6
Ankle and foot injuries	68	6.7
Leg injury	60	5.9
Head	114	11.2
Foreign body on external eye	67	6.6
Head injury	35	3.4
Ocular and orbital injury	12	1.2
Exposures/contact	85	8.4
Toxic effect of other gases, fumes and vapors	68	6.7
Contact or exposure to communicable diseases	17	1.7
Others	336	33.1
Not specified low back pain or lumbago	49	4.8
Other work-related injuries	23	2.3
Depressive episodes, depression, depressive disorder	12	1.2
Others	252	24,8

It was found that 841 (82.7%) workers suffered work-related injuries and received ambulatory care, and after that, 467 (45.9%) were discharged. Regarding the relationship between the injury and work, 773 (76.1%) had a confirmed work link, according to data from Table 4.

Table 4 – Description of the care service, outcome and relationship with work, notified in 2015. N=1.016. Frederico Westphalen, RS, Brazil, 2017 (continues)

Variables	N	%
Type of care service		
Outpatient	841	82.7
Emergency	131	12.9
Admission (inpatient)	44	4.3
Outcome		
Discharge	467	45.9
Outpatient monitoring	371	36.5

Specialized monitoring	90	8.8
Admission	66	6.5
Other	16	1.6
Death	3	0.3
Discharge on request	1	0.1
Cure with sequel	1	0.1
Evasion/escape	1	0.1
Relationship with work		
Confirmed	773	76.1
Not reported	156	15.4
Probable	73	7.2
Discarded	11	1.1
Pending	3	0.3

Regarding occupation, 158 (15.5%) of the workers were from mixed production: agriculture and livestock (described in Table 5). Notifications of other types of occupations were less frequently reported, totaling 188 (18.5%) cases.

Table 5 – Characteristics of the type of activity notified in 2015. N=1.016. Frederico Westphalen, RS, Brazil, 2017 (continues)

Variables	N	%
Type of activity		
Agricultural and livestock activities	279	27.5
Mixed production: farming and livestock	158	15.5
Production of temporary crops	71	6.9
Production of permanent crops	35	3.4
Agricultural-related services	15	1,5
Civil Construction	67	6.6
Construction of buildings and civil engineering works	44	4.3
Finishing works and construction-related services	23	2.3
Commercial activities	40	3.9
Retail sale of other products in specialized stores	15	1.5
Wholesale of food, beverages and tobacco	14	1.4
Retail sale of food, beverages and tobacco		
	11	1.1
Industrial activities	42	4.2
Manufacture of other products of wood, cork and braided materials	15	1.5
Manufacture of metal structures and heavy duty boilers	14	1.4
Manufacture of other food products	13	1.3
Others	608	59.6
Slaughter and preparation of meat and fishing products	119	11.7
Extraction of stone, sand and clay	96	9.4

Domestic workers	70	6.8
Health care activities	40	3.9
Cargo handling and storage	22	2.2
Rock thinning, manufacture of lime and others	20	1.9
Maintenance and repair of motor vehicles	20	1.9
Wood lamination	18	1.8
Collective services provided by the public administration	15	1.5
Others	188	18.5

The occupations of the workers affected by injuries were polyvalent agricultural producer (127-12.5%); miner (91-8.9%); feeder of production line (71-6.9%); housewife (69-6.8%). Other occupations were also reported, totaling 657 (64.7%) cases.

Regarding the employment relationship, the most affected workers were those with contracts governed by the Consolidation of Labor Laws (CLT) (344-33.8%); self-employed person who does not provide services to a company (223 - 21.9%); informal worker (106-10.4%); Others (105-10.3%). Other notifications accounted for 238 (23.4%), and one concerned child labor.

● DISCUSSIONS

The present study found that most workers affected by injuries were men. A study ⁽⁴⁾ developed in Rio Grande do Norte identified the profile of the injured workers, demonstrating that most were men (53.7%) and had employment contracts, corroborating other studies on the subject. Contrasting results were found in other studies ^(3,13-14) that found that most women were the workers who had most injuries.

The predominance of males can be related to the types of activities performed: mixed production (crop and livestock); slaughtering and preparation of meat and fishery products, and extraction of stone, sand and clay. This is confirmed by the fact that the state of Rio Grande do Sul is one of the largest agricultural and livestock producers ⁽¹⁵⁾, that is, with a large number of jobs that require physical strength, such as those addressed in a study with tobacco growers in a city of Rio Grande do Sul focused on low back pain, which was the cause of several levels of disability⁽¹⁶⁾. The referred jobs are high risk activities, according to regulation no 4 of the Ministry of Labor: on a scale of 1 to 4 they are rated 3 ⁽¹⁷⁾.

Regarding the age group, it was found that most workers affected by work-related injuries were young adults. A study ⁽¹⁸⁾ on the Work Accidents Communications (CATs) of Jequié, Bahia workers reported 52 (36.1%) in the age group of 20-30 years, corroborating the results of the present study.

A study ⁽¹⁹⁾ that analyzed the profile of work accidents in the Brazilian adult population showed that they occurred in 3.4% of the adult population, being more frequent among young men aged 18-39 years. These accidents are worrying because they involve high costs with medical and psychological treatments, cause physical problems, and may even lead to death. They also generate economic and financial losses, since this age group is productive, that is, these individuals integrate the economically active population ⁽¹⁾.

One case of child labor was reported. However, considering all the cases reported according to age range, one case of child labor in the age group of 5-13 years and five in the age group of 14-15 years were reported. According to Decree No. 5,452 of May 1943, article 403: "work under the age of sixteen is forbidden except as an apprentice from the age of fourteen" (20: 100).

Concerning the educational level, the highest frequency of injuries was observed among workers with incomplete primary education corroborating the results of a study conducted in the Metropolitan Region of Salvador, Bahia, which attempted to characterize occupational accidents that resulted in death ⁽²¹⁾. A

study found that workers in the industrial segment with 10 years or less of education were more prone to occupational accidents ⁽²²⁾.

Individuals with a poor level of education have lower activation of cortical regions, the motor thalamus, the basal ganglia and the cerebellum in their cognitive-motor activities. Also, they find it more difficult to perform visual perception tasks, because they are slow-witted and make more mistakes ⁽²³⁾. The lower educational level of the workers was reported in a study⁽¹⁹⁾ that found that the socioeconomic condition is a determining factor in work accidents. Therefore, it can be affirmed that the lower the level of education, the higher the risk of injuries.

Considering the type of injury, most notifications concerned other work-related accidents. Occupational accidents include injuries, occupational and work-related injuries and occupational diseases and route accidents, as well as other situations provided for in the legislation. The concept of injury is comprehensive and can comprise several situations and to explain most notifications ⁽²⁴⁾. An in-depth discussion about this variable is necessary given the lack of studies on the subject.

The work-related illnesses and accidents reported by the SINAN of Teresina, Piauí, between 2007 and 2011 were severe work accident, accident with exposure to biological material, exogenous intoxication, RSI/DORT and pneumoconioses ⁽¹⁾. The authors associated the increased number of notifications with several factors, including the qualification of the healthcare professionals and epidemiological surveillance ⁽¹⁾.

Regarding the site of the injury, most of them occurred in the workplace. Data from the Social Security ⁽⁸⁾ indicate that in 2014 most occupational accidents (427,939) occurred in the workplace. This can be related to the risks inherent to the workplace where unsuitable and risky working conditions prevail ⁽²⁵⁾ and the safety measures are not sufficient to prevent or reduce these accidents.

The body parts affected by injuries are those that are most exposed during the execution of the worker's activity ⁽²⁶⁾. The hands perform most work activities and hence are the body parts most exposed to risk and most vulnerable to accidents.

Regarding the main diagnosis, a similar result was found in data released by the Social Security, in which of the 704,136 accidents reported in 2014, the highest prevalence was hand and hand injury with 67,644 cases ⁽⁸⁾. A study conducted in Pernambuco, from 2011 to 2013, found that the main part of the body affected in the accidents was the hands ⁽²⁶⁾.

One limitation of this study was the impossibility of performing associations with the variables of interest, since the SAN generates the RINA report, with a maximum of three variables selected.

● CONCLUSION

It can be concluded that most individuals affected were male, and this can be due to their prevalent occupations, which require greater physical strength. Low educational level may be one of the contributing factors for the occurrence of accidents, perhaps because of the poor understanding of the workers of the risks posed by the activities performed. Therefore, workers should be trained and advised on the correct and appropriate use of the Personal Protective Equipment (PPE).

The most frequently reported injury was other types of accidents. This suggests that improvements should be made in the workplace, including equipment and machinery to prevent the occurrence of the referred injuries. Regarding the diagnosis of wrist and hand injury, it is concluded that there is a need for awareness and adherence to the use of PPE, which must be made available by the companies. Also, the workers should request this equipment and keep it in proper conditions for use.

Rehabilitation and health promotion actions are important strategies for the prevention of work-related diseases and accidents, which should be developed by a multidisciplinary team. In addition to the actions/activities to promote and prevent occupational accidents, we stress the importance of the proper completion of the injury report forms.

Workers' health and safety issues should receive constant attention, as they also impact employers, the government and all citizens.

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